ICASET

22 - 23 March 2025 | Chennai, India

3rd International Conference on Advances in Science, Engineering & Technology (ICASET-2025)

22nd & 23rd March, 2025
Chennai, India

IFERP Academy
Explore Your Research Journey...

Organized By:

IFERP Academy - Chennai, India

Academic Partner

SSM
ACIC RISE ASSOCIATION CEC LANDRAN
CGC LANDRAN Building Careers. Transforming Lives.
NAAC GRADE A+

3rd International Conference on Advances in Science,
Engineering & Technology(ICASET-2025)

ICASET
22 - 23 March 2025 | Chennai, India


“Enabling Sustainable Development through Science, Engineering, and Technology”

PREFACE

We are delighted to extend a warm welcome to all participants attending 3rd International Conference on Advances in Science, Engineering & Technology (ICASET-2025), taking place in Chennai, India on 22nd & 23rd March, 2025. This conference provides a vital platform for researchers, students, academicians, and industry professionals from all over the world to share their latest research results and development activities in the field of Sustainable Agriculture and Climate Resilience. It offers delegates an opportunity to exchange new ideas and experiences, establish business or research relationships, and explore global collaborations.

The proceedings for ICASET-2025 contain the most up-to-date, comprehensive, and globally relevant knowledge in the field of Engineering, Technology and Management. All submitted papers were subject to rigorous peer-reviewing by 2-4 expert referees, and the papers included in these proceedings have been selected for their quality and relevance to the conference. We are confident that these proceedings will not only provide readers with a broad overview of the latest research results in Advances in Science, Engineering & Technology but also serve as a valuable sussssmmary and reference for further research in this field.

We are grateful for the support of many universities and research institutes, whose contributions were vital to the success of this conference. We extend our sincerest gratitude and highest respect to the many professors who played an important role in the review process, providing valuable feedback and suggestions to authors to improve their work. We also extend our appreciation to the external reviewers for providing additional support in the review process and to the authors for contributing their research results to the ICASET-2025.

Since January 2025, the Organizing Committees have received more than 175+ manuscript papers, covering all aspects of ICASET-2025. After review, approximately 133+ papers were selected for inclusion in the proceedings of ICASET-2025. We would like to thank all participants at the conference for their significant contribution to its success. We express our gratitude to the keynote and individual speakers and all participating authors for their dedication and hard work. We also sincerely appreciate the efforts of the technical program committee and all reviewers, whose contributions made this conference possible. Finally, we extend our thanks to all the referees for their constructive comments on all papers, and we express our deepest gratitude to the organizing committee for their tireless work in making this conference a reality.

ABOUT ICASET - 2025

The 3rd International Conference on Advances in Science, Engineering & Technology (ICASET), partnership with SSM College of Arts, Science, PT. Mega Mas Abadi Consultant and Training Jakarta, Indonesia and IFERP Academy, beckons researchers, scholars, and industry professionals to embark on a journey of intellectual exploration and collaboration. As an attendee, you will find compelling reasons to participate in this dynamic event.

ICASET offers a unique opportunity to immerse yourself in a rich tapestry of multidisciplinary knowledge. It is a platform to connect with global thought leaders and visionaries who have left an indelible mark on the landscape of science, engineering, and technology. Keynote sessions by these luminaries promise to offer profound insights into the latest trends, challenges, and future directions in these dynamic fields.

Whether you are a researcher looking to refine your methodology or a professional seeking to stay abreast of the latest industry practices, these workshops provide a unique learning experience.

Purpose of the Conference:

"Enabling Sustainable Development through Science, Engineering, and Technology"

The primary purpose of ICASET is to provide a dynamic platform for researchers, academics, and industry professionals to converge and explore cutting-edge advancements in science, engineering, and technology. In an era marked by challenges, this conference stands as a beacon for nurturing resilience – a space where ideas flourish, collaborations thrive, and solutions emerge. ICASET seeks to transcend disciplinary silos, encouraging participants to engage in interdisciplinary dialogues that pave the way for resilient solutions to real-world challenges.

Objective of the Conference:

ICASET is driven by a multifaceted objective that goes beyond traditional conference goals. Our aim is to facilitate knowledge exchange, promote collaboration, and catalyze transformative breakthroughs in the fields of science, engineering, and technology.

By providing a conducive environment for networking, learning, and idea-sharing, ICASET aspires to contribute to the global pool of knowledge and inspire innovative approaches to address the complexities of our ever- evolving world.

ABOUT COLLEGE

SSM College of Arts & Science

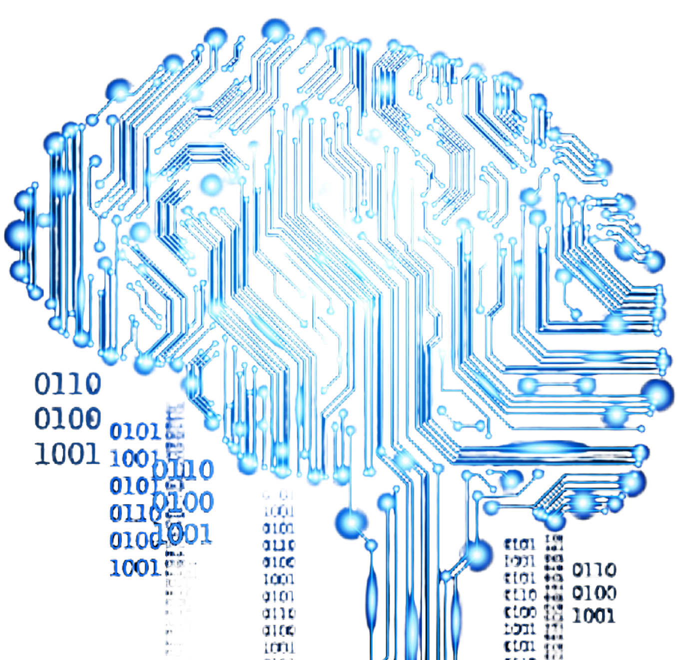
SSM group welcomes all to their new novel academic venture in the field of higher education. S. ChennimalaiGounder Charitable Trust embarks on a noble mission to transform the society through employment, especially the people inhabited in the vicinity of Dindigul. As a diversified venture of Corporate Social Responsibility, SSM group initiated building institutions for the future generation.

To fulfill the demands of the parents of Dindigul, SSM Institute of Engineering and Technology was started in 2011. The dream of the founders is to provide quality technical education to the deserving rural students and to make them emerge as employers than employees. The institute has produced multifaceted workforce who have earned a niche for them and in turn to their alma mater.

CGC Landran

CGC Landran, with its 23-year legacy under the aegis of Sri Guru Ramdass Educational Society, has established itself as one of the leading higher education institutes. With NAAC A+ accreditation, NIRF, NBA, ARIIA, IIC, and other prestigious rankings it is one of the most sought-after institutes in the Northern region. The institution is focused on providing affordable, high-quality education and ensuring academic excellence for its students.

Kicking off with the Engineering Program in the year 2001, the Institute offers more than 55 + UG & PG programs across streams such as Engineering, Management, Pharmacy, Biotechnology, Computer Applications, Hotel Management & Commerce. Being among the heritage institutes in the region is committed to providing the best of faculty, infrastructure, global associations, research, and innovation-centric environment, a safe and culturally diverse campus, and making the students participate in sports, skill upgrading activities, clubs, and committees, NCC, NSS, etc beyond academics



ABOUT IFERP

The Institute for Educational Research and Publication (IFERP) is a professional association devoted to the advancement of the fields of engineering, science, and technology through the funding of research activities, propagation of the latest research insights, furtherance of industry trends, and other related ventures. IFERP aims to digitalize this entire process of innovation, collaboration, and knowledge-sharing through the fostering of a unified virtual scientific community worldwide. Everything from networking and joint ventures to learning, research assistance, publication, and more, will be carried out as part of this objective.

IFERP has established robust scientific, academic, and industry networks throughout Asia, the Middle East, and Europe. Some of the countries that IFERP has its presence in, include Iraq, Maldives, Thailand, Malaysia, Singapore, Philippines, Indonesia, Taiwan, Vietnam, UAE, Australia, Japan, Sri Lanka, Nepal, Ghana, and Africa.

The IFERP Academy emerges as the dynamic force steering the organizational prowess behind the 3rd International Conference on Advances in Science, Engineering & Technology (ICASET). IFERP stands as a distinguished professional association committed to advancing the frontiers of knowledge in the fields of engineering, science, and technology. With a steadfast dedication to promoting innovation, collaboration, and knowledge dissemination, IFERP plays a pivotal role in orchestrating conferences that serve as crucibles for intellectual exchange.

Mission:

Upskilling the knowledge hub through technological innovation and excellence for the benefit of humanity.

Vision:

A Digitally equipped robust, dynamic & swift professional community integrating academics & industry for upgraded technical knowledge implementation.

Value:

IFERP values the restoration of high- level technological research, learning, collaboration, resource sharing & community-building traditions.

Goal:

To serve as the foundation for all technological progress and advancement activities around the world.

MESSAGE FROM
MANAGING DIRECTOR, IFERP

Mr. A. SIDDTH KUMAR CHHAJER
MD & Founder,
IFERP, Technoarete Group

On behalf of Institute For Educational Research and Publications (IFERP) & the organizing Committee, I express my hearty gratitude to the Participants, Keynote Speakers, Delegates, Reviewers and Researchers.

The goal of the 3rd International Conference on Advances in Science, Engineering & Technology (ICASET-2025) is to provide knowledge enrichment and innovative technical exchange between international researchers or scholars and practitioners from the academia and industries in the field of Recent Advances in Engineering and Computer Applications.

This conference creates solutions in different ways and to share innovative ideas in the field of Recent Advances in Engineering and Computer Applications. ICASET-2025 provides a world class stage to the Researchers, Professionals, Scientists, Academicians and Students to engage in very challenging conversations, assess the current body of research and determine knowledge and capability gaps.

3rd International Conference on Advances in Science, Engineering & Technology (ICASET-2025) will explore the new horizons of innovations from distinguished Researchers, Scientists and Eminent Authors in academia and industry working for the advancements in Science and Engineering from all over the world. ICASET-2025 hopes to set the perfect platform for participants to establish careers as successful and globally renowned specialists in the field of Science and Engineering.

MESSAGE FROM
CHIEF EXECUTIVE, IFERP

MR. RUDRA BHANU SATPATHY

CEO & Founder,
IFERP, Technoarete Group

IFERP is hosting the 3rd International Conference on Advances in Science, Engineering & Technology (ICASET-2025) this year in month of 22nd & 23rd March 2025, Chennai, India. The main objective of ICASET-2025 is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions. The sessions serve as an excellent opportunity to soak up information from widely respected experts.

Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and become known as a thought leader. I express my hearty gratitude to all my Colleagues, Staffs, Professors, Reviewers and Members of Organizing Committee for their hearty and dedicated support to make this conference successful. I am also thankful to all our delegates for their pain staking effort to make this conference successful.

BIOGRAPHY OF KEYNOTE SPEAKERS

Dr. Subhas Chandra Mukhopadhyay
Professor of Mechanical / Electronics Engineering Macquarie University, Australia

Dr. Subhas Chandra Mukhopadhyay (M'97, SM'02, F'11) currently is working as a Professor of Mechanical/Electronics Engineering with the School of Engineering, Macquarie University, NSW 2109, Australia. He is the Discipline Leader of the Mechatronics Engineering Programme. He is also the Director of International Engagement for the School of Engineering. His fields of interest include Sensors and Sensing Technology, Instrumentation, Wireless sensor networks, Internet of Things, Mechatronics and Robotics, Drones etc. He has authored/co-authored 14 patents, 10 books, over 450 papers in different international journals, conferences and book chapter. He has edited eighteen conference proceedings. He has also edited forty special issues of international journals as guest editor and fifty books. He is a FIEEE (USA), a FIET (UK) and a FIETE (India). He is a Topical Editor of IEEE Sensors journal, an Associate Editor of IEEE Transactions on Instrumentation and Measurements and an Associate Edior of IEEE Review of Biomedical Engineering. He is EiC of S2IS journal and Series Editor of Smart Sensing, Measurements and Instrumentation, Springer-Verlag. He was the Founding Chair of the IEEE Instrumentation and Measurement Society New South Wales, Australia Chapter and currently chair of the chapter. He is also the Founding Chair of the IEEE Sensors Council New South Wales, Australia Chapter. He was a Distinguished Lecturer of the IEEE Sensors Council 2017-2022. He has delivered 450 seminars, including keynote, invited, tutorial and special talks. He has organized over 20 international conferences either as General Chair or Teachnical Programme Chair. He has organized the IEEE Sensors Conference 2009 at Christchurch, New Zealand as General Chair and 2021 in Sydney as General Co-chair.

BIOGRAPHY OF KEYNOTE SPEAKERS

Dr. Nurnadiah Zamri, (Associate Professor)

Senior Lecturer, Faculty of Informatics and Computing, University of Sultan Zainal Abidin, Terengganu, Malaysia

Assoc. Prof. Dr. Nurnadiah Zamri is a Senior Lecturer in the Faculty of Informatics and Computing at Universiti Sultan Zainal Abidin, where she has been a faculty member since 2015. She completed her Ph.D. in Mathematical Sciences at Universiti Malaysia Terengganu. Her major research interests lie in fuzzy expert systems, fuzzy decision making, social statistics, and data sciences. Previously, she served as a Visiting Postdoctoral Researcher at Manchester Cancer Research Centre, University of Manchester, where she worked with David Wedge in the field of Cancer Genomics and Data Science. Her work focuses on applying machine learning, deep learning, and statistical techniques to make novel discoveries across a wide range of cancer types. Her target is to analyze data from Whole Genome Sequencing (WGS) experiments to identify genomic features that drive tumor evolution, with her focus on lung and prostate cancers. Besides, she has also published outstanding research articles broadly in her area. She was selected as one of the CEO@ Faculty Programme 2.0 Cycle 2.0 fellows in 2018 and joined the industry attachment at Sun Life Assurance Malaysia Berhad for 6 months. She was also one of the finalists for the Merdeka Award 2019. She has experience as an Editor for the Malaysian Journal of Computing and Applied Mathematics and the Malaysian Journal of Applied Sciences since 2016. She has major involvement in planning and conducting events, especially national and international conferences, seminars, conventions, corporate talks, convocations, dinners, and other social/academic events with various responsibilities (event manager, host, committee, etc.). She led event management conducted by students and worked closely with students, administrators, and others. She has actively participated as a reviewer, jury member, evaluation panelist, facilitator, workshops, and courses for staff and students' modules. She has a major involvement in presenting research at international and local conferences, publication of chapters in books and journals (research grant and non-research grant). She has been awarded the Best Paper Award at the SCDM Conference (2014), Book Award (2018), won several innovation awards including Silver Medal for Electronic Mental Health Assessment and Self-Treatment (e-MAST) at IUCEL 2018, Gold Medal for e-MAST at Unicel 2018, Silver Medal for e- MAST at MTE 2019, Gold Medal for e-MAST at MTE 2019, Gold Medal for e-MAST at MPI 2019, Silver Medal for eUA at MPI 2020, and Silver Medal for Electronic Autism Care Centre at MPI 2020. Since 2015, she has received 9 grants (3 as a leader and 6 as a member) locally and internationally. She is also one of the members of Pusat Psikologi dan Rehabilitasi UniSZA and received a grant from Terengganu State to run a project on autism towards the community. She actively participates in the community and has served in the Angkat Programme for Orang Asli in Kampung Gurney, Ulu Yam, Selangor. Besides, she is also one of the members of the Qalb Leadership Programme. Her next aim is to serve the community and look forward more actively to collaborating nationally and internationally. Also, she is looking forward to collaborating on machine learning and deep learning studies for any case study.

BIOGRAPHY OF KEYNOTE SPEAKERS

Dr. Jothilakshmi P
Associate Professor, Electronics and Communication Engineering Amrita Vishwa Vidyapeetham India

Dr.P.Jothilakshmi completed her BE(ECE) degree from University of Madras in the Year 1996.She completed her ME (Communication Systems) Degree from Madurai Kamaraj University in the Year 2000. She completed her Ph.D degree in Microwave Antenna Design from Thiagarajar College of Engineering under Anna University Chennai in the year 2015. Her research areas are Microwave antenna design, Embedded Systems, Electromagnetic Interference and Compatibility and Wireless Communication. She is having more than 25 years of teaching and research experience in reputed organizations. She led several numbers of B.E and M.E and Ph.D level projects. Three research scholars are completed Ph.D degree under her supervision. Currently eight research scholars are pursuing Ph.D under her guidance. She is the principal investigator and successfully completed two funded projects titled, "Ku-band Tx/Rx Transportable Reflect Array Antenna for Satellite Communications (ISRO respond scheme)" and "Automated Weed Control using Swarm of Robots (TNSCST, Tamil Nadu)". She published more than 140 research papers in International, National Journals and Conferences. She filed and published two Indian innovation patents and granted three design. She published several SCI indexed and Scopus Journal papers with high impact factor. She reviewed several papers in the journals IET Communications, IEEE Journal of Biomedical and Health Informatics, IET Microwave Antennas and Propagation, Applied Computational Electromagnetic Society Journal, WSEAS Transactions on Communications, IEEE sensors Journal and International Journal of RF and Microwave Computer-Aided Engineering She is one of the Global Goodwill Ambassador of India for LinkedIn professional network. She is a Doctoral committee member in various Universities. She received grants from government for organizing workshops and short-term training programme. She attended several workshops and conferences. She received national level Best Women Teacher Award 2018 at N.L.Dalmia Institute of Management Studies and Research in association with Combined Society for Educational Research and Development. She is recognized as top 20 Influential Women Educators in Tamil Nadu for the year 2019 by ULektz wall of fame. She is recognized as top 50 Research Guides across India for the year 2019 by the Academic Council of ULektz. She is the Volunteer of International Human Rights Commission from 11.06.2020. She is an active fellow member in professional societies, ISTE, IETE and IAENG.

BIOGRAPHY OF KEYNOTE SPEAKERS

Dr. Prakash Subramaniam

Dean Sathyabama Institute of Science & Technology Chennai, India

Dr. S.Prakash is the Former Dean of the School of Mechanical Engineering at Sathyabama University, with over 25 years of teaching experience and expertise in academic leadership. He has played a pivotal role in securing NAAC A++, NBA, and ABET accreditations, authored over 100 publications, holds 27 design patents, and has facilitated successful technology transfers to industry. He has also secured research grants totaling INR 3 crore for projects like MODROB and Digital Twin Technology. A dedicated mentor and researcher, Dr. S.Prakash bridges academia and industry through impactful collaborations and innovative academic programs.

Dr. Deepika Sharma

Associate Professor, Research and Development Department, Chandigarh Group of Colleges CGC Landran Mohali, Punjab, India

Dr. Deepika Sharma has completed her PhD in year 2015 from Guru Nanak Dev University Amritsar, Punjab (India). She has done her postdoctoral studies from CSIR-Institute of Microbial Technology Chandigarh (India). She is currently working as Associate Professor in Research &Development Dept. CGC Landran Mohali, Punjab (India) a premier organization. She has successfully completed two minor research projects funded by Department of Science and Technology (DST), New Delhi. She has published 20 research papers in reputed international journals and two book chapters.

BIOGRAPHY OF KEYNOTE SPEAKERS

Pratik Jain

Engagement Manager Exponentia.ai
India

Pratik Jain is an esteemed IT expert and a globally acknowledged thought leader in cloud-driven digital transformation. With more than ten years of experience, his leadership, forward-thinking approach, and creative solutions have left a lasting impact on the corporate, government, and academic sectors. Pratik's work encompasses pioneering research, impactful policy guidance, and innovative business strategies, cementing his reputation as a reliable advisor and thought leader in the field. Currently the Engagement Manager at Exponentia.ai, Pratik's career is marked by numerous honors and accomplishments. His role as a judge for prominent international awards, speaker at renowned conferences, and influencer of national policies showcases his widespread recognition and influence within the cloud technology industry. Pratik's professional journey serves as a blueprint for digital transformation. From his work with major organizations like BNY Mellon Technology, ADP, NYU Langone Health, JetBlue Airways, Pitney Bowes, and Exponentia.ai, his impact is clear — he is the constant driver of change. Through his visionary leadership, Pratik has been instrumental in promoting cloud technologies that tackle pressing global challenges. His influence spans from shaping national policies to redefining corporate innovation, highlighting the transformative potential of secure, efficient, and collaborative solutions that improve industries and lives worldwide. As a leader in cloud-enabled digital transformation, Pratik's career is marked by groundbreaking research, policy contributions, and spearheading key technological projects. With an unwavering commitment to advancing technology, he continues to shape the future of cloud solutions and drive transformation across industries and nations.

BIOGRAPHY OF KEYNOTE SPEAKERS

Dr. Lalitha Lakshmi

Assistant Professor, SSM College of Arts & Science, Dindigul , India

Dr. M. Lalitha Lakshmi is a qualified academic professional with a strong background in Commerce, and Human Resource Management. She holds a Ph.D. in Commerce from Madurai Kamaraj University. With over a decade of teaching experience, she currently serves as an Assistant Professor at SSM College of Arts and Science, Tamil Nadu. Her research focuses on Human Resource Management, particularly on the socio-economic conditions of MGNREGS women workers in Dindigul District. She has presented and published 20 research papers at national and international conferences, with publications in esteemed journals. In addition to her academic pursuits, she has completed various professional courses and published three books under University Syllabus.

BIOGRAPHY OF SESSION SPEAKERS

Dr. Tiruveedula Gopi Krishna

Assistant Professor, Adama Science and Technology University, Ethiopia

Dr. T. Gopi Krishna is a seasoned professional with over 20+ years of experience in teaching and research in the field of Computer Science and Engineering, He's a passionate educator with research experience in big data analytics, and in image processing and specializing in Machine Learning, Artificial Intelligence, and Data Mining. He earned his Ph.D. in CSE from Rayalaseema University in 2014, focusing on advanced data analysis techniques for extracting insights from large datasets. Dr. Gopi also holds a Master of Engineering degree in Computer Science and Engineering (M.E)-(2004) From Anna University and a Master of Science in computer science (M.Sc)-(2001) from Andhra University, and a Bachelor's degree in Computer Science (B.Sc)-(1997) From Andhra University. Throughout his career, Dr. Gopi has made significant contributions to his field through research, publications, patents and collaborations. Dr. Gopi is also a dedicated educator, mentoring students and supervising research projects to empower the next generation of computer scientists and engineers. Dr. Gopi Krishna's profound understanding of machine learning and artificial intelligence, coupled with his teaching and research experience, positions him as a respected leader and authority in the field of computer science and engineering. Currently he is working as an Associate Professor at Adama Science and Technology University, Ethiopia since 2017. His current research area is Data Science and Big Data Analytics with AI/ML.

BIOGRAPHY OF SESSION SPEAKERS

Dr. Madhurima Dasgupta

Assistant Professor, School of Humanities, Management and Social Sciences, The Neotia University, India

Dr. Madhurima Dasgupta, is a Ph.D in Sociology and UGC-NET qualified in the same area, is a young, dynamic and dedicated academician, prolific researcher and a social science investigator in the areas of gender studies in specific and sociology in general. Till 2024, she has almost seven years full time regular teaching experience. With the impressive academic record to her credit, Madhurima has earned her Ph.D from the prestigious Jadavpur University, Kolkata, India. She has also completed her M.Phil and MA in Sociology with distinction grade results from the same university. She has been into full time regular university teaching since February 2018 and have been associated with the two reputed private universities of Eastern India, like the Adamas University Kolkata and the Neotia University, Diamond Harbour in West Bengal. In adjunct capacities, she has served Jadavpur University and several other prestigious government and government aided degree colleges of Kolkata, West Bengal, those are affiliated with the University of Calcutta. She has also been associated with the prestigious private universities and institutions in adjunct faculty roles such as Amity University, Kolkata etc. Dr. Madhurima has significantly contributed in framing academic curriculum and in designing UG and PG level courses in accordance with NAAC compliance requirements at the Adamas University. Her academic leadership capabilities can be observed during her role as the head of the department of the department of Sociology with the Adamas University, Kolkata. During her present association with the Neotia University, West Bengal, she has been instrumental for course mapping, academic quality documentation under the office of the Dean of the School of Humanities, Management and Social Sciences.As a researcher, she has published her research works with different reputed research journals and edited research volumes, published by prestigious Taylor and Francis, Sri Ram Centre for Industrial Relations-A Review of Economic and Social Development, RabindraBharati University, Indian Sociology Society, PanditDeendayal Energy University, Calcutta Historical Society etc. Her research interest lies in Sociology of Gender; Body, technology and society; Sociology of Human Relationships and sexuality; Sociological Theories; Sociology of Law etc. At such a young age, she has been invited to deliver lectures and expert talks at different parts of India and abroad through physical, online and hybrid mode. She is the recipient of several prestigious awards and accolades for her academic and professional achievements. She is a serious learner and open to continuous development for her teaching learning and research skills through several faculty development programs on academic delivery, student engagement through experiential learning, project based teaching, exploration of research possibilities and inter-disciplinary course developments for multi-dimensional learning opportunities of her students. She has also participated in several national and international conferences as speakers, keynote speakers and session chairs. She is also an active individual member of the Indian Sociological Society, the apex research and professional body of the sociological studies in India. Since January 2024, Dr. Dasguptais pursuing her post-doctoral research at Abo-Akademy University, Finland under the supervision of Prof. Dr. Mans Bro, a reputed sociologist on the 'Issues and Challenges faced by LGBTQ+ community in India-with special emphasis on West Bengal, India'.

BIOGRAPHY OF SESSION SPEAKERS

Dr.Tanuja Satish Dhope (Shendkar)

Professor, Department of Electronics and Communication Engineering, Bharati Vidhyapeeth (Deemed to be University) College of Engineering, Pune, India

Dr. Tanuja Satish Dhope (Shendkar) graduated Electronics and Telecommunication engineering at Cummins College of Engineering, University of Pune in 1999.She received Master degree in Electronics Engineering from Walchand college, Sangli, Shivaji University in 2007. She has completed her Ph.D in 2012 in wireless communication at University of Zagreb, Croatia under Erasmus Mundus Mobility for Life fellowship. She has honored with 'Women Scientist Award' by VG Factory in 2020. She has 24 years of teaching experience as well as industrial experience. She is currently working as Professor, Department of Electronics and Communication, Bharati Vidyapeeth (Deemed to be University) College of Engineering, Pune, India. Her research focus is on cognitive radio network optimization with spectrum sensing algorithms, radio channel modelling for cognitive radio, cooperative spectrum sensing, MIMO, Direction of arrival (DoA) Estimation algorithms in Cognitive Radio and in SDMA, Machine learning, NLP. She published 45 scientific papers in journals and conference proceedings.

BIOGRAPHY OF SESSION SPEAKERS

Dr. Amit Kumar Marwah

Professor, Head of the Department of Mechanical Engineering Acropolis Institute of Technology and Research, Indore (MP), India

Dr Amit Kumar Marwah is a Mechanical Engineering graduate with Gold Medalist in Master's degree in Industrial Engineering and Management and Doctorate degree (Ph. D.) in Supply Chain Management. He has over 22 years of teaching experience and more than 14 years of Entrepreneurial experience. Presently he holds a position of Professor and Head in Mechanical Engineering Department of Acropolis Institute of Technology & Research, Indore (MP). He is IIC Vice President, ARIIA Coordinator, NISP coordinator and Innovation Ambassador of AITR. Also, he is a Global Jury Member of WF-NEN. His areas of interest include automobiles, sustainability, entrepreneurship and innovation.

He holds 4 patents and is a co-founder of a start-up.

BIOGRAPHY OF SESSION SPEAKERS

Dr. Ku Nurul Fazira Ku Azir

Assistant Professor, Faculty of Electronic Engineering & Technology Head Centre of Excellence for Advanced Computing Universiti Malaysia Perlis, Malaysia

Assoc. Prof. Ts. Dr. Ku Nurul Fazira Ku Azir is a dedicated researcher, educator, and leader at Universiti Malaysia Perlis (UniMAP), where she serves as an Associate Professor in the Faculty of Electronic Engineering Technology as well as Head Centre of Excllence for Advanced Computing (AdvComp). She obtained her Ph.D. from the University of Birmingham, UK, specializing in Human-Computer Interaction (HCI). With a significant academic footprint, Dr. Ku Nurul Fazira has achieved an H-Index of 6 and over 145 citations, reflecting her impactful contributions in fields like ubiquitous computing, IoT, machine learning, and activity recognition systems for health and caregiving applications. Dr. Ku Nurul Fazira is highly regarded for her leadership in guiding research initiatives, having secured substantial funding from sources like the Fundamental Research Grant Scheme (FRGS) and industry grants for projects that optimize IoT applications, enhance digital healthcare solutions, and innovate smart home technologies. She has mentored numerous Ph.D. and Master's students, with her students completing groundbreaking research on topics such as arrhythmia detection and food spoilage classification using machine learning. Her accolades include the Anugerah Perkhidmatan Cemerlang (APC) and numerous awards in research and technology innovation exhibitions, such as the Gold Award for her IoT-Based Non-Invasive Blood Glucose Monitoring System at CRI 2021 and a STEM Mentor-Mentee Gold Award at the Malaysia Technology Expo (2019). Dr. Ku Nurul Fazira's work has been showcased internationally, with key publications in journals and conferences related to pervasive computing, digital health, and machine learning. In addition to her academic pursuits, Dr. Ku Nurul Fazira is a prominent member of professional bodies such as IEEE, MBOT, and the Chartered Institute of Ergonomics and Human Factors (UK). She contributes to Malaysia's technology and education sectors as a certified Huawei ICT Academy instructor and consultant on Micro-programming and IoT applications. Her leadership in community programs includes coordinating STEM outreach initiatives through MCMC-UniMAP Makerspace, where she mentors students across Kedah and Perlis, fostering interest in digital skills and STEM fields. Throughout her career, Dr. Ku Nurul Fazira has exemplified excellence in academia, research, and community service, continually advancing knowledge and innovation in technology for both local and global impact.

BIOGRAPHY OF SESSION SPEAKERS

Dr. Karuppasamy Periyasamy

Professor, Department of Electronics & Communication Engineering Adithya Institute of Technology, Coimbatore, India

Dr.P.Karuppasamy is currently working as a Professor in the Department of Electronics & Communication Engineering, Adithya Institute of Technology,Coimbatore,India.He obtained his B.E degree in Instrumentation & Control Engineering from Arulmigu Kalasalingam College of Engineering, Krishnankoil, under Madurai Kamaraj University in the year of 1996 and M.E. degree in the specialization of Applied Electronics from Madurai Kamaraj University in the year of 2000. Then, he started his career as a Lecturer in R.V.S College of Engineering. After Three years, he changed- over his career and started to work as a Senior Lecture in the Department of Electronics & Communication Engineering, Syed Ammal Engineering College, Ramanathapuram. There he has done a various Academic Activities towards the Development of Students and growth of the Institution. He has served and gained the more than 15 years' Experience in the same Institution, He is very Specialized in Electronics and Communication Subjects He obtained his Ph.D. degree in the year of 2018 under the faculty of Information and Communication Engineering, Anna University, Chennai. After Ph.D. he has joined as a professor in the Department of Electronics & Communication Engineering, P.S.R Engineering college, sivakasi. There he has worked as a project coordinator of the Institution and students have received a 20Lakhs awards by Participating the various Project Contest under his Guidance. His areas of interest are Non Destructive Testing (NDT), Image processing, IOT, Semiconductor Electronics, Analog & Digital Communication and Data analytics. Also he has published more than 25 research articles around the world including reputed journal transactions like Springer, American Society for Non Destructive Testing (ASNT), Journal of Marine Science and Elsevier. He filed and Published 12 patents in the field of Electronics and Communication engineering. He has 23 years of experience in teaching and research. He acted as a referee in various Conferences Conducted by Reputed Institutions. He is a recognized Ph. D Supervisor of Anna University, Chennai, under Faculty of Information and Communication Engineering. He acted as a resource person for AICTE sponsored FDP and STTP Programmes organized by various Reputed Engineering Institutions. He acted as an Editor for American Journal of Science, Engineering and Technology. He is an outstanding Reviewer in Sensors and Actuators Elsevier journals. He is Actedand Acting as a Mentor for Students Projects and Evaluator of Students Project Contest like SIH (AICTE Nominee).

BIOGRAPHY OF SESSION SPEAKERS

Mr. Hardik Ruparel
Nutanix | Founder- Stealth Project
United States

Hardik Ruparel is a cloud technology expert, Shorty Impact Award winner, researcher, and innovator specializing in cloud/distributed systems domain. He holds a master's degree in Computer Science from the University of California, Irvine. Currently, Hardik is a Software Engineer-3 at Nutanix, where he designs and develops cutting-edge cloud storage solutions (petabyte-scale) for organizations. As a researcher, Hardik delves into the fields of cloud computing and the integration of Generative AI in cloud security. His work has been featured in international conferences, contributing to the advancement of these domains. His latest research will be presented at the University of Sharjah (December 16-19, 2024). Furthermore, he has also served as a technical reviewer for over five prestigious international conferences, further showcasing his expertise and commitment to evaluating and advancing cutting-edge research. Hardik is also the founder of a stealth-mode cloud-based platform designed to accelerate the job search process for students and professionals. He is a strong advocate for "Responsible Technology" and is developing this platform to provide it to students at his own expense. The platform leverages cloud technologies to scale, making job search guidance and resources accessible to as many students as possible. Hardik's innovative contributions have earned him global acclaim, including the prestigious Shorty Impact Award in the Multi-Cause Initiative category, alongside Gold and Silver Honors for Fight Poverty and Creative Use of Technology, respectively. Additionally, he received Audience Honors in all three categories, recognizing his ability to combine technical innovation with societal impact. Furthermore, Hardik is also a mentor and cloud coach, ranking in the top 1% of mentors on Topmate. He provides free resume reviews, interview preparation, and career guidance, spending his weekends helping students with their queries about interviews, cloud careers, and more.

BIOGRAPHY OF SESSION SPEAKERS

Dr. Nagandra Kumar Sharma

Professor, Dean Faculty of Technology
Chandra Shekher Azad University of Agriculture and Technology Campus-Etawah India

Dr. Nagandra Kumar Sharma, Professor in Physics have an additional responsibility of Dean, College of Fisheries Science & Research Centre, Etawah. At present Dr. Sharma also have an additional charge of Dean, College of Agricultural Engineering & Technology, Etawah. He has 39 year teaching and Research experience and at present he is the Chairman, Board of Faculty of Technology, Etawah and the member of Academic Council Chandra Shekhar Azad University of Agriculture & Technology, Kanpur. Dr. Sharma graduated and post graduated from Agra University, Agra and completed the M.Phil and Ph.D. degree from Aligarh Muslim University, Aligarh. Dr. Sharma also worked as Post Doctoral Fellow in UGC-DSA Research Programme at Aligarh Muslim University, Aligarh. Dr. Sharma participated as invited and keynote speaker in various National and International Conference and recently wrote a book entitled "Application of IoT in Agriculture". Dr. Sharma published various research papers in National & International journals and visited Tata Institute of Fundamental Research, Bombay during his research career.

BIOGRAPHY OF SESSION SPEAKERS

Dr. Ayush Dogra

Assistant Director –Research, CRIO, Chitkara University Punjab, India

Dr. Ayush Dogra (Allied Member-European Society of Oncological Imaging) is currently working as an Assistant Director-Research , CRIO , Chitkara University , Punjab , India. He is graduated in Bachelor of Engineering and Technology (ECE) from Guru Nanak Dev University, Amritsar in 2011. He has received his Master's degree in Electronics & Communication Engineering from Punjabi University, Patiala in 2013 and Master's degree in Business Management (MBA) from IGNOU,Delhi (Central University) during 2015. He completed his Doctorate Degree from Department of Electronics and Communications engineering from Oct-2015 to Jan-2019 from Panjab University.His work area focuses on devising a novel and innovative, market-oriented mechanism for medical image fusion He has also worked as CSIR-Nehru Post-Doctoral Researcher in Biomedical Applications Unit, CSIR-Central Scientific Instruments Organization, Chandigarh. In the past, he worked as the Junior and Senior Research Fellow in the Department of Electronics and Communication Engineering, UIET, Panjab University, Chandigarh.Also worked as Post-Doctoral fellow in the Department of Center of Biomedical Engineering, IIT Ropar .

IFERP Academy
Explore Your Research Journey...

BIOGRAPHY OF SESSION SPEAKERS

Dr. Nithya Selvaraj

Assistant Professor, SSM College of Arts & Science, Dindigul, India

Dr. S. Nithya is an academic professional with a strong background in computer science and biomedical signal processing. She holds a Ph.D from Gandhigram Rural Institute (Deemed to be University), where her research focused on ECG signal-based cardiac arrhythmia classification using explainable artificial intelligence models. With over a decade of teaching experience, she currently serves as the Assistant Professor in the Department of Computer Science at SSM College of Arts and Science, Tamil Nadu. Her expertise spans deep learning, machine learning, and biomedical signal processing, with a particular focus on applying these technologies to healthcare, particularly in classifying cardiac arrhythmias and the detection of malignant breast tumours. She has published 14 research papers in reputed journals and conferences, many indexed in Scopus and other prestigious databases. She has also presented papers at various international conferences, further enhancing her knowledge and skills in image processing, deep learning, and artificial intelligence.

BIOGRAPHY OF SESSION SPEAKERS

Dr. Narinder Kumar

Assistant Professor, Department of Mechanical Engineering, Chandigarh Engineering College Landran, Mohali Punjab, India

Dr. Narinder Kumar is an accomplished academician with 19 years of extensive teaching and research experience. He is currently serving as an Associate Professor at Chandigarh Group of Colleges, Landran, Punjab, where he actively contributes to academic excellence and research-driven learning. Prior to this, he was a Postdoctoral Researcher at the Indian Institute of Technology (IIT), Ropar, where he worked on cutting-edge advancements in incremental forming and advanced manufacturing processes. Dr. Kumar holds a Ph.D. in Incremental Forming from Punjab Engineering College, along with a Master's degree in Computer Integrated Manufacturing and a Bachelor's degree in Mechanical Engineering from Punjab Technical University, Jalandhar. His expertise includes advanced manufacturing technologies, CAD/CAM, product design and development, materials engineering, and industrial automation. With a strong inclination toward research and innovation, he has contributed significantly to engineering advancements, published in reputed journals, and guided numerous students in their academic and research pursuits. A passionate educator and researcher, Dr. Narinder Kumar brings a blend of theoretical knowledge and practical industry insights, making him a sought-after speaker at conferences and a mentor to aspiring engineers.

BIOGRAPHY OF SESSION SPEAKERS

Dr. Dhivya S

Assistant Professor, SSM College of Arts & Science, Dindigul , India

Dr. S. Dhivya is a qualified academic professional with a strong background in Computer Science, working as an Assistant Professor in the Department of Computer Science at SSM College of Arts and Science, Tamil Nadu. She has completed her Ph.D in Computer Applications at Anna University, Chennai, focusing on Artificial Intelligence-based breast cancer image enhancement. She received the Best Outgoing Student Award during her undergraduate studies. She has published 4 research papers in SCI-indexed journals on breast cancer detection using innovative AI algorithms. In addition, she has presented various conferences and has 8 years of teaching and research experience. She is passionate about teaching, mentoring students, and contributing to impactful research in computer applications.

COMMITTEE MEMBERS

Organizing Committee

Dr. Natarajan Sampathkumar
Principal, SSM College of Arts & Science, Dindugul, India

Dr. V. Manikandan
Principal, undefined PSN College of Engineering and Technology, Tirunelveli, India

Dr. Abhay Gupta
Principal, undefined Shri Jain Diwakar Mahavidyalaya, Madhya Pradesh, India

Scientific Committee

Dr. M. Sivakumar
Associate Professor, Department of Mechanical Engineering, K. S. R. College of Engineering, Tamilnadu, India

Dr. Megha
Assistant Professor, Department of Computer Languages and Systems, University of Seville, Sevilla, Spain

Dr. Rupjyoti Bhattacharjee
Associate Professor, Department of Human Development and Family Studies, College of Community Science, Assam Agricultural University, Assam, India

Mr. Kumaravadivelan Andavarsamy
Assistant Professor, Department of Computer science SSM College of Arts & Science Dindugul, India

Dr. K. Sakthi Vel
Head of Department, Department of Chemistry SSM College of Arts & Science Dindugul, India

Dr. Deepika Sharma
Associate Professor, Department of Biotechnology CGC Landran Mohali, India

Dr. Amresh Kumar
Professor, Departemnt of Mechanical Engineering CGC Landran Mohali, India

Dr. Parveen Singla
Professor, Department of ECE CGC Landran Mohali, India

Review Committee

Dr. S. SARANYA M.C.A., M.Phil., Ph.D.,
Assistant Professor, Department of Computer Science and Engineering, Hindusthan College of Arts and Science Coimbatore, India

Dr. Animesh Kumar Sharma
Assistant Professor, Department of Mathematics The ICFAI University Raipur, India

Dr. K. Mithra M.E., Ph.D
Assistant Professor, Electronics and Communication Engineering, Saveetha Engineering College (Autonomous), Anna University, Chennai , India

Dr. Deenadayalan T
Assistant Professor, School of Computer Science Engineering and Information systems Vellore Institute of Technology Vellore, India

Dr. D. Vanitha
Assistant Professor, Electrical & Electronics Engineering, Sri Chandrasekharendra Saraswathi Viswamahavidhyalaya (SCSVMV Deemed to be University) Kanchipuram, India

COMMITTEE MEMBERS

Ms. Rashmi SB
Assistant Professor, Department of Computer Science and Engineering, Hindusthan College of Arts and Science Coimbatore, India

Mrs. S. Jayachitra
Associate Professor, Department of Chemistry, S.A. Engineering College Chennai, India

Dr. Rajesh Kathiresan
Professor, Department of Computer science, SSM Institute of Engineering and Technology Dindigul, India

Dr. G. Selvabharathi, M.E., PH.D.
Professor, Department of Civil Engineering, SSM Institute of Engineering and Technology Dindigul, India

Dr. K. Thara
Associate Professor, Departmet of Chemistry, SSM Institute of Engineering and Technology Dindigul, India

National Advisory Committee Members

Dr. Singaraju Siva Jyothi
Assistant Professor, Department of Physics, Dr. Lankapalli Bullayyacollege of Engineering Engineering College, Andhra Pradesh , India

Dr. K. Sudha
Lecturer, SSM College of Arts & Science Dindugul, India

Dr. Lalitha Lakshmi M
Assistant Professor, Department of Business, SSM College of Arts & Science Dindugul, India

Mrs. Usharani
Assistant Professor, Department of Business, SSM College of Arts & Science Dindugul, India

Dr. Dhivya S
Assistant Professor, Department of Computer science, SSM College of Arts & Science Dindugul, India

Dr. Nithya Selvaraj
Assistant Professor, Department of Computer science, SSM College of Arts & Science Dindugul, India

Mrs. Guna Sundari R
Assistant Professor, Department of Computer science, SSM College of Arts & Science Dindugul, India

Mr. Sudhanesh R
Assistant Professor, Department of Computer science, SSM College of Arts & Science Dindugul, India

Dr. Shankarraman C
Assistant Professor, Department of English, SSM College of Arts & Science Dindugul, India

Dr. Sudha Sikkannan
Assistant Professor, Department of Maths, SSM College of Arts & Science Dindugul, India

Dr. Gowtham Palanisamy
Assistant Professor, Department of Chemistry, SSM College of Arts & Science Dindugul, India

Mrs. P. Thara
Assistant Professor, Department of Computer science, Aarupadai Veedu Institute of Technology, Vinayaka Mission’s Research Foundation Chennai, India

Mrs. Banumathi B
Assistant Professor, Department of Computer science, SSM College of Arts & Science Dindugul, India

Abstract's Index

IFERP Academy
Explore Your Research Journey...

Abstracts

Precision-Driven Real-Time Pose Estimation for Therapeutic Interventions: Advanced Heatmap Regression, Reference Video Alignment, and Real-Time Corrective Feedback

Sarvesh Kumar
Department of Computing Technology, SRM Institute of Science and Technology, Chennai, India

R Bhagwanth
Department of Computing Technology, SRM Institute of Science and Technology, Chennai, India

Dr. R Subash
Department of Computing Technology, SRM Institute of Science and Technology, Chennai, India

Abstract:

Accurate movement and posture are essential for effective physical therapy, as improper form can hinder recovery and worsen injuries. This project introduces a real-time human pose estimation system specifically designed for physical therapy, providing precise feedback on body alignment. Utilizing a modified YOLOv8 architecture with custom heatmap regression, the system monitors key joints—particularly the wrist, elbow, and shoulder—vital for upper-body rehabilitation. Initially trained on a combined MPII and COCO 2017 dataset, the model was fine-tuned on a custom dataset of 6,000 images derived from 1,250 video frames under varied lighting conditions, with a 380% augmentation rate to improve robustness across scenarios. Achieving a detection accuracy of 91.61%, the system surpasses widely used models like OpenPose and MediaPipe, which deliver accuracies of 85% and 88%, respectively. With an average frame rate of 27.94 FPS and latency of 19.24 milliseconds per frame, the system provides instant feedback, enabling users to adjust posture in real time. Personalized guidance is offered by calculating the distance between live and reference keypoints, maintaining a mean keypoint detection error under 5 pixels. This real- time corrective feature enhances rehabilitation by empowering users to self-adjust and allowing healthcare providers to track progress effectively. By focusing on physical therapy-specific movements, this system represents a significant advancement in integrating AI-driven solutions into rehabilitation, enhancing both effectiveness and accessibility.

Keywords:

Physical therapy, Real-time pose estimation, heatmap regression, yolo-v8, keypoint detection, Corrective feed- back.

ECG Monitoring System and Linking it to Cloud

Pratik Yadav
Department of ENTC, Vishwakarma institute of information technology, Pune, India

Rohak Larokar
Department of ENTC, Vishwakarma institute of information technology, Pune, India

Siddhi Gondepatil
Department of ENTC, Vishwakarma institute of information technology, Pune, India

Dr. Pallavi Deshpande
Department of ENTC, Vishwakarma institute of information technology, Pune, India

Sudarshan Kale
Department of ENTC, Vishwakarma institute of information technology, Pune, India

Abstract:

This paper approaches tracking ECG signals produced by the human heart, with particular attention to the ECG graph and Web tracking techniques. The growing need for real-time health monitoring systems has made the Internet of Things (IoT)-based solutions indispensable for remote and continuous healthcare management. The study aims to provide accurate, real-time cardiac data for the early detection and diagnosis of heart diseases. The system is based on the Internet of Things-based heart rate and ECG monitoring system designed and put into operation. The sensing signals from these systems shall be transmitted through a wireless network to a cloud platform where healthcare providers can view, analyze, and monitor. Both visual and time-sensitive data of ECG will be delivered to the end-users through HTTP and MQTT protocols in the IoT cloud. The cross-platform problem has also been significantly eased by the ease with which ECG data may be retrieved by almost any smart terminal equipped with a web browser. In this application BLYNK Cloud has been utilized. This methodology based on Internet of Things provides scalability-low power consumption and smooth data transfer, thus creating a cost-effective tool for clinicians as well as for the patients. Normal readings can also get alert mechanisms, which enable rapid response for interventions. Experimental results show that the system is efficient in accurate data capture and transmission concerning cardiac data with minimum delay and high reliability.

Keywords:

IoT, ECG monitoring system, styling, NodeMCU ESP8266, BLYNK, AD8232.

ISBN: 978-93-92104-23-7

Beyond Traditional Concrete: The Rise of Bio-Concrete

Alefiya Idris Kachwala
Research Scholar at Faculty of Engineering & Technology, Ganpat University, Mehsana, India

Dr. Piyushkumar J Patel
Professor, Department at Sakalchand Patel College of Engineering, Visnagar, India

Abstract:

Choosing the right building materials is essential for designing structures that support sustainable development. Concrete, a staple in construction, has a significant environmental impact due to its high energy requirements during production. Moreover, concrete is prone to cracking from external factors. To achieve durability and sustainability, it's crucial to employ environmentally friendly and effective crack repair methods. Bacterial self-healing concrete presents a promising alternative, reducing inspection and maintenance costs, and ultimately extending the lifespan of structures. However, despite its potential benefits for durability, bacterial concrete is not yet widely adopted in the industry, primarily due to the high initial costs associated with the materials and process as well the research in marine construction has still to be explored. This paper investigates the opportunities for bacterial self-healing concrete in emerging construction sectors.

ISBN: 978-93-92104-23-7

Auxiliary Agricultural Decision Assistance for Monitoring and Recommending Crops

Darshana Yadav
Department of Electronics and Telecommunication, Vishwakarma Institute of Information Technology, Pune, India

Ishita Raut
Department of Electronics and Telecommunication, Vishwakarma Institute of Information Technology, Pune, India

Anushree Joshi
Department of Electronics and Telecommunication, Vishwakarma Institute of Information Technology, Pune, India

Rohini Chavan
Department of Electronics and Telecommunication, Vishwakarma Institute of Information Technology, Pune, India

Renuka Inamdar
Department of Electronics and Telecommunication, Vishwakarma Institute of Information Technology, Pune, India

Abstract:
The system has used ESP8266 for the presentation of a smart crop advisory system, which uses LDR for measuring the intensity of sunlight, DHT22 for humidity and temperature, and an accommodation sensor to measure the moisture level in the soil. Data is given on the LCD. A user- manual entry facility is available in a web application too, which suggests suitable crops based on these parameters. In turn, this system provides low-cost mechanisms for efficient use among farmers to make decisions for improved agricultural productivity.

Keywords:
ESP8266 , Real-time monitoring, Crop advisory system, LDR (Light Dependent Resistor), DHT22 sensor, Soil moisture sensor, Precision farming , Smart agriculture, Web- based crop recommendations.

ISBN: 978-93-92104-23-7

Smart Parking Management : Integrating RFID, Mobile Application, Real-Time Database and UPI Payments

Chetan Jain
Department of Electronics and Telecommunication Engineering, Vishwakarma Institute of Technology, Pune, India

Rupali Tornekar
Professor, Department of Electronics and Telecommunication Engineering, Vishwakarma Institute of Technology, Pune, India

Sanskruti Chopade
Department of Electronics and Telecommunication Engineering, Vishwakarma Institute of Technology, Pune, India

Medha Wyawahare
Professor, Department of Electronics and Telecommunication Engineering, Vishwakarma Institute of Technology, Pune, India

Ameya Date
Department of Electronics and Telecommunication Engineering, Vishwakarma Institute of Technology, Pune, India

Abstract:

The rapid growth of urban areas and the corresponding increase in vehicle numbers have necessitated the development of efficient parking management solutions. Traditional parking systems often fail to address issues such as congestion, inefficient space utilization, and driver frustration. This paper presents an advanced, integrated parking management system that leverages RFID technology, IoT hardware, real-time databases, cloud services, and mobile application development to streamline the parking process.The system utilizes RFID cards for user verification and vehicle check-in/check-out, supported by Arduino and NodeMCU hardware to interface with RFID readers and sensors. The Arduino IDE is used for programming and development, ensuring seamless hardware integration. Firebase's real-time database and Firestore are employed for efficient data storage and retrieval, while Firebase Authentication provides secure access. Azure cloud functions enhance the system by handling complex computations and integrations.On the client side, a mobile application developed using Flutter and Dart offers a cross-platform solution, providing a consistent user experience on both Android and iOS devices. FlutterFlow assists in rapid UI prototyping and development. The mobile app enables users to register, authenticate, check parking availability, and manage payments via UPI, facilitated by Razorpay.This paper details the design and implementation of the integrated system, emphasizing the synergy between its components. The proposed solution enhances parking efficiency through real-time data processing, secure transactions, and a user-friendly interface. The findings demonstrate the potential of modern IoT, cloud computing, and mobile technologies in creating scalable and effective parking management systems, addressing the pressing challenges faced by urban environments.

Keywords:

RFID Technology, Parking Management System, IoT, Arduino, NodeMCU, Firebase, Real-Time Database, Firestore, Firebase Authentication, Mobile Application, Flutter, Dart, FlutterFlow, Azure Cloud Functions, UPI Payments, Razorpay, Smart Parking, Urban Parking Solutions, Real-time database.

22 - 23 March 2025 | Chennai, India

Clinical Impact and Workflow Integration of Artificial Intelligence for Breast Cancer Detection and Diagnosis: A Scoping Review

Gurjeet Kaur
Junior Research Fellow, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research DU, Sawangi Meghe, Wardha, Maharashtra, India

Irshad Qureshi
Professor, Department of NeuroPhysiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research DU, Sawangi Meghe, Wardha, Maharashtra, India

Sharath Hullumani
Assistant Professor, Department of Paediatrics Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research DU, Sawangi Meghe, Wardha, Maharashtra, India

Raghuveer Raghumahanti
Professor, Department of Neuro Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research DU, Sawangi Meghe, Wardha, Maharashtra, India

Abstract:

This scoping review explored the application of Artificial Intelligence (AI) in diagnosing and detecting breast cancer, examining various AI techniques and their effectiveness in enhancing early detection. By analysing current trends and advancements, the review highlights the potential of AI to improve breast cancer screening and identifies research gaps for better integration into clinical workflows. A comprehensive search across databases such as PubMed, Google Scholar, and MEDLINE yielded 425 articles, of which 47 met the inclusion criteria. Among these, deep learning (DL) techniques were most prevalent (50%), followed by machine learning (30%) and hybrid models (20%). Convolutional neural networks were commonly employed for image analysis, with accuracy rates exceeding 90% in mammography interpretation. Metrics like accuracy (70%), sensitivity (50%), and specificity (40%) were frequently reported. AI's integration with traditional imaging methods enhanced detection rates, reduced false positives, and decreased radiologists' reading times. The findings underscore AI's significant role in breast cancer care, particularly in early detection, risk prediction, and diagnostic precision. Despite its promising performance, the study calls for improved assessment methodologies to maximize AI's potential in clinical workflows, emphasizing its utility in enhancing screening efficiency and overall patient outcomes.

Keywords:

artificial intelligence, breast cancer, diagnostic imaging, early detection, machine learning.

Engage and Excel: How Emotional Intelligence and Personality Drive Active Learning Success

Gurulakshmi S
Research Scholar, SASTRA Deemed University, Tamil Nadu, India

Dr Gayathri R
Assistant Professor, SASTRA Deemed University, Tamil Nadu, India

Abstract:

Active learning fosters deeper understanding and critical thinking by promoting student engagement and participation. However, success in these environments often goes beyond academic skills, with emotional intelligence (EI) and personality traits playing a key role. This article examines how EI and personality influence student engagement in active learning settings. By incorporating EI components like self-awareness, empathy, and emotional regulation, along with recognizing personality traits such as extraversion, conscientiousness, and openness, educators can customize learning experiences to better meet the diverse needs of students. This personalized approach not only boosts collaboration and motivation but also creates a more supportive and inclusive classroom. Through practical strategies, the article demonstrates how combining EI and personality traits can enhance active learning, leading to better academic outcomes, stronger student-teacher connections, and a more positive learning experience for all.

Keywords:

Active Learning, Collaborative Learning Emotional Intelligence, Personality Traits, Student Engagement, Student Motivation, etc.

ISBN: 978-93-92104-23-7

Effect of Inertial Sensor Technology Through X-Sens for Explicit Real-time Feedback in Rehabilitation of Adhesive Capsulitis: A Pilot Randomised Controlled Trial

Urvini Lokhande
Intern, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research DU, Sawangi Meghe, Wardha, Maharashtra, India

Dr. Sharath Hullumani*
Assistant Professor, Department of Paediatrics Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research DU, Sawangi Meghe, Wardha, Maharashtra, India

Dr. Irshad Qureshi
Professor, Department of Neurology Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research DU, Sawangi Meghe, Wardha, Maharashtra, India

Dr. Raghuveer Raghumahanti
Professor, Department of Neurology Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research DU, Sawangi Meghe, Wardha, Maharashtra, India

Abstract:

Adhesive capsulitis, or frozen shoulder, is a condition characterized by restricted passive and active shoulder movements, insidious onset of stiffness, severe pain, especially at night, and loss of external rotation. This randomized controlled trial included 10 participants aged 40–60 years, equally distributed by gender, divided into control and intervention groups. Shoulder mobility (extension, abduction, internal and external rotation), pain (VAS), and disability (DASH) were evaluated from baseline to Week 6. Both groups showed significant improvements in shoulder mobility and reductions in pain and disability over six weeks ($p<0.05$). Intragroup analysis revealed significant increases in all shoulder mobility parameters and decreases in pain and disability scores in both groups. Intergroup comparisons showed significant differences at specific time points, including Week 6 for shoulder extension and internal rotation, Weeks 3 and 6 for shoulder abduction, and Weeks 1, 3, and 6 for external rotation. Pain and disability scores also improved significantly in the intervention group at Weeks 3 and 6 compared to the control group ($p<0.05$). These findings suggest that while both interventions were effective, the intervention group experienced greater benefits in certain parameters at key intervals, indicating potential differences in treatment efficacy.

Keywords:

Breast cancer, early detection, artificial intelligence, machine learning, diagnostic imaging.

Effects Of Foot Rehabilitation Exercises using X Sens Inertial Sensor Technology on School Going Children with Pes Planus- A Pilot Randomized Controlled Trial

Pradhyum Kolhe
Intern, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research (DU), Sawangi (Meghe), Wardha, Maharashtra, India

Dr. Sharath Hullumani*
Assistant Professor, Department of Paediatrics Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research (DU), Sawangi (Meghe), Wardha, Maharashtra, India

Dr. Irshad Qureshi
Professor, Department of Neurology Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research (DU), Sawangi (Meghe), Wardha, Maharashtra, India

Dr. Raghuveer Raghumahanti
Professor, Department of Neurology Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research (DU), Sawangi (Meghe), Wardha, Maharashtra, India

Abstract:

Pes planus, commonly known as flatfoot, is a prevalent foot deformity that affects the medial arch, influencing gait kinematics and potentially leading to acquired adult flatfoot deformity at skeletal maturity. This randomized controlled trial included 92 children aged 7–18 years, equally distributed between males and females, diagnosed with flatfoot using the ink method. Participants were randomized into Group A (n=46), receiving foot-specific exercises for 30 minutes daily combined with barefoot walking (conventional therapy), and Group B (n=46), performing only foot-specific exercises. Primary outcomes included the Navicular Drop Test, measuring the difference in navicular bone height between seated and standing positions, and the Manchester-Oxford Foot Questionnaire, assessing physical function, pain, and social interaction. Secondary measures included gait analysis and the Enhanced Paper Grip Test (EPGT) to evaluate foot intrinsic muscle strength. Results demonstrated that Group A exhibited significant improvements in navicular drop, functional outcomes, and gait kinematics compared to Group B ($p<0.05$). Group A also showed enhanced foot muscle strength and better overall foot structure and function. These findings suggest that incorporating barefoot walking with foot-specific exercises may be more effective than exercises alone in improving flatfoot conditions among children.

Keywords:

Flat Foot, Pesplanus, Rehabilitation, Children Flat- Foot.

ISBN: 978-93-92104-23-7

AI-Powered Urban Mobility: Reducing Congestion and Enhancing Efficiency in Smart Cities

Gopi Krishna KV
Dayananda Sagar College of Architecture, Bengaluru

Dinesh Kannaa KV
Sri Sairam Engineering College, Chennai

Abstract:

Urban traffic congestion poses a significant challenge in rapidly growing cities, affecting mobility, safety, and environmental sustainability. Traditional traffic management systems have proven inadequate in addressing these issues, prompting the need for innovative solutions. This paper examines the potential of Artificial Intelligence (AI)-driven technologies, including machine learning, deep learning, and the Internet of Things (IoT), to optimize traffic flow and reduce congestion in smart cities. Through real-time traffic prediction and adaptive management systems, AI offers the ability to significantly improve traffic efficiency, enhance road safety, and reduce emissions. The study draws insights from case studies, such as Barcelona, where AI-based traffic management systems have demonstrated success in improving urban mobility and sustainability. Despite these advancements, challenges such as high infrastructure costs, data privacy concerns, and the scalability of AI solutions in larger urban environments remain significant barriers to widespread adoption. Overcoming these obstacles requires collaboration between governments, urban planners, and technology providers. The findings suggest that AI-driven traffic management systems have the potential to revolutionize urban mobility by creating more efficient, sustainable, and scalable solutions. This paper also proposes a conceptual framework for integrating AI with existing infrastructure and outlines future research directions, particularly in addressing privacy, cost, and scalability issues.

Keywords:

Artificial Intelligence, data privacy, IoT, Machine learning, real-time traffic management, smart cities, urban mobility.

Sound Monitoring And Limiting System

Amogh Deshpande
Department of Electronics and Telecommunications Vishwakarma Institute of Information Technology Pune, India

Shaoor Ahmad
Department of Electronics and Telecommunications Vishwakarma Institute of Information Technology Pune, India

Ishwari Chaudhari
Department of Electronics and Telecommunications Vishwakarma Institute of Information Technology Pune, India

Pratiksha Bhagat
Department of Electronics and Telecommunications Vishwakarma Institute of Information Technology Pune, India

Dr. Pallavi Deshpande
Department of Electronics and Telecommunications Vishwakarma Institute of Information Technology Pune, India

Abstract:

This paper presents the design and implementation of a sound monitoring system utilizing an ESP32 microcontroller, powered by a 9V battery and an LM7805 voltage regulator. The system is designed to detect sound levels and trigger a relay when specific thresholds are exceeded, such as during loud music or DJ sounds. The LM7805 regulator efficiently converts the 9V battery output to a stable 5V, providing reliable power for both the ESP32 and additional components. A secondary 3.3V regulator ensures the ESP32 operates within its voltage requirements. Furthermore, the system integrates with the Blynk platform to enable remote monitoring and control, enhancing user interaction and accessibility. The paper details the hardware design, circuit connections, and relay activation based on sound level thresholds. This research highlights the feasibility of low power, battery-operated solutions for sound level monitoring, offering practical applications in community safety and noise regulation systems.

Keywords:

Sound Monitoring System, ESP32, LM7805, Blynk, Noise Pollution, Blynk IoT.

ISBN: 978-93-92104-23-7

A Comprehensive Review of the Future of Medical Learning with Artificial Intelligence

Siddhi Rathi
Under Graduate Student, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research (DU), Sawangi (Meghe), Wardha, Maharashtra, India

Dr. Sharath Hullumani*
Assistant Professor, Department of Paediatrics Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research (DU), Sawangi (Meghe), Wardha, Maharashtra, India

Dr. Irshad Qureshi
Professor, Department of Neurology Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research (DU), Sawangi (Meghe), Wardha, Maharashtra, India

Dr. Raghuveer Raghumahanti
Professor, Department of Neurology Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research (DU), Sawangi (Meghe), Wardha, Maharashtra, India

Abstract:

Artificial Intelligence (AI) is revolutionizing health education by enhancing accessibility, personalization, and efficiency in learning. This paper explores how AI technologies, including machine learning, natural language processing, and predictive analytics, are transforming traditional health education methodologies. Key innovations include adaptive learning platforms, virtual patient simulations, and AI-driven decision-support tools that enhance clinical training and knowledge retention. AI fosters personalized learning experiences by tailoring content to individual needs, enabling real-time feedback, and promoting competency-based education. Additionally, it supports interdisciplinary collaboration by bridging gaps between medical specialties through shared data insights. The integration of AI into health education also addresses challenges like faculty shortages, uneven resource distribution, and the need for continuous skill updating in dynamic healthcare environments. Ethical considerations, including data privacy and equity in access to AI tools, remain critical for responsible implementation. By reshaping how health professionals are trained, AI not only prepares learners for complex clinical scenarios but also contributes to improved patient outcomes. This paper emphasizes the transformative potential of AI in creating innovative, inclusive, and efficient health education systems, setting a foundation for future advancements in the healthcare workforce.

Keywords:

Artificial Intelligence, health education, personalized learning, adaptive technology, virtual simulation, clinical training, AI ethics, healthcare innovation.

Walking Into the Future A Two Decade Review of Gait Analysis Innovations

Dr. Sharath Hullumani
Assistant Professor, Department of Paediatrics Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research (DU), Sawangi (Meghe), Wardha, Maharashtra, India

Dr. Irshad Qureshi
Professor, Department of Neurology Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research (DU), Sawangi (Meghe), Wardha, Maharashtra, India

Dr. Raghuveer Raghumahanti
Professor, Department of Neurology Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research (DU), Sawangi (Meghe), Wardha, Maharashtra, India

Abstract:

This review explores advancements in gait analysis technologies and methodologies from 2000 to 2024, highlighting key innovations that have transformed clinical, sports, and research applications. Gait analysis, the systematic study of human locomotion, has evolved significantly with the integration of wearable sensors, machine learning algorithms, and imaging technologies. Traditional methods like motion capture and force plate systems have been enhanced by portable, cost-effective tools such as inertial measurement units (IMUs) and pressure-sensitive insoles, enabling real-time, field-based assessments.The adoption of artificial intelligence has facilitated the automated analysis of complex gait patterns, improving accuracy and efficiency in diagnosing movement disorders like Parkinson's disease and cerebral palsy. Additionally, advances in 3D imaging and computational modeling have expanded the scope of gait analysis in prosthetics and rehabilitation, providing personalized solutions for mobility impairments.Despite these advancements, challenges remain, including standardization of protocols, data interoperability, and ensuring accessibility of technology in low-resource settings. This review synthesizes progress over the last two decades, examines current limitations, and identifies future directions to guide researchers, clinicians, and engineers in advancing gait analysis for enhanced human mobility and quality of life.

ISBN: 978-93-92104-23-7

In Silico Analysis for Action of Probiotics on Potential Prebiotics

Dhriti Mallika Satyanarayana
Department of Biotechnology, B.M.S College of Engineering, Bengaluru, India

Harshitha S Kowlagi
Department of Biotechnology, B.M.S College of Engineering, Bengaluru, India

Risha Rajesh
Department of Biotechnology, B.M.S College of Engineering, Bengaluru, India

Varshini V
Department of Biotechnology, B.M.S College of Engineering, Bengaluru, India

Prathibha Narayanan
Department of Biotechnology, B.M.S College of Engineering, Bengaluru, India

Abstract:

In order to improve gut health and host immunity, prebiotics and probiotics work in synergy effectively. Designing successful functional food compositions requires an understanding of these interactions at the molecular level. Fruit peels are generally regarded as waste and are not consumed; however, this study investigates their potential as valuable prebiotic sources, highlighting their beneficial properties. This study employs in silico techniques such as molecular docking and molecular dynamics (MD) simulations to comprehend the interaction between prebiotics and probiotic proteins. Compounds from synbiotics involving probiotic Lactobacillus strains (L. plantarum, L. rhamnosus, L. casei) and prebiotics from fruit peels (mango, orange, banana) were chosen for interaction investigations using bioinformatics tools. High-affinity binding mechanisms and crucial residues involved in complex formation were discovered using molecular docking. Molecular Docking (MD) simulations were performed in order to verify these interactions and evaluate stability. The findings showed that the structural integrity of the prebiotic-probiotic complexes is influenced by particular hydrogen bonds, van der Waals forces, and hydrophobic interactions. The role of important residues to binding energy was also emphasized by energy decomposition analysis, which shed information on interaction synergy but also unravels possible areas where their beneficial effects could be tested. Future experimental validations and the development of optimal formulations for enhancing gut health are made possible by the results of these studies. This project highlights the potential of computational methods in promoting nutraceutical research by combining molecular docking and MD simulations.

ISBN: 978-93-92104-23-7

Phantom level Evaluation of Optical Properties of Human Forearm Skin in the Wavelength Range of 400 nm to 2500 nm

Pradipta Samanta
Academy of Scientific and Innovative Research, Ghaziabad, Uttar Pradesh-201002, India
CSIR-Central Scientific Instruments Organisation, Chandigarh-160030, India

Boris Mizaikoff
University of Ulm, Albert-Einstein-Allee 11, 89081 Ulm, Germany

Umesh K. Tiwari
Academy of Scientific and Innovative Research, Ghaziabad, Uttar Pradesh-201002, India
CSIR-Central Scientific Instruments Organisation, Chandigarh-160030, India

Sunita Mishra
Academy of Scientific and Innovative Research, Ghaziabad, Uttar Pradesh-201002, India
CSIR-Central Scientific Instruments Organisation, Chandigarh-160030, India

Abstract:

Understanding the optical parameters of skin tissues are required to diagnose the abnormalities of the skin and for therapeutic purposes. Different researchers have done Monte Carlo-based simulations, in vitro, in vivo and phantom level experiment in discrete or in short wavelength range to assess few optical parameters, but a full assessment in Vis-NIR range for most of the parameters associated to skin tissue optics has rarely been explored.

Skin phantoms with variation of composition has been prepared, and the main optical parameters related to skin, like absorbance coefficient (μ_a), scattering coefficient (μ_s), reduced scattering coefficient (μ_s), and other derived optical parameters such as diffusion and attenuation coefficient etc. has been assessed analytically in the wavelength range of 400-2500 nm. Variation of the parameters at different wavelength regions has been observed and compared by using different equations.

Keywords:

Spectroscopy; Light Tissue Interactions; Optical Parameters; Human Skin Phantom

ISBN: 978-93-92104-23-7

Bridging Visuals and Words by Automating Image Captioning and Translation

Padmavati E Gundgurti
Assistant Professor, Department of Computer Science Engineering

Mehnaaz
Department of Computer Science Engineering

Panasa Sai Vinaya
Department of Computer Science Engineering

Sokkula Chaitanya
Department of Computer Science Engineering

Abstract:

This AI-based system automates image captioning, multilingual translation, and textto-speech synthesis using state-of-the-art deep learning techniques. For image captioning, it employs the BLIP (Bootstrapped Language-Image Pretraining) model, enabling conditional generation of highly descriptive captions. These captions are translated into various Indian languages, including Hindi, Tamil, and Telugu, using the Deep Translator powered by the Google Translator API. To enhance accessibility, the system integrates Google Text-to-Speech (gTTS), converting both English and translated captions into audio files.

A user-friendly web interface, developed with Gradio, allows users to input images via upload or webcam, select their desired output language, and receive both textual and audio outputs. This versatile system supports applications such as assistive technologies for visually impaired users, multilingual content localization, and efficient image indexing for diverse audiences.

A Computational and Experimental Evaluation of Advanced Composites Ballistic Performance

S. Joseph Dominic Vijayakumar
Department of Mechanical Engineering, SSM Institute of Engineering and Technology, Dindigul - 624002, Tamilnadu, India

N. Sampathkumar
Department of Chemistery, SSM College of Arts and Science, Dindigul - 624002, Tamilnadu, India

S. Jannai
Department of Mathematics Engineering, SSM Institute of Engineering and Technology, Dindigul - 624002, Tamilnadu, India

Selvabharathi Gopal*
Department of Civil Engineering, SSM Institute of Engineering and Technology, Dindigul - 624002,Tamilnadu, India

Abstract:

This research incorporates the numerical models and experimentation to examine the ballistic performance of advanced composite materials. High-velocity impact tests were used to assess the energy absorption, penetration resistance, and failure processes of advanced composites, such as fiber-reinforced plastics and hybrid laminates. High-speed projectile experiments were carried out, and important damage mechanisms such delamination, fiber breaking, and matrix cracking were identified by analysis employing examination microstructure assessments and complex imaging. The dynamic impact events were simulated using Finite Element Modelling (FEM), which included progressive failure criteria, strain-rate reliance, and material anisotropy. Strong agreement was found when numerical findings were compared to experimental data, revealing important factors that affect ballistic resistance such fiber orientation, thickness, and stacking sequence. It was discovered that the hybridization of composite systems greatly improved energy absorption and minimized penetration depth, indicating the possibility of optimal designs. The results give a useful framework for the design and analysis of sophisticated composite systems under extreme stress circumstances and offer important insights into the development of lightweight, high-performance materials for defense, aerospace, and automotive applications.

 ISBN: 978-93-92104-23-7

Ensemble Learning Model for Employee Attrition Rate Prediction and Retention Strategy Optimization

Arunprasath D
Student at Periyar Maniammai Institute of Science & Technology, Vallam, Thanjavur

Azeem Khan S
Periyar Maniammai Institute of Science & Technology, Vallam, Thanjavur

Abstract:

This project addresses the challenge of employee attrition by developing a machine learning model aimed at predicting which employees are at risk of leaving an organization. By analyzing historical employee data, including demographics, job roles, performance metrics, and engagement scores, the study seeks to identify the key factors driving turnover and design targeted retention strategies. The methodology involves preprocessing the data, managing issues such as missing values and class imbalance, and applying various machine learning techniques to build predictive models. These models are evaluated using accuracy, precision, recall, and F1-score to ensure their effectiveness in identifying employees at risk of attrition. The project also employs interpretability techniques to uncover the most significant factors influencing employee turnover. The results demonstrate that the model effectively predicts employee attrition, providing actionable insights that can inform proactive retention strategies. By implementing this model within HR systems, organizations can make real-time predictions about employee retention, ultimately reducing turnover costs and fostering greater organizational stability. The study concludes that integrating machine learning into HR practices enhances the ability to retain valuable employees, with future work focusing on refining the model with additional data and further integrating it into existing HR systems for improved accuracy and applicability.

Study of Tagset for Natural Languages with Special Reference to Marathi Language

Swati Prakash Sonawane
School of Computer Sciences KBC North Maharashtra University Jalgaon, M.S., India

Kavita Tukaram Patil
SVKM's Institute of Technology, Dhule, Maharashtra-424001

R. P. Bhavsar
School of Computer Science, KBC North Maharashtra University Jalgaon, M.S., India

B. V. Pawar
K. C. E. Society's, Institute of Management and Research, Jalgaon

Abstract:

The study of tagsets for natural languages is central to the development of computational tools in Natural Language Processing (NLP), particularly in tasks like Part-of-Speech (POS) tagging. POS tagging assigns grammatical categories to each word in a sentence, which is essential for various NLP applications such as syntactic parsing, machine translation, and information retrieval. For languages with complex morphology, such as Marathi, the task becomes increasingly intricate. This paper focuses on understanding the tagsets used for Marathi POS tagging, examining their linguistic intricacies and the challenges involved. A detailed overview of popular Marathi tagsets like Universal Dependencies (UD), the Marathi Syntax Treebank (MST), and the Indian Language Treebank (ILCI) is provided, highlighting their advantages and shortcomings. Additionally, the study delves into the significance of corpus development, the impact of word segmentation, and the importance of context in accurate tagging. Through this analysis, we aim to provide insights into how Marathi-specific characteristics influence POS tagging and the evolution of tagset frameworks for morphologically rich languages.

Keywords:

Marathi language, Part-of-Speech tagging, Universal Dependencies, Tagsets, Natural Language Processing, Morphological analysis.

ISBN: 978-93-92104-23-7

Hate Speech Detection Using Machine Learning During General Election in India

Bhumika Patel
Gujarat University, Gujarat

Dr. Hardik Joshi
Gujarat University, Gujarat

Abstract:

The proliferation of online content during elections has led to an alarming rise in hate speech, posing threats to democratic values and social cohesion. In the Indian context, detecting hate speech presents unique challenges due to the multilingual and culturally diverse population. Recent advancements in machine learning (ML) have provided effective tools to identify and analyze hate speech in online political discourse.

This study synthesizes current research on hate speech detection during Indian general elections, focusing on English-language content. Leveraging natural language processing (NLP) techniques, researchers have developed datasets and employed machine learning models, including support vector machines (SVM), random forests, and transformer-based models like BERT, to identify hateful content with high precision. Studies reveal that hate speech during elections often involves targeting specific communities, spreading misinformation, and polarizing voters.

Despite progress, challenges such as addressing implicit hate speech, domain adaptation for political content, and mitigating algorithmic biases remain. Future research highlights the importance of developing more generalized detection models, improving contextual understanding, and integrating ethical considerations into ML practices. This work underscores the role of machine learning in combating hate speech and fostering constructive online discourse during elections, safeguarding democratic principles in India.

A Comparative Evaluation of Chunking Strategies in Question Answering Systems on CORD-19: Impact on Retrieval and Answer Generation

Mr. Mayurkumar Marolia
Department of Computer Science, Gujarat University

Dr. Hardik Joshi
Department of Computer Science, Gujarat University

Abstract:

The increasing amount of unstructured data necessitates the development of effective Question Answering (QA) systems, especially those that incorporate Retrieval-Augmented Generation (RAG). Chunking strategies, which segment extensive documents into smaller components, play a vital role in enhancing retrieval precision and elevating answer quality. Nonetheless, the efficacy of various chunking strategies within RAG-based QA systems remains inadequately investigated.

This analysis examines seven distinct chunking strategies: Fixed-size chunking, Recursive-based Chunking, Document-based Chunking, Semantic Chunking, Token-based Chunking, Sentence-based Chunking, and Agenting Chunking within the context of the RAG framework. These techniques are used to benchmark datasets like CORD-19. The assessment of performance includes Precision, Recall, and F1-Score for retrieval metrics, in addition to BLEU, ROUGE, and Exact Match for evaluating answer quality, while also taking into account latency and memory usage to measure computational efficiency.

Initial results indicate that semantic chunking yields high-quality responses, though it demands increased computational resources. Utilizing fixed-size chunking enhances speed, yet it compromises contextual understanding. Recursive-based and Agenting chunking provide a balanced approach, whereas document-based chunking proves to be more effective for structured data.

This investigation highlights the significance of choosing the right chunking strategy in RAG-based QA systems to enhance retrieval efficiency, answer quality, and overall performance.

ISBN: 978-93-92104-23-7

Cropping Pattern Planning Based On Bonik Weir Mainstay Discharge In Batuplat Irrigation

Fransiskus Leonardus Molan Korohama
Master student of Civil Engineering, Sebelas Maret University, Surakarta, Indonesia

Sobriyah
Lecturer of Master of Civil Engineering, Sebelas Maret University, Surakarta, Indonesia

RR. Rintis Hadiani
Lecturer of Master of Civil Engineering, Sebelas Maret University, Surakarta, Indonesia

Abstract:

Cropping pattern planning is necessary to support sustainable water resources management, as climate change has resulted in a shift in the growing season. The water potential at Bonik weir, in the Dendeng watershed, needs to be explored so that it can meet the needs of Batuplat irrigated agriculture. The results show that the mainstay discharge of 80%, with a probability figure close to 85,7%, can meet the water needs for the paddy-palawija-bera cropping pattern for two consecutive growing seasons. This cropping pattern is much more effective than the existing paddy-bera-bera cropping pattern. Appropriate watering arrangements according to the k factor fullness indicator can increase the planting area in the first planting season with a potential paddy planting area of 90 hectares and the secondary crop area in the second planting season increased by 2.77 hectares.

Keywords:

Cropping pattern, mainstay discharge, climate change, growing season shift, irrigation water utilization efficiency.

Predictive Model for Estimation of Index Properties of Expansive Soil Stabilized with Ideal Amount of Fly Ash with Changing Ratios of Lime

Madhukar Sul
Shivaji University, Kolhapur

P. S. Patil
RIT, Uran Islampur, India

Abstract:

The soil whose volume fluctuations with change in moisture content is called expansive or swelling soils. Expansive soil is a problematic soil. It swells when the moisture content rises, and shrinks as it falls down. Therefore, during rainy seasons, such soil gains volume by absorbing water, and in dry seasons it loses volume due to evaporation. In the process, it exerts strong expansion force mainly on the light loaded structure such as low volume roads. The force's magnitude is dependent upon on several variables of the soil, but the moisture variation that takes place during varying seasons is the main cause of change in volume. The objective of the proposed work is to study variables like Liquid Limit (LL), Plastic Limit (PL) and Plasticity Index (PI) of black cotton soil stabilized with an ideal amount of fly ash (i.e., 20%) and lime in changing ratios (i.e., 2%, 4%, 6%, 8%, 10%, etc.). Thus, it is essential to figure out the relationship among ideal amount of fly ash (i.e. 20%) with changing ratios of lime and Liquid Limit (LL), Plastic Limit (PL), etc. using linear regression technique. The research also looks into the likelihood of using LL, PL and PI value as an indicator parameter to determine the ideal amount of lime with reference of fly ash (i.e., 20%) from previous study. To summarize, a good relationship was established for estimation of index properties of expansive soil stabilized with an ideal ratio of fly ash (i.e., 20%) and changing ratios of lime as a performance parameter.

Keywords:

Expansive soil, fly ash stabilization, ideal fly ash and lime content, Liquid Limit (LL), Plastic Limit (PL), Plasticity Index (PI), low-volume roads.

ISBN: 978-93-92104-23-7

A Blockchain-Powered Solution Enabling Fast Cross-Border Payments and Streamlined Loyalty Programs

Samiksha Jamankar
Pimpri Chinchwad College of Engineering, Pune

Deep Poharkar
Pimpri Chinchwad College of Engineering, Pune

Abhidnya Kulkarni
Pimpri Chinchwad College of Engineering, Pune

Radha Deoghare
Assistant Professor, Pimpri Chinchwad College of Engineering, Pune

Abstract:

This paper addresses challenges in cross-border payments and loyalty programs by proposing a blockchainbased platform that integrates Stellar and Hyperledger Fabric. Traditional cross-border payments involve high fees and complex intermediaries, limiting accessibility, especially for small businesses and unbanked populations. Stellar enables low-cost, fast peer-to-peer payments, minimizing transaction fees, while Hyperledger Fabric supports a tokenized loyalty system that allows flexible and transferable rewards. Together, these systems create a streamlined ecosystem, facilitating both secure transactions and rewarding customer engagement.

The platform utilizes smart contracts to automate financial operations and integrates QR codes to enhance user accessibility. This blockchain-based solution redefines payment and loyalty frameworks to support financial inclusion and strengthen business-customer relationships. Technical architecture and key components are outlined, addressing security, scalability, and regulatory compliance considerations. Future developments will focus on cross-network compatibility and enhanced security measures to further support platform adoption and resilience.

ISBN: 978-93-92104-23-7

AGROTRACK, One App for all Your Farming Needs

Shreyanka B L
School of CSE, Presidency University, Bangalore, India

Bhuvaneshwar Y
School of CSE, Presidency University, Bangalore, India

Brahma Chaitanya S P
School of CSE, Presidency University, Bangalore, India

Dhanush M
School of CSE, Presidency University, Bangalore, India

Dr. Nihar Ranjan Nayak
School of CSE, Presidency University, Bangalore, India

Abstract:

Technology has transformed farming, and new online platforms have played a key role in connecting farmers directly to mid-level consumers. The platform allows farmers to sell their fresh products, such as fruits and vegetables and other agricultural goods to customers and other stakeholders through personalized information, such as product details, price, and description. In addition to direct sales, the platform provides useful tools such as crop planting recommendations and weather forecasts during the decision-making period to help farmers improve their crops. Farmers can obtain small loans to support their growth and development. The platform's agrotrack service ensures the safety and efficiency of products, thereby creating a better experience for farmers and consumers. The platform promotes a more transparent, efficient, and environmentally friendly agricultural ecosystem by shortening the food chain, promoting sustainability, and providing farmers with assistance.

Keywords:

Agricultural Technology, Sustainability, Farmer-Consumer Connectivity, Direct Sales, Digital Platforms, Supply Chain Efficiency.

ISBN: 978-93-92104-23-7

A Novel Takagi-Sugeno-Kang Fuzzy Convolutional Network for Image Classification with Imbalanced Datasets in Remote Sensing Applications

Kirthiga Alias Sridevi
National Engineering College, Kovilpatti, Anna University

Malathi
National Engineering College, Kovilpatti, Anna University

Abstract:

In many domains, including urban planning, disaster management, agronomy, oceanography, animal management, water resource management, and environmental remote sensing, the integration of satellite and aeroplane images is essential. For remote sensing applications to be effective, these pictures must be properly labelled and classified. Convolutional neural networks (CNN) or fuzzy CNN have been used in earlier studies for automated picture categorization. In order to increase prediction accuracy, this research suggests a unique method that combines CNN with Takagi-Sugeno-Kang fuzzy (TSK) CNN. To boost prediction accuracy, a revised layer called TSK fuzzy CNN is added, yielding a marginal improvement of 0.11% over earlier techniques. The study also computes picture sensitivity and displays a confusion matrix to demonstrate classification specificity, offering a thorough assessment of the suggested methodology.

Keywords:

CNN, Fuzzy CNN, Customized Layer, Accuracy, Image Classification, Remote Sensing.

Healthcare Effective Diabetes Disease Prediction using Supervised Machine Learning

Pooja Barde
Department of CSE, Technocrats Institute of Technology Excellence, Bhopal India

Rajesh Kumar Boghey
Department of CSE, Technocrats Institute of Technology Excellence, Bhopal India

Bhupendra Verma
Department of CSE, Technocrats Institute of Technology Excellence, Bhopal India

Arjun Rajput
Department of CSE, Technocrats Institute of Technology Excellence, Bhopal India

Abstract:

The goal of this research is to improve the overall disease prediction accuracy by analyzing the automatic prediction and recommendation of diabetes disease from the electronic health record diabetes dataset. Diabetes data is acquired from patients and are processed utilizing optimal artificial intelligence techniques during the diabetes data recognition process. This research integrated machine learning based approaches to predict diabetes disease features such as: SVM, DT, RF, LR, K-NN, NB and GB. The proposed GB model is proposed to apply diabetes diagnosis which is single class and multiclass classification problems. In the future, we shall incorporate an auto feature selection method to design the crossed features and select the features for the prediction and classification model. The diabetes dataset of 1145 Pima Indians: The test uses 330 diabetic and 815 non-diabetic participants. An ensemble of gradient boosting was used in the proposed algorithm to achieve an accuracy of 91.23%. As can be seen, the majority vote-based model employs NB, DT, and SVM classifiers, and its accuracy for the diabetes disease dataset is 73.42%, 80.76%, and 82.51%, respectively. Subsequently, the Inclination helping calculation gives the best exactness to Diabetes finding than the past calculation.

Keywords:

Diabetes Disease, Machine Learning, Gradient Boosting, Accuracy.

ISBN: 978-93-92104-23-7

Smart Ambulance Dispatcher System Using Real-Time Gps Tracking

Fatimathul Shahana
Department of Computer Science and Engineering, Presidency University Karnataka, Banglore, India

Shahul Hameed
Department of Computer Science and Engineering, Presidency University Karnataka, Banglore, India

Simran Kumari
Department of Computer Science and Engineering, Presidency University Karnataka, Banglore, India

Tanveer Ahmed
Assistant Professor, Department of Computer Science and Engineering, Presidency University Karnataka, Banglore, India

Abstract:

The Smart Ambulance Dispatcher System is the innovative solution to the major problems presented by traditional ambulance dispatch systems. It uses the advance technologies like real-time GPS (Global Positioning System) tracking, cloud-based data management using Firebase, and friendly user web interface to enhance efficiency, accessibility, and responsiveness of emergency medical services. The primary goal is to reduce the response time and make easy communication between users and drivers. After a request is submitted, the system uses GPS technology to identify the user's location and automatically sends the nearest available ambulance. The driver will receive the booking information together with the best routing directions that avoid delay due to bad navigation. Additionally, the web-based application provides the user with the real-time tracking of the ambulance's location so that he can track the vehicle's journey and its estimated time of arrival. The smart Ambulance Dispatch System is a practical means to modernize emergency medical services. Optimization in allocating ambulances helps minimize response time, facilitate clear communication between the stakeholders involved, and ultimately make it significantly improve the health system efficiency.

Besides its core functionalities, the Smart Ambulance Dispatcher System gives a great importance on scalability and robustness in order to be prepared for any kind of demand variations in demand for both urban and rural areas. It is designed to work efficiently with high user loads, with good database management and optimized algorithms to provide real-time resource allocation. This system is on a broader scale to bridge gaps in emergency healthcare access, especially in underserved regions, with a cost-effective and adaptable solution. It is aligned with smart city initiatives because it enables data sharing with healthcare providers and municipal authorities, thus paving the way for a connected, technology-driven public health ecosystem.

Keywords:

Real-Time GPS tracking, Routing Optimization, Driver Verification, Response Time Reduction, Digital Health Ecosystem and Sustainable Healthcare Solutions.

Advanced AI Therapy System with Emotion Recognition and Recommendation Engine

Yadhunandhan R
Department of Computer Science and Engineering, Presidency University Karnataka, Bangalore, India

Ashutosh Rayagouda Patil
Department of Computer Science and Engineering, Presidency University Karnataka, Bangalore, India

R Manisha
Department of Computer Science and Engineering, Presidency University Karnataka, Bangalore, India

Kaveri C
Department of Computer Science and Engineering, Presidency University Karnataka, Bangalore, India

Mrs Sterlin Minish T N
Assistant Professor, Department of Computer Science and Engineering, Presidency University Karnataka, Bangalore, India

Abstract:

There is an increasing number of people with mental health disorders like anxiety and depression that require scalable, technology-driven solutions. This paper introduces a personalized empathetic support system powered by AI that majorly core three-component system including sentiment analysis, a hybrid recommendation engine, and a conversational response generator powered by the Gemini API. This module applies natural language processing to categorize mainly feelings like Anxiety, depression, sadness, anger and fear and accordingly makes interventions. A hybrid recommendation engine utilizes both collaborative and content-based filtering of a structured dataset in providing therapeutic activities like mindfulness, journaling, art therapy etc. It features a feedback mechanism for improvement based on the preferences stored dynamically in a repository. The conversational model turns recommendations into empathetic dialogues, thus developing engagement and trust. The system is deployed using flask, a Firebase for data storage integrated with backend, also provides a user -friendly interface through a dialogue box thus providing a perfect web interface. This study explores the system's architecture, implementation, and performance, emphasizing its potential to complement traditional mental health services. The proposed AI therapist not only broadens the reach of mental health support but also demonstrates the importance of integrating technology with empathy to address the growing demand for scalable mental health care solutions.

Keywords:

Sentiment analysis, Collaborative filtering, Content-based filtering, Conversational AI, Empathetic responses, Gemini API, Natural language processing (NLP), flask deployment, Personalized recommendations, Feedback mechanism.

ISBN: 978-93-92104-23-7

Machine Learning Approach to Prediction of Dengue Fever and Preventing the Outbreaks

Sanjeev Kumar G
UG Scholar, St.Joseph's institute of Technology, Chennai, India

Yuvaraja V R
UG Scholar, St.Joseph's institute of Technology, Chennai, India

Dr. Vijayakumar. K
Professor, St.Joseph's institute of Technology, Chennai, India

Abstract:

Dengue fever, a major public health issue in temperate and subtropical parts of the world, is induced by Aedes mosquitoes. Fast and accurate identification is the crux for its effective control and salvation from the adverse consequences of outbreaks. In this paper, the use of machine learning algorithms (k-Nearest Neighbors (k-NN), Random Forest, and XGBoost) in the detection and identification of the dengue fever are analysed. To develop these, we used a dataset of clinical, demographic, and environmental characteristics to train and evaluate the models. We validated the nearest-neighbor (k-NN) algorithm which is simple in implementation, easy to interpret, and it classifies a data point through a majority vote among its nearest neighbors. We evaluated the stability of Random Forest an ensemble learning method built from multiple decision trees appropriate for high-dimensional data 6. It is well known for its high performance in classification task, so we decided to use it, especially its optimized gradient boosted trees (XGBoost) which have special ability to handle imbalanced dataset. The comparison of the algorithms was based on their performance with respect to the identification of dengue fever using metrics including accuracy, precision, recall and F1. Results indicated that XGBoost had greater overall accuracy and predictive power than k-NN and Random Forest, which suggests that it leveraged the complexities inherent to dengue detection best. These results indicate that the modern machine learning methodologies have the potential to make significant contributions to the prediction of dengue disease and the establishment of more efficient public health strategies for dengue outbreaks control and prevention.

Keywords:

Classification ,Outbreak Prevention, Disease Diagnosis, k-NN;Random Forest;XGBoost Algorithms, Dengue Fever, Machine Learning, Medical surveillance systems.

AlertWave: "Enhancing MSME Compliance with Automated License Renewal Alerts."

Dr. D. Deepa
Associate Professor, School of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, Tamil Nadu, India

Anjali Kumari
BE CSE with Data Science, Sathyabama Institute of Science and Technology, Chennai, Tamil Nadu, India

Aditya Raj
BE CSE with Data Science, Sathyabama Institute of Science and Technology, Chennai, Tamil Nadu, India

Abstract:

Micro, Small, and Medium Enterprises (MSMEs) in India are vital to the economy but face challenges in maintaining regulatory compliance due to the complex and high-volume nature of license renewals. Missing renewal deadlines can result in severe penalties, adversely affecting their financial health and operational efficiency. This research introduces "AlertWave," an innovative alert system designed to enhance MSME compliance by delivering automated notifications for license renewals. By targeting Shop Establishment, Trade, and Labour Licenses, AlertWave aims to minimize the risk of penalties through timely reminders. Addressing this issue is crucial to help MSMEs avoid significant fines and ensure smooth business operations. Timely renewals are imperative for legal compliance, as failure to renew can lead to financial burdens and business disruptions. Existing systems lack a holistic and automated solution for notifying MSMEs of impending expirations, often relying on error-prone manual tracking. This research leverages data mining and analysis techniques to monitor license expiry dates. AlertWave integrates seamlessly with existing databases, sending alerts via WhatsApp, Email, and SMS, and is designed for ease of adoption by MSMEs. The deployment of AlertWave will dramatically reduce late renewals and associated penalties, ensuring MSMEs remain informed and compliant. By automating the notification process, AlertWave promotes regulatory adherence and enhances the financial stability of MSMEs, fostering a more sustainable business environment.

Keywords:

License Renewals, Automated Alerts, Data Mining, WhatsApp, Email, SMS Alerts using Api, Automated Data Gathering, Database Integration, Information Retrieval, Web Scraping.

 ISBN: 978-93-92104-23-7

Relative Attractiveness Index of World Markets

U Dhanalakshmi
UG Student Dept. Of CS&E, Presidency University, Bengaluru-560064

Kalpana K Harish
Asst.Professor Dept. of CS&E, Presidency University, Bengaluru-560064

K Layasree
UG Student Dept. Of CS&E, Presidency University, Bengaluru-560064

Sneha Latha Reddy
UG Student Dept. Of CS&E, Presidency University, Bengaluru-560064

Y Shiva Reddy
UG Student Dept. Of CS&E, Presidency University, Bengaluru-560064

Abstract:

In an increasingly globalized economy, businesses and investors face significant challenges in evaluating and comparing markets for potential investment or expansion. The complexity of analyzing diverse economic, political, and regulatory factors across countries necessitates a data-driven approach to decision-making. This research introduces the Relative Attractiveness Index (RAI), a comprehensive and scalable tool designed to assess the attractiveness of global markets. The RAI integrates multiple quantitative and qualitative indicators, including GDP growth, inflation rates, ease of doing business, political stability, and regulatory frameworks, to generate a unified score for market comparison.The methodology leverages machine learning algorithms and statistical models to dynamically weight factors based on user-defined priorities, ensuring that the index is adaptable to various industries and investment goals. Furthermore, the tool incorporates real-time data from authoritative sources such as the World Bank and IMF, along with interactive visualizations like heatmaps and dashboards, to simplify complex analyses for users. The results demonstrate the tool's ability to accurately predict market trends, highlight growth opportunities in emerging markets, and identify potential risks, offering invaluable insights for strategic investment planning.This research contributes to the fields of economic analysis, financial modelling, and decision science, bridging the gap between theoretical frameworks and practical applications. By enabling more objective and efficient market evaluations, the RAI tool supports investors, policymakers, and businesses in making informed decisions. Future work includes expanding data sources, incorporating advanced predictive analytics, and refining the tool to address specific industry needs, ensuring its relevance in an ever-evolving global market landscape.

Keywords:

Pharma Industry,Regional Attractiveness,Investment Potential,RAI tool,World Bank.

Abstractive Multi-Document Summarization based on Semantic Link Network

Vinayak Katti
Student, KIT College of Engineering, Kolhapur

SameerB.Patil
Professor, KIT College of Engineering, Kolhapur

Abstract:

In Text summarization, a critical task In the realm of information overload, efficient summarization techniques are indispensable for distilling large volumes of text into concise and informative summaries. Abstractive multi-document summarization, in particular, holds great promise for generating summaries that capture the essence of multiple source documents. In this work, proposed an advanced approach to abstractive multi-document summarization using Semantic Link Networks (SLNs). SLNs provide a powerful framework for representing the semantic relationships between concepts and events in a document corpus. By leveraging SLNs, our approach transforms source documents into a network of interconnected concepts and events, enabling a more nuanced understanding of the underlying semantics. This employs a text-SLN-text approach, which involves summarizing the SLN to generate the final summary. Experimental results demonstrate that our approach outperforms existing state-of-the-art methods, underscoring the effectiveness of SLNs in enhancing the quality of multi-document summarization.

Keywords:

Machine Learning Convolutional Neural Networks Indian summarizers summarizers text summarization.

ISBN: 978-93-92104-23-7

A Multidimensional Blueprint for Shifting from Linear Systems to Sustainable Circular Economies in Emerging Economies

Shanu Singh
Christ University, Bengaluru, India

Aditi Anand
Christ University, Bengaluru, India

Kalyani
Christ University, Bengaluru, India

Abstract:

The immediate upheaval for transitioning and slipping from mundane linear system to deliberately choosing sustainable and equitable circular economy system has been in airs ,suggesting its shared benefits and changed outlook. The current research paper proposes a framework "RE-GENO" which support the design of responsible circular economy practices and argues that this framework can act as a preliminary tool for improving and expanding the decision-making context for a more equitable transition through use of artificial intelligence. This framework aims to provide a guideline for smooth and efficient socio-economic transformation and its implementation as well as adoption in developing nations like India. The paper has performed thematic analysis to review existing literature data on topics pertaining to its transition. The research papers have discussed about idea of transitioning from linear economy which results in generation of large amount of waste to a circular economy which leads to sustainable form of consumption and have further highlighted the challenges followed by it and application of artificial intelligence in its transition. They have given different frameworks which could form base of transitioning into it but at the same time , there has not been enough insight on implementation of it in Indian based economy. This research paper brings up a modified version for a framework whose main aim is to provide a new base for moving to circular economy and focusing on strategies on its efficient implementation in developing nation like India. It is found that application of this framework in India requires multifaceted approach that integrates all aspects such as technology, education, government initiatives and monitoring through risk analysis to foster sustainable growth, production and consumption. Hence, the paper suggests that successful implementation might open the way for more sustainable and efficient resource management strategies across a variety of businesses.

Keywords:

Artificial Intelligence, Circular Economy, Framework, Sustainable Practices, Framework, SDG.

RAG-powered Question Answering for Complex Information Needs

Prabhat Kumar
B.E CSE with Data Science, Sathyabama Institute of Science and Technology, Chennai, India

Suraj Kumar
Department of Computer Science, Sathyabama Institute of Science and Technology, Chennai, India

Dr. D. Anu Disney, M.E., Ph.D.,
Assistant Professor, CSE Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

The explosive growth of information requires intelligent QA systems, which, beyond retrieving relevant passages, can synthesize comprehensive answers to intricate questions. The given methods are capable of producing very good-quality results but, by themselves, do not handle questions that require reasoning and multi-document factual support. This work will focus on the need to integrate the two approaches. Our goal is to build a system that takes advantage of the strengths of both to retrieve relevant information from large datasets and generate clear, context-aware answers. Traditional approaches are insufficient in answering complex questions and delivering good results, so this problem needs to be addressed. This research closes the gap between retrieval-based and generation-based approaches by pushing the limits of QA systems to handle complex information needs efficiently. For this project, a few Python libraries are used in order to facilitate sophisticated question answering. Streamlit provides a web framework for deployment that is friendly to users. Embed-chain, as a pre-configured vector database, fetches the information from external knowledge sources, with a focus in this case on GitHub data. Finally, the system uses a strong Language Model (LM) available through an LLM API, such as GPT-4, to comprehend and produce text that resembles human communication to formulate responses. The overall aim of this project is to simplify information retrieval so that it happens faster and more efficiently for the user. The outcomes show significant increases in the quality and relevance of the answers being returned, making the user experience and the search process more effective.

Keywords:

Contextual Answer Extraction (CAE) ,Knowledge-Enhanced Text Generation, Semantic Passage Matching, Sequence-to-Sequence Transformer Model, Domain-Agnostic Information Retrieval Expertise-Driven Text Analysis, Multi-Hop Reasoning, Contextual Relevance, Neural Reader, Document Retrieval, Language Model Pre-Training, Latent Retrieval, Knowledge- Guided Retrieval, Generative Models, Information Synthesis.

ISBN: 978-93-92104-23-7

Digital Guardian: Empowering Parents in the Digital World

Abhishek Kumar
U.G Student, Department of CSE, Sathyabama Institute of Science and Technology, Chennai

Aditya Kumar Singh
U.G Student, Department of CSE, Sathyabama Institute of Science and Technology, Chennai

Dr. Prince Mary
Assistant Professor, School of Computing, Sathyabama Institute of Science and Technology, Chennai

Abstract:

Digital Guardian provides a suite of advanced features that allow parents to monitor, manage, and protect their children's digital experiences across multiple devices and platforms both online and offline. At its core, the app offers intelligent screen time management, enabling parents to set customizable limits on device usage, schedule device-free periods, and even designate specific location of their children. The app's GPS tracking capabilities allow parents to monitor their children's whereabouts, set up geo-fences, and receive instant alerts when predefined boundaries are crossed. This functionality extends the app's utility beyond mere online protection to real-world safety. Digital Guardian also offers comprehensive app usage monitoring, providing parents with detailed insights into their children's digital behaviours. Parental control apps are basically mobile applications and software that help parents monitor and control the activities of their children. It basically provides the remote control to screen time and other electronic exposure of children to parents. This way, parents don't have to bother about what their children are doing or watching on the internet.

Keywords:

Online Parental Guidance, Parental Monitoring, Child Safety Online, Internet Filtering, Content Restrictions, Online Safety Tools, Screen Time Management.

Fake News Detection Using Machine Learning

Manju C Nair
Department of Computer Science And Engineering, Sathyabama Institute of Science and Technology, Chennai, India

R Velvizhi
Department of Computer Science And Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Saurav Kumar
Computer Science department, Sathyabama Institute of Science and Technology, Chennai, India

Sayan Adhikary
Computer Science department, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

In the digital age, fake news proliferation has become a major challenge, affecting public opinion, political stability, and trust in society. This paper will introduce a machine learning-based approach to detect fake news in multiple languages, relying on NLP techniques to find patterns and features that distinguish actual news from fabricated stories. It applies a set of supervised learning algorithms, among them decision trees, support vector machines, and deep learning models for the news articles' linguistic characterization, sentiment, and credibility, in the context of its intended application, as shown to perform well over multiple datasets and with news articles from different languages, thereby performing efficient real-time detection of fake news. This system can significantly minimize the spread of misinformation, which is a scalable solution to tackle the growing menace of fake news across various media platforms.

ISBN: 978-93-92104-23-7

Comparative Analysis of Illumination and Energy Consumption in Industrial Workspace

Ranjana Ubale*
Department of Electronic Science, Fergusson College. Pune, India

Yogita Khandge
Department of Electronic Science, Fergusson College. Pune, India

Nitin Kulkarni
Department of Electronic Science, Fergusson College. Pune, India

Abstract:

This research provides an in-depth analysis of the efficiency and impact of LED lighting configurations in office space. This study thoroughly examines the effectiveness and effects of LED lighting arrangements in workplace buildings. The study assesses the measured and simulated lux values under various lighting scenarios using Lux meter and DIALux. These scenarios ranged from all lights turned off to complete illumination, representing various operational setups in an industrial workspace setting. The research highlights the need for optimizing lighting design to ensure energy efficiency, adequate lux levels, and the strategic integration of natural daylight to reduce power consumption. The study's objectives include identifying discrepancies between simulated predictions and measured data, understanding the causes of these variations, and providing recommendations for better lighting strategies.

The study used a detailed experimental setup to analyze LED tubes across various surfaces. It also used artificial and natural daylight lighting, Lux meters, and simulation software to validate findings and identify performance gaps.

Additionally, it assessed energy usage across configurations, demonstrating that lighting designs with selective lighting might result in significant energy savings. In comparison to the maximum power consumption when all lights are on, turning on Zone 1 alone resulted in an energy savings of 88.24%. Energy consumption was reduced by almost 50% on average as a result of thoughtful light configurations. The study highlights the importance of accurate simulation models, proper installation, and regular maintenance in enhancing lighting system efficiency. Practical recommendations include optimizing LED placement, leveraging IoT-enabled smart lighting, and exploring integrating emerging technologies for industrial applications. Future research should integrate emerging technologies and advanced modeling techniques to refine industrial lighting systems, balancing operational efficiency and sustainability.

Keywords:

Lux Levels, LED, Efficiency, Energy Savings, Energy consumption, Natural Daylight.

Comprehensive Evaluation of PEM water electrolysis for Green Hydrogen Generation: A Review

Bhavinkumar Solanki
Parul Institute of Engineering & Technology, Parul University, Gujarat 391760, India

Anand Joshi
Parul Institute of Technology, Parul University, Gujarat 391760, India

Unnati Joshi
Parul Institute of Engineering & Technology, Parul University, Gujarat 391760, India

Abstract:

The increasing demand for energy in the world and the greenhouse emission have, in recent years, raised a great concern for clean and green renewable energy, with hydrogen likely to be a green carrier of energy. This review provides detailed information on water electrolysis technologies, such as Proton exchange membrane (PEM), Alkaline water electrolysis (AWE), Anion exchange membrane water electrolysis (AEMWE), and Solid oxide electrolysis (SOE), which constitute the pathway for high-purity hydrogen production from renewable sources. also have some limitations like high cost, short durability, and difficulty in integration with renewable energy. PEM electrolysis is very efficient but bears issues that are mechanical and chemical degradation. The AEMWE appears to offer an economic approach, but its limitations have translated into a challenge in the large-scale deployment of its efficiency and stability. Many innovations have also been reported in the design of catalysts, architecture of the electrolyzer, and renewable integration towards making hydrogen production more economic and friendlier to the environment. Targeting challenges in an electrolysis system and permitting coupling to renewable energy sources, this effort informs a pathway toward scalable low-carbon production of green hydrogen.

ISBN: 978-93-92104-23-7

Unified Workforce and Order Management E-Platform

Dr. J. Dafni Rose
Head OF Departmant, Dept of Computer Science and Engineering,St. Joseph's Institute of Technology, Chennai

J. M Joel Staines
UG Scholar, Dept of Computer Science and Engineering,St. Joseph's Institute of Technology, Chennai

A. Khalushankar
UG Scholar, Dept of Computer Science and Engineering,St. Joseph's Institute of Technology, Chennai

Abstract:

This project proposes an all-inclusive mobile application by way of making engagement between customers and recruiters, or workers, in a recruitment and e-commerce environment, much more efficient. The moment one opens the application, one is guided to register or log in and specify their role: as a customer, recruiter, or worker. The registration process captures detailed user information, somewhat analogous to the onboarding experience when signing up for a platform such as Amazon, where the customer gets to set up a new profile and login credentials. For the customers, the app will offer them a detailed overview of the order history, including what they ordered, as well as the expected delivery dates for those orders, who the dealers were from whom the products were ordered, and associated costs, including advance payments if any. This gives the customer a quick view of their total estimate amount and advance amount along with getting dealer contact. With this app, it is very much like Internshala in that regard-for recruiting labor, for there is a solid system wherein the worker will get matched up with the recruiters as per the type of the job as welding or cutting or grinding, and so on, and general helper. It ensures a smooth interaction between recruiters and workers to have efficient communication and job assignment within the postulated work categories. The solution is thus designed to improve user experience by putting all the essential features together into one platform-an e-commerce solution catering to the labor recruitment needs as well-to enhance operational efficiency and user satisfaction.

Keywords:

Mobile App, Labor Recruitment, E-Commerce, Customers, Recruiters, Workers, Operational Efficiency.

Adjusting Parameters of One-Sided Control Chart-Based Support Vector Machines Using Genetic Algorithm and Particle Swarm Optimization

Le Thi Huynh Anh
Faculty of Project Management, The university of Danang, University of Science and Technology, Danang 550000, Vietnam

Nguyen Thi Thao Nguyen
Faculty of Project Management, The university of Danang, University of Science and Technology, Danang 550000, Vietnam

Abstract:

This study investigates the optimization of parameters for one-sided control chart-based Support Vector Machines (SVM) using Genetic Algorithm (GA) and Particle Swarm Optimization (PSO). Statistical learning classification has proven effective in addressing statistical process control challenges, particularly in managing the complexities of big data. While SVM offers computational advantages, its predictive accuracy is highly contingent upon proper parameter selection. This research introduces two novel methods—D-SVM-GA and D-SVM-PSO—to fine-tune essential parameters, including moving windows (Nw), Gamma (σ^2), and penalty cost (C). By applying GA and PSO, the study aims to enhance the SVM's performance and improve the Average Run Length (ARL) of the control chart. The findings highlight the significance of evolutionary algorithms in optimizing SVM parameters, contributing valuable insights for future applications in process control and statistical learning. The methodology and results are thoroughly discussed, emphasizing the potential for improved accuracy and efficiency in data-driven decision-making.

Keywords:

Genetic Algorithm, Parameter Optimization, Particle Swarm Optimization, Statistical Process Control, Support Vector Machine.

ISBN: 978-93-92104-23-7

A Study of Different Clustering Techniques in Brain Mri

Pooja Singh*
Department of Physics, Faculty of Applied and Basic Sciences, SGT Univesity, Gurugram, 122505, Haryana, India

Neeru Rathee
Department of Electronics and Communication Engineering, Maharaja Surajmal Institute of Technology, Janakpuri, New Delhi 110058, India

Sunanda Sharda
Department of Physics, Faculty of Applied and Basic Sciences, SGT University, Gurugram, 122505, Haryana, India

Sanoj Kumar
School of Computer Science, UPES, Dehradun ,248007, Uttarakhand, India

Abstract:

Brain MRI images are segmented and clustered using popular clustering methods in image processing literature. The clustering methods in image processing are used to group or segment the brain MRI images into three separate regions, each representing the white matter (WM), grey matter (GM), and cerebrospinal fluid spaces (CSF). Different clustering approaches are applied in brain MRI depending on the medical purpose, image modality, and other considerations. This review article presents an efficient study of varying clustering methods for brain MRI images. The K-Means Clustering, Fuzzy C-Means (FCM), Spectral Clustering, Expectation-Maximization, Bio-inspired Clustering and hybrid clustering in brain MRI is discussed. A comparison between the different clustering approaches is also presented.

Keywords:

Brain MRI, segmentation, clustering, k-means, FCM, expectation-maximization, spectral clustering, bio-inspired clustering.

Smart Voice Assistants for Mental Health: Integrating Emotional Detection and Generative AI

S. Visnu Dharsini
Assistant Professor

S.Shruthi
Student

A V Samyuktha
Student

Kuzhalisaiyal L S
Student

Abstract:

In this era, there is a growing population that is experiencing mental health problems like stress, anxiety and depression. To help such people, this paper presents the development of a voice bot meant to offer empathetic conversation platform for individuals who are grappling with mental health challenges. With the aid of generative AI and emotion recognition technologies, it provides an appropriate environment for users to express how they feel in privacy. An examination on some of the possible platforms in which it can be deployed includes AWS, Azure and Rasa with scrutiny on their positive aspects as well as their negative sides is carried out. Preliminary findings show that incorporating emotion detection enhances the bot's sensitivity to user emotional states hence increasing its usefulness and improving quality of support provided. Also, details are given concerning the design, implementation and evaluation of this voice bot meaning it offers a new perspective into revolutionizing mental health assistance services.

Keywords:

Generative AI, Bidirectional Encoder Representations from Transformers, Generative Adversarial Network, Generative Artificial Intelligence, Variational Auto encode, Large Language Model, Natural Language Processing, Generative Pre-trained Transformer, Value Adoption Model.

ISBN: 978-93-92104-23-7

Regenerative Testbench for EV Motors using front-end Rectifier with Voltage Magnitude and Angle Control

Ujwal N K
Department Electrical and Electronics Enginnering of Aff. PES University Bangalore, India

Ramya Adiga
Department Electrical and Electronics Enginnering of Aff. PES University Bangalore, India

Nikhil Ramesh
Department Electrical and Electronics Enginnering of Aff. PES University Bangalore, India

Debayan Das
Department Electrical and Electronics Enginnering of Aff. PES University Bangalore, India

Rex Joseph
Department Electrical and Electronics Enginnering of Aff. PES University Bangalore, India

Abstract:

An innovative torque control approach for Three-Phase PMSM that simplifies traditional control methodologies. By using a bi-directional inverter and angle-based control, the technique eliminates computationally intensive Park and Clarke coordinate transformations typically used in Field Oriented Control (FoC). The method regulates direct and quadrature axis currents by manipulating the inverter's switching angle relative to the motor's rotor position. A Phase Locked Loop (PLL) estimates rotor position without a traditional encoder, further streamlining the control system.

Keywords:

include reduced computational complexity, enhanced power transfer flexibility, minimized look-up table dependence, and decreased mechanical complexity. Experimental results validate the approach's effectiveness in precisely controlling torque and current through inverter switching angle and modulation index variations.

Women's Safety Platform using Machine Learning

G Rohith Naidu
Department of Computer Science and Engineering with specialization in Artificial Intelligence, Sathyabama Institute of Science and Technology, Chennai-600119, Tamil Nadu, India

K Yaswanth Sai Ram
Department of Computer Science and Engineering with specialization in Artificial Intelligence, Sathyabama Institute of Science and Technology, Chennai-600119, Tamil Nadu, India

Subapriya V
Department of Computer Science and Engineering with specialization in Artificial Intelligence, Sathyabama Institute of Science and Technology, Chennai-600119, Tamil Nadu, India

Abstract:

Although much progress has been made, the safety of women continues to be a global concern, and deserves innovative and comprehensive solutions to address the emerging urban and rural challenges. To support women's safety, this paper presents a novel platform which integrates options on secure login, real time alerts, emergency panic systems, incident reporting, and route navigation alongside police station proximity. Using advanced technologies such as IoT, geolocation services, and real time data analytics, the platform offers a dynamic and user friendly interface for its users to proactively and reactively mitigate safety concerns. It features an SOS panic button that transmits real time location data to contacts and authorities and a community driven heatmap visualization allowing users to see hotspots. Personal and community safety as well as emergency response have been improved through the platform's capability to provide personalized safety recommendations and to facilitate rapid responses in emergencies, making the platform a dependable and scalable solution. This work captures the transformative potential of technology to strengthen the position of women and to enhance safety.

Keywords:

Women's Safety, IoT, Real-Time Alerts, SOS System, Geolocation, Incident Reporting, Route Navigation, Police Proximity.

ISBN: 978-93-92104-23-7

Quercetin and Rosmarinus Officinalis Loaded Film Forming Dermal Gel (Q-Ro Dermal Gel) Repairs Diabetic Wounds in Rats

Rupinder K Sodhia*
Ph.D, Department of Pharmacology, Chandigarh College of Pharmacy, Mohali Punjab, India

Manpreet Kaura
Department of Pharmacology, Chandigarh College of Pharmacy, Mohali Punjab, India

Jitender Madanb
Department of Pharmaceutics, National Institute of Pharmaceutical Education and Research, Hyderabad, Telangana, India

Abstract:

Uncontrolled diabetes is often associated with delayed wound healing and limb amputations. A film forming dermal gel comprising of quercetin and Rosmarinus officinalis essential oil (Q-Ro dermal gel) was prepared and evaluated for synergistic acceleration in healing of diabetic wounds. Open excision wounds were created on the back of streptozotocin (STZ) treated rats to test the in-vivo wound healing efficacy. The percentage of wound contraction was calculated on day 0, 4, 8, 12 and 16 and was found to be significantly higher in Q-Ro dermal gel treated group compared to STZ group. On 17th day, excised wound granulation tissues were evaluated for biochemical and histopathological analysis. Application of Q-Ro dermal gel in STZ rats demonstrated therapeutic efficacy in terms of enhanced SOD, CAT and GSH levels, reduced LPO, NO levels and MPO activity with improved connective tissue parameters (HPR, HXA and HUA) in comparison to STZ group. Histopathological analysis also revealed fibroblast proliferation, angiogenesis, re-epithelialization and collagen deposition in Q-Ro dermal gel group. The study demonstrated that appropriate combination of constituents in Q-Ro dermal gel efficiently accelerated diabetic wound healing process owing to decreased oxidative stress and inflammation in the wound area in addition to connective tissues regenerating activities.

Keywords:

Diabetic wounds, quercetin, Rosmarinus officinalis essential oil, film forming dermal gel, wound healing.

Exploring Diethanolamine (DEA) as Potential Liquid Organic Hydrogen Carrier (LOHC) Using Various Alkali Metal Hydroxides: Thermodynamic and Kinetics Study of the Best Performing Base

Usman Lado Ali
Hydrogen Energy Storage Research Group, School of Chemical Sciences, Universiti Sains Malaysia, USM 11800, Penang, Malaysia
Department of Pure and Industrial Chemistry, Northwest University, Kano, P.M.B.3220, Kano, Nigeria

Chua Yong Shen*
Hydrogen Energy Storage Research Group, School of Chemical Sciences, Universiti Sains Malaysia, USM 11800, Penang, Malaysia

Lee Hooi Ling
Hydrogen Energy Storage Research Group, School of Chemical Sciences, Universiti Sains Malaysia, USM 11800, Penang, Malaysia

Abstract:

Hydrogen gas is considered an ideal clean energy carrier to replace fossil fuels. However, developing safe, efficient, and cost-effective hydrogen storage methods remains a significant challenge for practical applications. Recently, liquid organic hydrogen carriers (LOHCs) have been regarded as the best potential hydrogen source due to their high hydrogen content, low potential risks, affordability, and compatibility with existing fuel facilities. However, most of these molecules are associated with unpleasant thermodynamic and kinetic constraints. In this work, we report for the first time diethanolamine (DEA) as a potential hydrogen storage material owning to its rich hydrogen content. Results of dehydrogenation of DEA using various alkali metal hydroxides under optimized conditions showed that dehydrogenation of DEA using NaOH in the presence of commercial Pd/C catalyst produced the most effective results with the conversion and selectivity of 98.51% and 94.41%, respectively, under a mild temperature of 180 oC, commendable for practical application. Thermodynamic study performed using DSC revealed that the enthalpy of the reaction is 59.15 kJ/mol H2, and the apparent activation energy obtained by the Isoconversional method is 47.38 kJ/mol. The combination of the rich hydrogen content, <200 oC dehydrogenation temperature, mild enthalpy, and low activation testify to the DEA potential for hydrogen storage.

Keywords:

Dehydrogenation, Diethanolamine, Liquid Organic Hydrogen Carrier, Hydrogen Storage & Alkali Metal Hydroxides.

 ISBN: 978-93-92104-23-7

Automated Identification of Eeg and Eog Signals using Signal Processing and Machine Learning Techniques

B. Vishnu*
CVR College of Engineering,Hyderabad, Telangana

Abstract:

This paper presents a comprehensive approach for the identification and classification of EEG (ElectroEncephaloGram) and EOG (ElectroOculoGram) signals utilizing signal processing and machine learning methodologies. EEG and EOG signals play a pivotal role in understanding brain activity and eye movement, respectively. The proposed method involves pre-processing, feature extraction, signal combination, and classification techniques to differentiate and classify these signals effectively.

Keywords:

EEG,EOG, LDA, Machine Learning.

Clinical and Nanotechnological Advances in the Treatment of Pityriasis Versicolor: A Comprehensive Review

Isha Sharma
Department of Pharmaceutics, Chandigarh College of Pharmacy, Landran, Mohali, Punjab 140307, India

Sandhya Jaiswal*
Chandigarh College of Pharmacy, Landran, Mohali, Punjab 140307, India

Shalu Shukla
Chandigarh College of Pharmacy, Landran, Mohali, Punjab 140307, India

Abstract:

Fungal infections are a significant health hazard to public, particularly among immunocompromised populations, and are linked to high morbidity and mortality rates. This review explains the historical context of antifungal treatment, tracing advancements from traditional therapies to modern approaches. It discusses the epidemiology and increasing incidence of fungal infections worldwide, emphasizing the diverse types, that vary from trivial to life-threatening systemic infections. The pathophysiology of these infections is explored to better understand their progression and impact on host immunity. Clinical trials have highlighted both the effectiveness and limitations of current antifungal treatments, highlighting the need for innovative solutions. This review emphasizes the need for adopting innovative treatment approaches, emphasizing advancements in drug development and therapies that show great promise in overcoming existing challenges and enhance patient outcomes.

Keywords:

Pityriasis Versicolor, Fungal Infection, Tinea Versicolor, Nanotechnology, Nanosphere.

ISBN: 978-93-92104-23-7

Pityriasis Versicolor, Fungal Infection, Tinea Versicolor, Nanotechnology, Nanosphere

R. Sujitha

Cardamom Planters' Association College, Affiliated to Madurai Kamaraj University, Bodinayakanur, Theni Dt

Dr. S. Sivakumar

Cardamom Planters' Association College, Affiliated to Madurai Kamaraj University, Bodinayakanur, Theni Dt

Abstract:

Predicting strokes is crucial in healthcare, as early detection and intervention can significantly improve patient outcomes. This study comprehensively examines the effectiveness of various machine learning algorithms in predicting stroke occurrence. The algorithms explored include Logistic Regression, K-Nearest Neighbors (KNN), Support Vector Machine (SVM), Decision Tree, Random Forest, Naive Bayes, Gradient Boosting, AdaBoost, XGBoost, LightGBM, CatBoost, Linear Discriminant Analysis (LDA), and Extra Trees. Each model was evaluated using key performance metrics such as ROC AUC score, accuracy, error rate, precision, recall, and F1 score. To ensure robustness and reliability, validation was conducted through Stratified K-Fold cross-validation. Subsequently, hyperparameter tuning was performed to optimize the models' parameters and enhance their predictive capabilities. This involved a thorough search of various hyperparameter combinations using GridSearchCV, resulting in significant performance improvements, especially in accuracy and precision.

Two different sampling methods were employed to assess the models' effectiveness: Stratified K-Fold cross-validation and random sampling. The Voting Classifier, developed to leverage the strengths of multiple classifiers, achieved a high accuracy rate of 94.91% with Stratified K-Fold cross-validation and an even higher accuracy rate of 96.74% with random sampling, which provided the best results. This ensemble model integrated predictions from the top-performing individual models, creating a robust predictive framework.

These findings highlight the critical roles of model selection, hyperparameter optimization, and ensemble methods in creating accurate and reliable predictive models for stroke prediction. This study provides valuable insights into applying machine learning in healthcare, paving the way for improved stroke risk assessment and early intervention strategies.

Sentiment Analysis and Call Reason Identification in Sales Transcripts Using Large Language Models

Vanama Vasanth
Student, Sathyabama Institute of Science and Technology, Chennai, India

Pammi Ravindar Reddy
Student, Sathyabama Institute of Science and Technology, Chennai, India

Sundar R
Assistant Professor, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

The continuous growth of customer interaction data necessitates advanced techniques for automated sentiment analysis and efficient query response generation. This study utilizes fine-tuned Large Language Models (LLMs) for sentiment classification in both customer reviews and real-time service conversations. A specialized sentiment model, Phi3 Mini 4K Instruct, is applied to evaluate the emotional tone of text, categorizing each utterance as positive, negative, or neutral. Additionally, keyword-driven methods are employed to analyze the underlying reasons for customer interactions, such as billing inquiries, refund requests, or technical issues. A Retriever-Augmented Generation (RAG) framework is implemented to enhance query-response capabilities by combining retrieval-based methods with generative models. Product instruction documents in PDF format are converted into vector representations through embedding techniques and stored in a Qdrant vector database. The RAG framework enables dynamic retrieval of relevant product information based on the detected reason for the customer call, followed by the generation of contextually appropriate responses. This dual-layer approach utilizes natural language understanding (NLU) to provide accurate sentiment analysis while enabling advanced, context-aware customer service experiences, ultimately improving customer satisfaction and operational efficiency.

Keywords:

Sentiment analysis, Large Language Models, Phi3 Mini 4K, Natural Language Understanding, Retriever-Augmented Generation (RAG), Qdrant, Embeddings, Customer Intent, Conversational AI, Automated Customer Support.

ISBN: 978-93-92104-23-7

AI Integrated Holistic Resume Analysis

Potu Ram Prasad
Student, Department of Computer science and engineering Sathyabama Institute of Science and Technology, Chennai, India

Mutyala Uday Kiran
Student, Department of Computer science and engineering, Sathyabama Institute of Science and Technology, Chennai, India

V Subapriya
Assistant Professor, Department of Computer science and engineering, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

Analytical resume is the best tool used to deeply and thoroughly evaluate any candidate resume by considering various elements like education, work experience, and skills. This approach incorporates different angles that complement one another to build the entire profile of the professional identity and prospects of the candidate. By means of the improvement of specific areas, e.g. formatting, language usage, and personal brand, holistic analysis is able to provide an employer with powerful resume content that efficiently presents a candidate's value proposition to the employer. It tells the reader how a resume not only reveals qualifications but also fits well with the desired audience. The analysis not only examines how the document is designed and if the experiences listed are relevant, but it also considers if the language used is appropriate, the whole package of which a candidate produces for recruiters. Holistic resume analysis addresses and points out possible omissions or inconsistencies that may adversely affect the profile of a candidate, thereby serving as a catalyst to his or her improvement. The holistic resume analysis mainly serves as a guide for job seekers to better their applications and at the same time it is a hiring manager's instruction for understanding that a candidate's skills must coincide with the organization's requirements at a given time. By bringing together the data and people, This analysis helps the hiring manager to benefit more in regard to taking right decisions that will ensure that the best firms and the right people will meet and work together. In a highly competitive job market, a comprehensive review of such details is the main means of getting ahead and thus it is the only means of successfully overcoming the pitfalls that intermingle in the promising career field.

Keywords:

AI, Natural Processing Language, Machine Learning.

Machine Learning Report for Vehicle Accident Detection and Alert System

R. Sathwik
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

S. SumithReddy
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Lakshmi Priya S
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

The Accident Detection and Alert System leverages Machine Learning (ML) to enable accurate, real-time identification of road accidents. The system integrates sensor data (accelerometers, gyroscopes) and video feeds to detect abrupt motion changes and collision patterns. By employing a combination of supervised and unsupervised ML methods, it ensures precise accident detection, minimizes false positives, and enhances emergency response times. Key technologies include deep learning frameworks like TensorFlow and PyTorch for video-based detection, as well as traditional ML algorithms like Random Forest for sensor data classification. The solution incorporates advanced preprocessing techniques, feature extraction, and model optimization to handle real-time processing challenges. Deployed via cloud services and edge devices, the system triggers GPS-enabled alerts, accelerating life-saving interventions. By addressing challenges such as sparse datasets, false positives, and computational demands, this ML-driven solution exemplifies the potential of AI in improving road safety and emergency management.

Keywords:

Convolutional neural networks, Long Short Term Memory, Simple Mail Transfer Protocol, Support Vector Machines, Pytorch.

ISBN: 978-93-92104-23-7

Comparative Analysis of Illumination and Energy Consumption in Industrial Workspace

Ranjana Ubale*
Research Scholar, Department of Electronic Science, Fergusson College Autonomous, Pune, India

Yogita Khandge
Assistant Professor, Department of Electronic Science, Fergusson College Autonomous, Pune, India

Nitin Kulkarni
Professor, Department of Electronic Science, Fergusson College Autonomous, Pune, India

Abstract:

This research provides an in-depth analysis of the efficiency and impact of LED lighting configurations in office space. This study thoroughly examines the effectiveness and effects of LED lighting arrangements in workplace buildings. The study assesses the measured and simulated lux values under various lighting scenarios using a Lux meter and DIALux. The scenarios examined encompassed the entire lighting spectrum from total darkness to full illumination which simulated different lighting situations found in industrial workplaces. The study demonstrates the requirement of optimal lighting optimization strategies for maximizing both energy efficiency and appropriate illumination while effectively incorporating sunlight to lower facility requirements. This research examines variations between predictive modeling outputs and field data collection to discover critical points while determining superior lighting solutions.

Researchers conducted an exhaustive series of assessments to measure LED tubes under diverse surfaces. Results validated by Lux meter analysis and simulation programs and natural daylight observation enabled the discovery of performance weaknesses. The study evaluated various lighting configurations and proved that controlled lighting approaches lead to meaningful reductions in energy consumption. The independent operation of Zone 1 lights achieved a power reduction of 88.24% against the total power usage associated with operating all lights simultaneously. The considered approach to light configuration lowered average energy use by almost half. Research findings demonstrate how precise simulation models when paired with proper installation along with regular maintenance create efficient lighting systems. The implementation of optimization strategies for LED placement and Internet of Things (IoT)-powered smart lighting together with research into emerging industrial solutions represent practical recommendations. applications. Future research should incorporate emerging technologies and advanced modeling techniques to refine industrial lighting systems, balancing operational efficiency and sustainability.

Keywords:

Lux Levels, LED, Efficiency, Energy Savings, Energy consumption, Natural Daylight.

Emotion and Gesture Recognition using Machine Learning

Dr. E. Srividhya, M.E., Ph.D
Assistant Professor, Department of CSE, Sathyabama Institute of Science and Technology Tamil Nadu, India

CH. Vamsi Krishnam Raju

B.Tech Student, Department of CSE Sathyabama Institute of Science and Technology Tamil Nadu, India

CH. Vinay Chowdary
B.Tech Student, Department of CSE Sathyabama Institute of Science and Technology Tamil Nadu, India

Abstract:

Emotion and gesture recognition using machine learning helps computers understand how people feel and what they are doing by analyzing their faces, body movements, and gestures. By training computer models with lots of examples, the systems learn to recognize patterns of emotions and actions more accurately over time. This makes technology more responsive and helpful in areas like communication, healthcare, education, entertainment, and security, where understanding human feelings and behavior can lead to better interactions and outcomesEmotion and gesture recognition using machine learning technologies allow computers to interpret human emotions and movements from visual input, enhancing human–machine interactions and communication. By utilizing advanced techniques, particularly deep learning, these systems learn patterns from large datasets, continually improving in accuracy and adaptability. As a result, emotion and gesture recognition solutions are becoming increasingly effective tools for applications such as human–computer interaction, healthcare, education, entertainment, and security.

ISBN: 978-93-92104-23-7

22 - 23 March 2025 | Chennai, India

Performance Analysis of Quantum Arithmetic Circuits on IBM Eagle Quantum Processor

Sumitra Singh*
Department of Information Technology, Delhi Technological University, Delhi, India

Dinesh Kumar Vishwakarma
Department of Information Technology, Delhi Technological University, Delhi, India

Abstract:

Quantum computing represents a transformative technology, offering exponential speedup for a range of computational problems compared to classical computing, notably Shor's algorithm for integer factorization and discrete logarithms, as well as Grover's quantum search algorithm. At the foundation of computing lies arithmetic, with addition serving as a fundamental operation that supports subtraction, multiplication, division, and other computational processes. In this paper, we evaluate the performance of quantum arithmetic circuits—including half adders, full adders, Toffoli-based adders, Quantum Fourier Transform (QFT)-based adders, and quantum comparators—on the IBM's Eagle, a 127-qubit quantum processor based on superconducting qubits, via the IBM Quantum Platform on the cloud. These circuits are implemented using IBM Qiskit and tested on both local simulators and IBM-provided backend simulators to validate their functionality before execution on quantum hardware. Due to imperfections in quantum hardware, such as limited qubit coherence times and stability, we investigate their impact on computational outcomes. Experimental results show that the probabilities of correct computations are notably low, even for smaller input sizes. A comparative analysis of Toffoli-based and QFT-based adders demonstrate that Toffoli-based adders have higher accuracy, making them more suitable for precise quantum arithmetic operations. These findings emphasize the impact of quantum hardware imperfections on the accuracy of arithmetic computations.

Keywords:

Quantum Computing, Quantum Arithmetic, Quantum Circuit, Quantum Fourier Transform, Ibm Quantum Eagle, Quantum Noise.

Software Defect Prediction Using ML Algorithms

Prabhav Pandey
Gautam Buddha University, Uttar Pradesh

Sanjay Kumar Sharma
Gautam Buddha University, Uttar Pradesh

Abstract:

Predicting software defects is very important in order to improve software quality. It does this through early defect detection which will reduce testing costs and development time. With the increase in software complexity there is a possibility of the software having a defect that may impact the software. In this research we will test the effectiveness of different ML algorithms on datasets from the Apache ANT Project (versions 1.3 and 1.7).

Multiple classification techniques are used in the study. Logistic Regression, Decision Trees, Random Forest and Support Vector are all included. For this Purpose, I have compared the performance of different versions of the software. On the other Hand ANT-1.3 dataset has 125 modules while ANT-1.7 is a big dataset with 745 modules.

The research demonstrates the importance of model selection based on dataset characteristics and size, with Random Forest showing particular promise for larger codebases. Overall performance of random forest algorithm is much better than other algorithms.

Keywords:

Algorithms, Software defects, software quality, ML.

ISBN: 978-93-92104-23-7

Investigating the Effects of Carrageenan Treatment on the Properties of Subgrade Soil

Asha Susan Abraham
A.P.J. Abdul Kalam University, Madhya Pradesh

Abstract:

Carrageenan, a natural polysaccharide derived from red seaweed, has shown promise as a soil stabilizing agent, particularly in enhancing the strength and durability of subgrade layers in pavement systems. This study currently focuses on the use of carrageenan on the engineering properties of various soil types used as subgrades. This paper first presents the laboratory results obtained by testing the weak clayey soil.

Unconfined compressive tests will be conducted to evaluate the compressive strength of subgrade soil. Laboratory tests including Atterberg limits, compaction, triaxial tests and unconfined compressive strength will be conducted to evaluate carrageenan's influence on soil plasticity, moisture content, density. From literature review, it is found that the carrageenan is an eco-friendly, cost-effective alternative to conventional soil stabilizers, contributing to sustainable construction practices and extended pavement lifespan.

The mechanism and chemical interaction behind the significant performance of carrageenan in binding soil grains, is expected to increase the mechanical strength of the soil. Additionally, settlement and factor of safety will be performed using PLAXIS software. Previous literatures indicate that carrageenan-treated soils exhibit improved load-bearing characteristics and reduced plasticity, suggesting enhanced resistance to deformation under loads. This paper explores carrageenan's role in subgrade improvement, focusing on its mechanical and environmental benefits for sustainable construction practices. Further research on the long-term performance and environmental impact of carrageenan-treated subgrades is recommended to validate its practical applicability.

Swimming Like Nature: A Soft Robotics Approach to Manta Ray-Inspired Propulsion

Anvitha Sundar
PES University, Karnataka

Chinmayee Khompi
PES University, Karnataka

CM Samartha
PES University, Karnataka

Venkata Krishna
PES University, Karnataka

Prof Suma S
PES University, Karnataka

Abstract:

The project presents the development and implementation of a bio-inspired soft underwater robot designed for efficient underwater propulsion. Underwater propulsion poses significant challenges in robotics particularly in tasks requiring smooth and precise movements. Conventional propulsion methods such as propellers generate noise and turbulence disturbing marine life. Drawing Inspiration from the fluid movement of manta rays (Mobula birostris), the robot employs biomimetic wings for propulsion, powered by servo motors to enable precise movement underwater. Using soft robotic principles and servo actuated fins the robot replicates the undulating motion of the wings to achieve silent and efficient propulsion. Hopf oscillation-based control for fin movement adds real-time correction and noise reduction while maintaining the undulating motion of the manta ray, ensuring stability and manoeuvrability. The robot integrates rigid and soft materials, utilizing foam board construction for the main body housing and silicone-based fins for propulsion. An array of sensors tracks the robot to ensure its smooth functioning. These Sensors include Ultrasonic sensors, acceleration and haptic sensors and cameras. The robot is controlled via UART communication and powered via cable allowing it for operation at a distance. The Design demonstrates the potential of robotics in marine research and conservation. This offers a sustainable solution for studies and conservation efforts by safely interacting with sensitive and essential ecosystems.

Keywords:

Biomimetic, Bio-inspired propulsion, Hopf Oscillation, manta ray, UAV, underwater drones, Undulating Fin.

ISBN: 978-93-92104-23-7

22 - 23 March 2025 | Chennai, India

Android Trojan Identification Using Mltechniques

Bakku Lokesh
Student, Computer Science and engineering, Sathyabama University, Chennai, Tamilnadu

N. Hari kesavarjuna Sai
Student, Computer Science and engineering, Sathyabama University, Chennai, Tamilnadu

Mrs. D. SUDHA , M.E., (Ph.D.),
Assistant Professor, Computer Science and engineering, Sathyabama University, Chennai, Tamilnadu

Abstract:

Users can search for any app on the Play Store using the interface. It if available, automatically retrieves the app's permissions list and privacy policy. To view relevant sentences from the privacy settings, users can select a specific permission strategy, alongside a reasonable clarification of what the consent involves. This makes a difference by highlighting important aspects, users quickly assess the privacy risks of Android apps sections of the privacy policy and a description of sensitive permissions. Our strategy introduces a new method for analyzing Android app privacy policies. Our apparatus makes it more obvious the security ramifications of introducing outsider apps and has already discovered issues in apps that are troubling. The tool is made to be expandable, allowing for seamless integration of future enhancements to improve efficiency and dependability. Additionally, if it is not too much work, make reference to the additional requirements in the section below under "Personal and Sensitive Information" if your app handles sensitive or personal user data. These standards for Play Google are on top of any privacy or data security laws that may be relevant. We suggested that when a client wants to introduce and use an external application, they may not understand the significance of the permissions that the application requests, so they grant all of them, allowing malicious applications to be installed and carry out their malicious activities covertly.

Keywords:

Machine Learning, Detection, Processing, Data Collection, ML Algorithms.

Sentiment Analysis and Call Reason Identification in Sales Transcripts Using Large Language Models

Vanama Vasanth
Student of Sathyabama Institute of Science and Technology, Chennai, India

Pammi Ravindar Reddy
Student of Sathyabama Institute of Science and Technology, Chennai, India

Sundar R
Assistant Professor, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

The continuous growth of customer interaction data requires advanced techniques for automated sentiment analysis and efficient query response generation. This approach utilizes fine-tuned Large Language Models (LLMs) for sentiment classification in both customer reviews and real-time service conversations. A specialized sentiment model, Phi3 Mini 4K, is applied to evaluate the emotional tone of text, categorizing each utterance as positive, negative, or neutral. Additionally, keyword-driven methods are used to analyze the underlying reasons for customer interactions, such as billing inquiries, refund requests, or technical issues. A Retriever-Augmented Generation (RAG) framework is also implemented to enhance query-response capabilities by combining retrieval-based methods with generative models. Product instruction documents in PDF format are converted into vector representations through embedding techniques and stored in a Qdrant vector database. The RAG framework enables dynamic retrieval of relevant product information based on the detected reason for the customer call, followed by the generation of contextually appropriate responses. This dual-layer approach utilizes natural language understanding (NLU) to provide accurate sentiment analysis while enabling advanced, context-aware customer service experiences, ultimately improving customer satisfaction and operational efficiency.

Keywords:

Sentiment analysis, Large Language Models, Phi3 Mini 4K, Natural Language Understanding, Retriever-Augmented Generation (RAG), Qdrant, Embeddings, Customer Intent, Conversational AI, Automated Customer Support.

ISBN: 978-93-92104-23-7

A Novel Convolutional Neural Network Framework for Multi-Grade Classification and Early Detection of Diabetic Foot Ulcers

Afsana Zeba Yasmin
Department of Computer Science, St. Xavier's University, Kolkata

Dr. Anandarup Roy
Department of Computer Science, Sarojini Naidu College for women

Dr. Mrinmoyee Bhattacharya
Department of Computer Science, St. Xavier's University, Kolkata

Abstract:

Diabetic foot ulcers (DFU) are a severe complication of diabetes, leading to infections, amputations, and increased healthcare burdens. Early detection and classification of DFUs are essential for timely intervention and improved patient outcomes. Convolutional Neural Networks (CNNs) have shown promise in automated DFU detection, yet several critical research gaps remain unaddressed. Existing models primarily focus on binary classification, limiting their ability to assess ulcer severity and disease progression. This study proposes a novel CNN-based framework for multi-grade DFU classification, enabling a more detailed and clinically relevant diagnosis. Another limitation in current CNN-based approaches is the lack of generalizability across diverse patient populations due to limited dataset diversity.

Furthermore, class imbalance within DFU datasets often leads to biased learning, affecting classification performance. To overcome this, the proposed approach integrates advanced data augmentation, weighted loss functions, and cost-sensitive learning methods to improve the model's ability to accurately classify minority-class samples. The study also emphasizes the need for explainability in CNN-based DFU detection to enhance clinical adoption. By incorporating explainable AI (XAI) techniques, the proposed model ensures transparent decision-making, increasing trust among healthcare professionals. Experimental evaluations demonstrate the effectiveness of the proposed framework, showing improved classification accuracy, ulcer severity assessment, and generalization across multiple datasets. Addressing these research gaps will contribute to more reliable, scalable, and interpretable AI-driven solutions for DFU diagnosis, ultimately improving patient care and clinical decision-making.

Keywords:

Diabetic foot ulcer (DFU), convolutional neural network (CNN), deep learning, multi-grade classification, class imbalance, explainable AI (XAI), medical image analysis.

Augmenting Mathematical Reasoning Capabilities of AI Models: Chain of Thought

Amritava Kole
Gautam Buddha University, Uttar Pradesh

Raju Pal
Gautam Buddha University, Uttar Pradesh

Abstract:

Large Language Models (LLMs) fail in performing multi step mathematical Reasoning, generating incoherent result, which either results in incorrect calculations or skipped any steps in the process. Even with Chain of Thought (CoT) prompting, we achieve maximal accuracy of 78% on the GSM8K benchmark.

Also, this research introduces Structured Answer Prompting (SAP), a mechanism that encourages such a specified answer structure for more transparency, consistency and reliability of model responses in the form of “Final Answer: X”. According to our results, SAP raises accuracy from 92.71%, 93.09%, and 92.77% with GPT-3, and QWEN-1.5 7B, and DeepSeek-R1 respectively.

We also developed Deep Understanding of Problems (DUP) that enhances semantic comprehension and decomposes the semantic problem. In addition, the performance is further boosted by the combination of DUP + SAP, as DeepSeek-R1 reaches 95.62% accuracy on solving a multi-step mathematical problem.

In contrast to traditional fine tuning, SAP only holds to system prompts modifications, and it is a computationally efficient and scalable approach for improving LLM reasoning accuracy in difficult tasks.

Keywords:

Chain of Thought, LLMs, GPT-3, LLM Reasoning.

ISBN: 978-93-92104-23-7

Deep Learning Based Image Forensics for Tampering Detection Techniques

Venkiteela Nihar Sai
Sathybama University, Tamilnadu, India

Basam Tharun Reddy
Sathybama University, Tamilnadu, India

Dr. Veena K, M.E., Ph.d.,
Sathybama University, Tamilnadu, India

Abstract:

The target of this research is to comprehensively analyze and consolidate existing methodologies for passive image tampering detection utilizing deep learning techniques. The primary focus is directed toward advanced deep learning architectures specifically designed for forgery detection. Various benchmark image manipulation datasets such as MICC, CASIA, and UCID have been leveraged to train and validate these tampering detection strategies. The experimental results demonstrate significant improvements in detection performance concerning key evaluation metrics such as True Positive Rate (TPR), False Positive Rate (FPR), and F1-score. While current methodologies exhibit robustness against specific types of image forgeries, challenges remain in achieving high accuracy across diverse attack modalities, including splicing, compression, rotation, resampling, and copy-move forgeries. The study emphasizes the necessity of developing an efficient deep learning-driven feature extraction mechanism capable of learning pixel-wise correlations with higher precision. Additionally, this research presents a thorough comparison of existing approaches, highlighting their advantages, limitations, dataset utilization, and the categories of tampering attacks they address. Furthermore, it identifies open research challenges and proposes future directions for developing robust mechanisms to enhance image forensic evaluations using deep learning methodologies.

Exploring Text Recognition: An Analysis of Various Algorithms

Aparna Tiwari
Computer Engineering Department SGSITS, Indore

Ms. Himani Mishra
Computer Engineering Department SGSITS, Indore

Mrs. Neha Mehra
Computer Engineering Department SGSITS, Indore

Abstract:

With technological advancement, a vast quantity of data is produced and stored in image format. Many images con- tain text that is a significant part of the image. This text, written in different scripts, can be extracted using optical character recognition (OCR), one of the most prominent research areas. OCR involves converting handwritten or typewritten text into machine-encoded text. Researchers are focused on recognizing characters from images written in various scripts like Roman, Devnagari, Latin Alphabet, Chinese Characters, and Arabic Alphabet. While progress has been made in recognizing English text, challenges remain with Indian languages, which have over

120 regional variations. Differences in writing style, quality, fonts, vowel diacritic (Matras), size, and more complicated OCR accuracy. Ongoing research aims to improve OCR systems for Devnagari scripts, but significant success is still elusive. OCR is crucial for converting documents into editable and searchable data. This paper reviews recent OCR algorithms and techniques.

Keywords:

Character Recognition, Document Analysis, Op- tical Character Recognition, classification, Deep Learning.

ISBN: 978-93-92104-23-7

Predicting Crime with Deep Learning Techniques Using Image and Video Data

Sumeet Kothari
University RNT University , Bhopal , India

Dr. Mukesh Kumar
University RNT University , Bhopal , India

Abstract:

The current research paper explores the deep learning approaches to predicting crimes based on image and video. The study seeks to use sophisticated convolutional neural networks (CNNs) in order to examine visual data for the patterns and anomalies that may point towards criminal activity. The new solution combines image recognition, motion analysis and predictive modeling to improve the situational awareness in crime prevention mode. The experimental results showed the effectiveness of detecting suspicious behaviors and predicting crimes to law enforcement agencies; this will undoubtedly be a help for society in that it gives good equipment which helps protect people against crime.

Keywords:

Character Recognition, Document Analysis, Op- tical Character Recognition, classification, Deep Learning.

Leveraging Deep Learning for Liver Disease Prediction: Tabnet Vs Xgboost

Saktheewar K
Artificial Intelligence and Data Science, St. Joseph's Institute of Technology, Chennai, India

Venkateshan
Artificial Intelligence and Data Science, St. Joseph's Institute of Technology, Chennai, India

Abstract:

Liver disease is one of the main causes of disability and death worldwide, and its diagnosis in the earliest phase is a key factor in the effectiveness of the treatment process. Even though traditional machine learning approaches show promising performance for this task, XGBoost among them, there is still room for improving accuracy and interpretability. This work proposes TabNet as a deep learning approach to predict liver diseases using tabular data. The aim is to explore the capability of TabNet to learn complex relationships from the data for more accurate and interpretable predictions than state-of-the-art conventional models such as XGBoost. This system is based on a dataset containing clinical and demographic features. In this regard, TabNet yields higher values in terms of prediction accuracy, model interpretability, and training efficiency compared to XGBoost. Some major advantages of TabNet include its capability to deal with tabular data without much preprocessing and the improvement in the task at hand by capturing critical patterns, hence serving as a promising alternative for predicting liver diseases.

Keywords:

Liver Disease, Prediction, Machine Learning, Deep Learning, Interpretability.

ISBN: 978-93-92104-23-7

A Comparative Review of Question Answering Systems in Tamil Language

Jeevit Davidson S*

Department of Computer Science and Engineering, SRM Institute of Science and Technology, Kattankulathur, Chennai, India

M. Murali

Department of Computing Technologies, SRM Institute of Science and Technology, Kattankulathur, Chennai, India

Abstract:

In today's digital age, we're faced with an overwhelming amount of knowledge. The sheer volume of data available makes it challenging to retrieve the most relevant and accurate information. To address this issue, two fundamental approaches are preferred: Online Searches, and Question Answering Systems (QAS). While online searches yield a large number of results, they often require manual filtering to extract the necessary details. In contrast, intelligent question-answering platforms have emerged as a preferred solution, offering precise answers. Much of the documents on the internet is in English, which has driven the development of advanced language processing tools for this language. Languages like Tamil, with its complex grammatical structure and rich cultural heritage, are still in the nascent stages of developing comparable question-answering capabilities.

This study aims to [i] Study various configurations of question-answering systems for English language, [ii] Compare English language QA systems with their Tamil counterparts, [iii] Recent works carried out in Tamil Question Answering frameworks, and [iv] Analyze the challenges faced in the research of Tamil QA systems.

To provide a comprehensive framework for future research, this study maps the differences between QA systems of high resource languages and Tamil language QA systems.

Keywords:

Tamil Language, Question Answering System (QAS), Word Similarity.

Unraveling Senescence in Cancer: Mechanistic Complexities and Therapeutic Opportunities

Prajakta Tiwari
Delhi Technological University, Delhi

Shreesh Kumar Shukla
Delhi Technological University, Delhi

Abstract:

Senescence is a pivotal cellular process involved in development, immune regulation, tissue repair, and aging, triggered by stressors such as telomere shortening, oncogene activation, and DNA damage. Characterized by distinct morphological and molecular features, senescence is known to act as a tumor suppressive mechanism through irreversible cell cycle arrest. However, emerging studies reveal a paradox: prolonged senescence in cancer cells can drive tumorigenesis via the senescence-associated secretory phenotype, promoting proliferation, invasion, and metastasis. This comprehensive review elucidates the molecular intricacies of senescence to induce growth arrest, enhance immune surveillance, and favorably modulate the tumor microenvironment to inhibit cancer progression. Additionally, it examines the senescence inducing effects of conventional therapies and explores the potential of emerging therapies, including targeted therapies and chimeric antigen receptor T cell therapy. The present review also highlights the promise of senotherapeutic strategies in selectively targeting senescent cells and discusses the innovative integration of machine learning tools, offering a transformative approach to improving cancer treatment efficacy.

Keywords:

Machine learning; Senescence; Senescence associated secretory phenotype; Senescence-targeted cancer therapy; Senotherapy; Senolytics.

ISBN: 978-93-92104-23-7

An Analysis of Energy-Efficient Clustering Protocols in Internet of Things Architecture

Monisha Gupta
Assistant Professor, Presidency University, Bengaluru

Md. Sameeruddin Khan
Presidency University, Bengaluru

S. Pravinth Raja
Presidency University, Bengaluru

Abstract:

In the current scenario the Internet-of-Things has become a potential solution for monitoring and sensing the environment to reduce any disastrous impact. Since many Internet of Things devices depend on battery-operated sensors, energy is a major concern for these devices. As a result, it's critical to minimize energy use, particularly during data transmission. A widely conventional routing system and topography management popularly known as Clustering is mostly used to optimize network longevity. The clustering technique plays significant role in energy conservation for networks with limited resources. With proper network load balancing and Cluster Head (CH) election, network energy consumption can be reduced and lifespan can be extended. Multiple clustering schemes have been suggested by the researchers to combat energy related concerns of the IoT network. So, the main intention of this survey is to gain knowledge about the presently used clustering protocols in the IoT field and discover the different challenges in the existing methods of IoT networks.

Performance Investigation of Deep Learning Architecture for Plant Leaves Disease Detection

Shiv Om Jaiswal
M.Tech Int (Computer Science Engineering) Noida Institute of Engineering & Technology Gr. Noida, India

Dr Prabha S. Nair
Information Technology, Noida Institute of Engineering & Technology Gr. Noida, India

Mr Rahul Kumar Sharma
Computer Science Engineering, Noida Institute of Engineering & Technology Gr. Noida, India

Abstract:

Plant disease detection is critical to agriculture's ability to sustain productivity and minimize financial losses for farmers. Using image analysis, deep learning models such as CNN, VGG-16, VGG-19, and ResNet-50 were tested to identify plant diseases. Among them, ResNet-50 attained the maximum accuracy of 98.98With the use of leaf image analysis, a smart web application was created to assist farmers in early crop disease detection, facilitating prompt treatment and improving diagnosis. In order to improve deep learning tools for agricultural disease management, a review of seventy research papers identifies important obstacles, including sensor technology, disease severity estimation, and dataset availability.

Keywords:

Deep Learning , Feauture Extraction , Convo- lutional Neural Network , CNN Architecture.

Cloud Computing as a Catalyst for Innovation in the Public Sector

Pratik Jain
Independent Contributor, Engagement Manager, Exponentia.ai Pune, MH, India

Abstract:

This article examines the pivotal role of cloud computing as a catalyst for innovation in the public sector. As governments face increasing pressure to enhance service delivery and operational efficiency amid budget constraints and rising citizen expectations, cloud technologies offer scalable, cost-effective solutions. By analyzing various case studies, including initiatives in healthcare, education, and transportation, the paper illustrates how cloud adoption facilitates faster deployment of services and encourages experimentation with emerging technologies such as artificial intelligence and the Internet of Things. However, the transition to cloud-based solutions is not without challenges, including security concerns, data privacy issues, and organizational resistance. This article provides best practices for effective cloud implementation and explores future trends that could shape the landscape of public sector innovation. Ultimately, it argues that strategic cloud adoption is essential for governments seeking to drive transformative change and improve citizen engagement in an increasingly digital world.

Keywords:

Cloud Computing, Public Sector Innovation, Cloud Adoption, Citizen Engagement.

FedLearn: Nipah Virus Prediction

Ms. Sowmiya Ramakrishnan
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology Chennai, India

Ms. Swetha K
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology Chennai, India

Mr. K Ravi Shankar
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology Chennai, India

Abstract:

The Nipah virus (NiV), a zoonotic pathogen with a high fatality rate, poses a significant challenge to public health due to its unpredictable outbreaks and lack of proven treatments or vaccines. This paper introduces FedLearn, a federated learning-based framework specifically designed for predicting Nipah virus outbreaks. Leveraging decentralized datasets from healthcare facilities, laboratories, and public health agencies, FedLearn employs advanced machine learning techniques, including convolutional neural networks (CNNs), recurrent neural networks (RNNs), and attention mechanisms. The framework combines epidemiological, environmental, and social data to deliver accurate, privacy-preserving predictions. Experimental results show that FedLearn outperforms traditional models in scalability, predictive accuracy, and compliance with data privacy regulations and it empowers local healthcare authorities with real-time insights for timely interventions and resource allocation. By addressing the unique challenges of Nipah virus outbreak modeling, FedLearn establishes a robust foundation for global health surveillance and predictive epidemiology.

Keywords:

Federated Learning, Nipah Virus Prediction, Machine Learning, Privacy-Preserving Data Analytics, Epidemiological Modeling, Decentralized Learning, Infectious Disease Prediction, Real-Time Monitoring, Public Health Surveillance, Zoonotic Diseases, Data Privacy, Advanced Predictive Analytics.

ISBN: 978-93-92104-23-7

High-Stability Position Sensor-less Control Method for Brushless DC Motors at Low Speed

Dr. R. Sumathi
Department of Electrical and Electronics Engineering, Sri Krishna College of engineering and technology, Coimbatore, India

SV. Sweatha
Department of Electrical and Electronics Engineering, Sri Krishna College of engineering and technology, Coimbatore, India

M. Shameem Fathima
Department of Electrical and Electronics Engineering, Sri Krishna College of engineering and technology, Coimbatore, India

K. Nitish Kumar
Department of Electrical and Electronics Engineering, Sri Krishna College of engineering and technology, Coimbatore, India

RS. Versha
Department of Electrical and Electronics Engineering, Sri Krishna College of engineering and technology, Coimbatore, India

Abstract:

This venture centers on creating a high-stability, position-sensor-less control system for motors working at moo speeds for Brushless DC (BLDC) motors. Unlike ordinary systems that depend on criticism instruments for exact control, this inventive strategy accomplishes exact speed direction without input, utilizing a Pic microcontroller for streamlined options. A potentiometer is utilized to set the wanted speed as a rate, which the system forms to control the BLDC motor driver. The motor is coupled with a dynamo that changes mechanical vitality into electrical control, which is put away in a battery. This double usefulness improves the system's utility by empowering vitality reception and capacity. The proposed approach offers a cost-effective and proficient arrangement for controlling BLDC motors and creating control in low-speed applications, with potential employment in vitality collecting and small-scale renewable vitality systems.

Keywords:

High-stability, sensor-less control, BLDC motor, low speed, Pic microcontroller, potentiometer, speed regulation, BLDC motor driver, dynamo, energy recovery, battery storage, cost-effective, energy harvesting, renewable energy systems.

Sustainable Circular Supply Chains for Electric Vehicle Batteries: A Structured Approach using Analytical Hierarchy Process

Aishwarya VM
Amrita Vishwa Vidyapeetham, Bangalore

Poorna Sunadar S
Amrita Vishwa Vidyapeetham, Bangalore

T Rojalin Patri
Amrita Vishwa Vidyapeetham, Kochi

Vaibhav Chavan
Amrita Vishwa Vidyapeetham, Bangalore

Vedant Singh*
Assistant Professor at Amrita Vishwa Vidyapeetham, Bangalore

Abstract:

The sustainability of electric vehicle (EV) battery supply chains is a major concern, especially in developing nations like India, where resource scarcity, inefficient recycling, and weak regulatory frameworks hamper progress. In this study, the Analytical Hierarchy Process (AHP) is used to systematically find, rank, and prioritize 10 major challenges, and 32 sub-challenges were derived from literature review on the sustainable circular supply chain of EV batteries. The findings show that the most urgent challenges are environmental protection and resource use (EPRU), efficient recycling and material recovery (ERMR) and resilient adaptive supply chains (RASC). Resource scarcity and inefficient management (EPRU1) and inefficient extraction and production emissions (EPRU2) stand out as major challenges among the sub-challenges. To assure a structured ranking, the research uses pairwise comparisons to incorporate expert's opinions from two academic experts and eleven industry practitioners. The suggested AHP-based approach offers measurable insights for policymakers, manufacturers, and industry stakeholders that allows focused interventions to improve technological advancements, regulatory effectiveness, and circularity in India's EV battery supply chain.

ISBN: 978-93-92104-23-7

22 - 23 March 2025 | Chennai, India

Evaluating Machine Translation Models: A Comparative Analysis of Quality and Performance for Kannada-Hindi and Hindi-Kannada Language Pair

Yathish Poojary
Department of Computer Science and Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal Karnataka INDIA-576104

Dhanusha
Department of Computer Science and Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal Karnataka INDIA-576104

Ashwath Rao B
Department of Computer Science and Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal Karnataka INDIA-576104

Musica Supriya
Department of Computer Science and Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal Karnataka INDIA-576104

Narendra V G
Department of Computer Science and Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal Karnataka INDIA-576104

Dipti Mishra Sharma
Language Technology Research Centre, IIIT, Hyderabad, India

Sobha L
Program Director, Anna University-KBC Research Centre, Chennai, India

Abstract:

Machine translation (MT) has advanced tremendously since the introduction of cutting-edge neural architecture models. However, determining the validity and applicability of these models remains difficult, particularly for low-resource language combinations like Kannada-Hindi and Hindi-Kannada. This study specifically evaluates the efficacy of four machine translation (MT) models—Google Translate, Microsoft Translator, IndicTrans2, and NLLB—with an emphasis on their unique linguistic traits, translation difficulties, and performance in various domains. We examine the lexical similarity using BiLingual Evaluation Understudy (BLEU), semantic alignment using Metric for Evaluation of Translation with Explicit ORdering

(METEOR), Character n-gram F-score (ChrF), and fluency/error rates using Translation Edit Rate (TER) and Cross-lingual Optimized Metric for Evaluation of Translation (COMET). We analyze the strengths and weaknesses using these models. According to the findings, Google Translate routinely receives the highest scores in all metrics and domains. In the Hindi-Kannada General domain, it does very well in BLEU (61.6), METEOR (0.708), and COMET (0.9399). However, with results like ChrF 58.6 and TER 55, Microsoft Translator and IndicTrans2 perform well in certain criteria, such as TER and ChrF, especially in the Kannada-Hindi Governance domain. Our results highlight the range in model performance, which is impacted by variables such as domain-specific variations, and data availability. The study also shows how low-resource MT models can be utilized to fill linguistic gaps, especially with targeted enhancements. The results provide a basis for further investigation, promoting the creation of machine translation systems for Hindi-Kannada and Kannada-Hindi language pairs that are more reliable, accurate, and inclusive.

Keywords:

Machine Translation Evaluation, Translation Accuracy Assessment, MT Quality Metrics.

Behavior-Driven Authentication: Enhancing System Security Through User Behavior Analysis

Jayakumar J
Dept. of Artificial Intelligence and, Data Science St. Joseph's Institute of Technology, OMR, Chennai

Chitra P.
Dept. of Artificial Intelligence and, Data Science St. Joseph's Institute of Technology, OMR, Chennai

Abstract:

In contemporary cybersecurity, ensuring secure system access is a critical task. Passwords and biometrics are examples of traditional authentication methods that frequently fail to stop sophisticated assaults. This study offers a fresh method of authentication that makes advantage of user patterns to create safe login processes. The suggested approach analyses and groups user behavior data using a Gaussian Mixture Model (GMM) to find unusual patterns suggestive of illegal access attempts. The system provides a non-intrusive and flexible authentication framework by learning behavioral factors including typing dynamics, login timings, and session characteristics. Results from experiments show that the GMM can reliably identify abnormalities and simulate intricate behavioral patterns while striking a balance between security and usability. This study demonstrates how behavior-driven authentication can improve cybersecurity in dynamic settings, opening the door for more robust and user-focused access control systems.

Keywords:

User Behavior Analysis, Feature Selection, Authentication System, Gaussian Mixture Model (GMM), Anomaly Detection, Dimensionality Reduction, Machine Learning for Security, Cybersecurity, Behavior-Based Authentication, Intrusion Detection, Behavioral Biometrics.

Study of Electrical Discharge Activities in High-Voltage Air-Insulated Switchgear

Sahib Ibrahimkhalilov
Azerbaijan State Oil and Industry University, Azerbaijan

Abstract:

High-voltage Air-Insulated Switchgear (AIS) plays a crucial role in electrical systems, ensuring stability and protection. This study focuses on different types of partial discharges (PD), including corona, internal, and surface discharges, which can compromise AIS reliability. Identifying and localizing these discharges is essential for preventing insulation failures and improving system performance.

The research examines PD detection through key signal parameters such as peak pulse time, frequency, and intensity. Simulating various PD types within AIS components—busbars, bushings, circuit breakers, and transformers—allows for a deeper understanding of discharge behavior. Advanced signal processing techniques are applied to analyze high-voltage signals across industrial voltage ranges, helping to trace the origin of PD activity. By forming a recognition framework, this study enhances condition assessment and maintenance strategies, reducing failure risks and improving AIS reliability. The findings offer valuable insights for electrical engineers and researchers, contributing to optimized monitoring, predictive maintenance, and better switchgear design. This research supports industry professionals in improving the safety and efficiency of electrical power systems by providing a structured approach to PD analysis and mitigation.

ISBN: 978-93-92104-23-7

Physics-Informed and Explainable Machine Learning for Airfoil Noise Prediction

Gaayatri Pradeep
Division of Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore, Tamil Nadu

P. Joyce Beryl Princess
Division of Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore, Tamil Nadu

Abstract:

Using the NASA Airfoil Self-Noise Dataset, this study explores the application of hybrid machine learning approaches to forecast scaled sound pressure levels produced by airfoils. The main goal is to create a predictive model that combines insights from physics and data-driven learning. Numerous aerodynamic parameters, such as frequency, angle of attack, chord length, free-stream velocity, and suction side displacement thickness, are included in the dataset. To incorpo- rate physical principles, these parameters are further enhanced with derived features like Reynolds number, Mach number, and dynamic pressure. The Explainable Boosting Regressor and several regression models, such as LightGBM, XGBoost, Random Forest, and Support Vector Regression, are used. In order to improve the results' interpretability, explainable AI methods like SHAP are employed to evaluate the significance of important parameters. The findings indicate that incorporating physics-informed features improves predictive accuracy while providing better interpretability of model behavior. This research contributes to aeroacoustics by introducing a machine learning framework that integrates physical knowledge to support airfoil design optimization and aerodynamic noise reduction.

Keywords:

Hybrid machine learning, Predictive modeling, Physics-informed features, Airfoil self-noise, Regression models, Explainable AI, SHAP, Aeroacoustics, Sound pressure prediction, Aerodynamic noise reduction.

Real-Time Luggage Detection and Arrival Prediction on Conveyor Belts Using YOLO and Feature Matching

Aarsha Ajith
Division of Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore, Tamil Nadu, India

Joyce Beryl Princess
Division of Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore, Tamil Nadu, India

Abstract:

The passenger experience and operational effec- tiveness are directly impacted by effective baggage handling, which is a crucial aspect of airport logistics. In this research, a vision-based method utilizing deep learning and feature matching approaches for automated baggage detection and arrival time estimation on conveyor belts is presented. While ORB feature matching is used to guarantee precise tracking of individual baggage items, a YOLO-based object identification model is used to identify luggage in video frames. By comparing detection timestamps with established conveyor belt speed parameters, the system calculates how long it will take for a piece of luggage to arrive at the passenger pickup location. By using rigorous feature matching, the methodology reduces false detections and maximizes computational efficiency for real-time deployment. According to experimental data, the system can predict luggage arrivals with high accuracy and speed, which improves passen- ger convenience and airport operations. The suggested method provides a flexible and scalable way to track luggage intelligently in airport settings.

ISBN: 978-93-92104-23-7

ICASET
22 - 23 March 2025 | Chennai, India

Automated Mango Plant Health and Disease Analysis Via Uav and Optimized Yolov5 Algorithm using Sgd and Multispectral Imaging

Mr.R.P.Karthik
Assistant Professor, Department of ECE Kongu Engineering College Erode, India

Mr.P.Sujith
Professor, Department of ECE Kongu Engineering College Erode, India

Dr.G.Murugesan
UG Scholar, Department of ECE Kongu Engineering College Erode, India

Mr.S.Sabarivelan
UG Scholar, Department of ECE Kongu Engineering College Erode, India

Ms.V.Shreya
UG Scholar, Department of ECE Kongu Engineering College Erode, India

Mr.K.Siddharth Ragavan
UG Scholar, Department of ECE Kongu Engineering College Erode, India

Abstract:

Mangoes, valued for their sweetness and colors, have been an integral part of tropical agriculture but are highly susceptible to diseases that can easily threaten production. This project seeks to use Unmanned Aerial Vehicles equipped with multispectral cameras to pursue an advanced crop health monitoring system with the most cutting edge. Contrary to traditional RGB imaging, it fails to identify early-stage diseases hidden under the leaf canopy; however, multispectral imaging gathers data at several wavelengths, revealing more about plant health. This paper collected real-time datasets in mango orchards using UAVs and subjected these datasets to extreme preprocessing to get meaningful features. The multispectral images were split into spectral bands and were calculated to come up with the bands particularly efficient for detecting disease: the Orange, Cyan, and Near-Infrared OCN bands. These enriched datasets were used for training the deep learning model known as YOLOv5. It's a high-performance object detection framework. It detects four classes of mango diseases, namely Anthracnose, Bacterial Canker, Die back, and Sooty Molds. The optimized YOLOv5 model had an accuracy of 86.7% for the early detection of diseases in mango leaves by using multispectral data. SGD is the technique used for optimization. This research shows the prospect of UAV-based multispectral imaging combined with deep learning models in the early detection of diseases in mangoes with high precision to reduce crop loss and increase mango production efficiency in areas where mango is a vital crop.

Keywords:

Mango, Anthracnose, Bacterial canker, Die back, Sooty molds,UAV, Multispectral images, Spectral bands, SGD, YOLOv5.

Tomato Plant Disease Detection using Yolo V9 Model

P RAHUL DAS
Geethanjali College of Engineering and Technology, CSE – IoT, Hyderabad, Telangana, India

Mudavathraju
Sreenidhi Institute of Science and Engineering, CSE - CS, Hyderabad, Telangana, India

Shakira
Geethanjali College of Engineering and Technology, CSE – CS, Hyderabad, Telangana, India

B Venkateswarlu
Geethanjali College of Engineering and Technology, CSE – DS, Hyderabad, Telangana, India

Abstract:

It is anticipated because the tomato sector would greatly benefit from deep learning techniques for this specific aim of identifying and separating sick crops. In order to demonstrate the usage of a specially trained YOLOv9 (You Only Look Once) model for this purpose, this project is provided here. This model is designed for real-time field use to lessen reliance on a very thorough inspection by hand for four particular tomato diseases: blossom-end rot, splitting, cracking, and sunscald. Tomatoes right out of the field. This early detection capability promotes improved crop management by halting the spread of diseases. The tomato sector may improve economic and operational efficiency by using this technology, which will increase the efficiency and sustainability in large-scale tomato farming. This experiment demonstrates how AI may resolve important issues in agriculture, which holds promise for better crop management and disease prevention. In contrast to the 75% accuracy of traditional techniques, the accuracy varies from 80% to 90%.

Keywords:

Plan Disease Detection, YOLO V9(You Only Look Once)Model, Image Annotation, Deep Learning, Convolutional Neural Networks(CNNs), Real-Time Field Analys, Data Augmentation.

ISBN: 978-93-92104-23-7

Using CT/MRI Data, Powerful Deep Learning Models are Developed for the Classification of Multiple Cancer Kinds

Nanduri Pranathi
Geethanjali College of Engineering and Tech, CSE-DS, Telangana, Hyderabad, India

Bondila Venkata Rajasri
Institute of Aeronautical Engineering, CSIT, Telangana, Hyderabad, India

Vardhiparthi Meher Kaushik
Geethanjali College of Engineering & Tech, CSE-IOT, Telangana, Hyderabad, India

B. Venkateswarlu
Geethanjali College of Engineering & Tech, CSE-DS, Telangana, Hyderabad, India

Abstract:

One in six fatalities worldwide are due to cancer, making it the second most common cause of mortality. Nonetheless, early illness detection significantly improves survival chances. If cancer diagnosis is automated by Artificial Intelligence (AI), we could be able to evaluate more patients in less time. One in six fatalities worldwide are due to cancer, making it the second most common cause of mortality. This paper suggests applying artificial intelligence (AI) to deep learning models. This work assesses Convolutional Neural Networks (CNNs), a kind of deep learning model, against the cancer feature categorization of images. A variety of cancer cell types are detected by the pre-trained CNN versions MobileNet, VGGNet, and DenseNet, which use the information they learned from the ImageNet dataset.To ascertain the proper hyper parameter values, Bayesian optimization is employed. Transfer learning, however, might cause models trained on original datasets to lose their classification capabilities. Learning without Forgetting (LwF) is what we use because it preserves the network's intrinsic functionality while training the network solely with new task data. According to the experiment's findings, the suggested transfer learning-based models outperform the state-of-the-art methods at the moment.

Keywords:

Convolutional neural networks (CNNs), forgetting to learn, Bayesian optimization, cancer, DenseNet, mobile net, VGG16, and VGG19.

Irrigation Scheduling and Estimation of Crop Water Requirement Using Cropwat 8.0

Mr. Inayatali L. Shah
Ph.D. Water Resources Engineering and Management Institute (WREMI), Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda, Samiala-391410, Vadodara, Gujarat, India

Dr. T. M.V. Suryanarayana
Water Resources Engineering and Management Institute (WREMI), Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda, Samiala-391410, Vadodara, Gujarat, India

Abstract:

Over the last century, the global population has tripled, and water consumption has increased threefold. Water use in India is no exception to this general trend. The main cause of the increase is growing population and rising food demand. In an agrarian economy like India, the importance of water for agricultural productivity hardly needs any emphasis. With increasing scarcity and growing competition for water, judicious use of water in agricultural sector will be necessary. This means that exact or correct amount and correct timing of application should be adopted. The estimation of "Crop Water Requirement" is essential for irrigation planning and management. The accurate determination of an irrigation schedule is a time-consuming and complicated process. The objective of this study is to estimate the crop water requirement and irrigation scheduling using "CROPWAT" for wheat and cabbage crops. The CROPWAT is based on penman-monteith method. The study area is selected near Water Resources Engineering and Management Institute in Samiala in Vadodara district in Gujarat, India. Various soil datas are determined by field experimentation. Climatological data of 10 years are used for this study. Irrigation scheduling is carried out for various scenarios. (i.e. Irrigation at critical depletion, Irrigation at fixed depletion etc.

ISBN: 978-93-92104-23-7

Effect of Mixing Intensity, Mode, and Direction on Biomethane Production in Batch Thermophilic Anaerobic Digestion of Tomato Waste

Irfan Ullah
Ph.D. researcher Department of Civil and Environmental Engineering, College of Engineering, Qatar University, PO Box 2713, Doha, Qatar

Mohamed Arselene Ayari
Department of Civil and Environmental Engineering, College of Engineering, Qatar University, PO Box 2713, Doha, Qatar

Saoussen Benzarti
College of Education and Arts, Lusail University, Lusail City, Doha, Qatar

Alaa H. Hawari
Department of Civil and Environmental Engineering, College of Engineering, Qatar University, PO Box 2713, Doha, Qatar

Abstract:

Anaerobic digestion (AD) is a promising method for the sustainable management of organic waste, particularly tomato waste, which is abundant in agricultural and food processing industries. This study investigates the effects of mixing intensity, mixing direction, and mixing pattern on methane production in batch AD reactors. Five reactors were analyzed under varying mixing conditions, including high-intensity, moderate, and no mixing. The results indicate that high-intensity mixing initially enhances hydrolysis and acidogenesis, leading to higher early-stage methane production. However, excessive turbulence resulted in volatile fatty acid (VFA) accumulation (~8000 mg/L as $CaCO_3$), causing a pH drop (~4) and subsequent inhibition of methanogenesis. In contrast, reactors with moderate and no mixing exhibited superior long-term methane production, with the No-Mixing achieving the highest cumulative yield (~350 mL), outperforming other reactors by up to 1.5 times. Mixing direction (clockwise vs. counterclockwise) had a negligible effect, while continuous mixing provided more stable methane yields compared to alternating mixing patterns. These findings emphasize the importance of phase-specific mixing strategies to optimize AD efficiency.

AI for Indian Agriculture: Deep Learning for Crop Disease Detection

Ayushi Pasrija
Indira Gandhi Delhi Technical University for Women

Riya Sharma
Indira Gandhi Delhi Technical University for Women

Saloni Gupta
Indira Gandhi Delhi Technical University for Women

Dr. Poonam Bansal
Indira Gandhi Delhi Technical University for Women

Abstract:

India is a country largely dependent on its agricultural sector. Crops in the country's diverse climatic conditions are highly susceptible to diseases. Even in the current age, monitoring the health of these crops is largely done manually and can be significantly benefitted through AI-based automation. The authors in this paper present a complete study on self-curated image-based data consisting of leaf images of the most prominent crops grown in the Indian subcontinent. This data is gathered from multiple distinct sources and image preprocessing methods including denoising, CLAHE and more are applied for image enhancement. Furthermore, the study utilizes a custom deep-learning convolutional neural network (CNN) for disease detection in these crops with an accuracy of 91.27% making use of learning rate optimization and early stopping methods to ensure an optimized performance while avoiding overfitting.

Keywords:

Plant disease detection, Data generation, Image preprocessing, Deep learning, classification.

ISBN: 978-93-92104-23-7

Blockchain - Enabled Government Fund Management System

Y Revanth
Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

T Venkata Naveen
Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

Dr D Geethanjali
Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

A state government must oversee a vast array of duties, including countless funding and operation and maintenance transactions at different sites throughout the state. These operations may include road constructions, building constructions under government schemes, pensions etc. It is known that managing these operations includes managing transactions through various parties resulting in embezzlement of funds in the process. While this is a major issue, it is not possible to always track the fund status and usage for the tasks. So, in this paper, a smart system for tracking the funds is proposed in order to keep the monitor the funds at each stage of the transaction while maintain transparency. This system uses blockchain technology to secure the transactions at each and every stage using proofs, so that the transaction data cannot be altered which helps in maintain clear records. This method secures transactional data with encryption, which in turn employs hashes. As a result, the data cannot be tampered with maintaining integrity which helps in prevention of fund embezzlement. This process of verification by every node helps in reaching the fund to the beneficiary.

Keywords:

Blockchain, Transactions, Security, Tracking, Transparency, Encryption.

Intelligent Fault Diagnosis System for IoT Devices Using Machine Learning

Sivacahran VS
Department of ECE Chennai Institute of Technology

Karthick Raja V
Department of ECE Chennai Institute of Technology

Ms. M. Harshanya M.E.,
Department of ECE Chennai Institute of Technology

Abstract:

With fault patterns being multifaceted, dynamic conditions alternating with real- time constraints pose challenges in reliable fault detection within the scope of the Industrial Internet of Things (IIoT). Because traditional methods such as threshold-based detection, statistical models, and signal processing generally lack adaptability with the fault detection methods and do not sufficiently process multi-dimensional sensor data, some new conceptual approaches to fault detection are warranted. In this paper, an Intelligent Fault Detection System (IFDS) is developed for accurate real-time applications in IIoT environments, combining Autoencoder (AE), Support Vector Machine (SVM), and Decision Tree (DT) techniques. Anomalies are detected and classified by the AE, while the SVM gives good accuracy with reasonable speed and the DT provides a level of interpretability to the process without sacrificing detection accuracy or computational efficiency. According to the experimental results, the detection accuracy was 95% with a low false-positive rate and an inference time of 8.2 ms, so the proposed system can be deployed in real time. Possible future enhancements include federated learning to safeguard data privacy and blockchain to ensure the integrity of fault data, thus enhancing IIoT systems' reliability and security.

Keywords:

Fault Diagnosis, Industrial IoT, Autoencoder, Support Vector Machine, Decision Tree, Real-time Systems, Machine Learning.

 ISBN: 978-93-92104-23-7

Classifying and Detecting Abnormal Cow Behavior Using Accelerometry and Hear Rate Data with Real-Time Alerts

Prasana S
Sri Manakula Vinayagar Engineering College

Maheshwaran T
Sri Manakula Vinayagar Engineering College

Elangovan D
Sri Manakula Vinayagar Engineering College

Sanjai E
Sri Manakula Vinayagar Engineering College

Abstract:

This paper introduces a novel abnormal cow behavior classification and detection system based on accelerometer, heart rate, and temperature sensor data. The system utilizes IoT-based wearable sensors for real-time monitoring of cattle for proactive health management. Unlike traditional manual observation methods, which are time-consuming and prone to errors, the system automatically collects and analyzes data using an optimized recurrent neural network (RNN) for sequential data processing. Utilizing accelerometer data, heart rate measurements, and temperature data, the system significantly enhances classification accuracy and reliability. The model classifies cow activities such as feeding, lying, standing, resting, and walking and also predicts whether the behavior is normal or abnormal using physiological parameters. Processed data is displayed in a web-based table, and abnormal states provide automatic alerts to the owner. Experimental tests verify the robustness of the system using heterogeneous datasets, its ability for precision livestock management, and improved dairy farm productivity.

Machine Learning Based Material Characterization of Natural Fiber Epoxy Composite

Ayman Hawaldar
Department Of Mechanical Engineering, PES University, Bangalore, India

Atharv Dilip
Department Of Mechanical Engineering, PES University, Bangalore, India

Rajesh Mathivanan N
Department Of Mechanical Engineering, PES University, Bangalore, India

Abstract:

An XGBoost model-based prediction approach is proposed to predict the mechanical properties of natural fiber-reinforced epoxy composites. The proposed machine learning model is validated by predicting the tensile and flexural strength values of the composites. A dataset composed of composite samples is prepared with key variables such as fiber length (mm), fiber loading (%), and chemical composition (hemicellulose, cellulose, and lignin content) along with tensile and flexural strength values as output variables. The model used 80% of the data set for training purposes and 20% of the dataset for testing. The evaluated values revealed that the R^2 score for tensile strength is 0.95, the MSE score is 6.81 and the RMSE score is 2.61, whereas for flexural strength, the R^2 score is 0.93, the MSE score is 3.20, and RMSE score is 1.79, outperforming other similar predictive models like random forest in terms of accuracy.

Keywords:

XGBoost, mechanical properties, composites, machine learning, tensile strength, flexural strength, fibre length, fibre loading, chemical composition, Random Forest.

ISBN: 978-93-92104-23-7

VocalCare: A Sophisticated Voice-Guided Healthcare Partner for Symptom Assessment and Medical Guidance

Dr. Puspita Dash
Department of Information Technology, Sri Manakula Vinayagar Engineering College, Puducherry, India

Madhanraj G
Department of Information Technology, Sri Manakula Vinayagar Engineering College, Puducherry, India

Premkumar B
Department of Information Technology, Sri Manakula Vinayagar Engineering College, Puducherry, India

Agathian. B
Department of Information Technology, Sri Manakula Vinayagar Engineering College, Puducherry, India

Abstract:

Virtual Voice Health Assistant is a computational system powered by artificial intelligence that enables users to describe their symptoms by using voice inputs, thereby giving an interactive and personalized health experience. The assistant is involved in questioning users through follow-up questions regarding the case in an attempt to enhance symptom description accuracy and disease prediction. To accomplish this, the system employs a Retrieval-Augmented Generation (RAG) model that fetches medical information from external databases initially. This information is compared with the user's symptoms to give a preliminary diagnosis. Where adequate information cannot be fetched through the RAG model, the system employs the Gemini Large Language Model (LLM) to give a more educated guess of the probable disease. Once the potential medical condition is determined, the assistant uses the Google API to find medical professionals and health centers on the patient. This information is then conveyed through a text-to-speech interface, thereby making it accessible and usable. The use of sophisticated artificial intelligence techniques also improves this platform, providing an effective and convenient way of early disease diagnosis and medical treatment.

Keywords:

Artificial Intelligence, Virtual Health Assistant, Disease Prediction, Voice-Based Interaction, Retrieval-Augmented Generation (RAG), Large Language Models (LLMs), Google API.

An Innovative Steganography Approach for Data Hiding in Digital Images

P Vignesh
Department Computer Science and Engineering Satyabhama Institute of Science and Technology, Chennai, India

Vishnu V
Department Computer Science and Engineering Satyabhama Institute of Science and Technology, Chennai, India

Dr. N. Nanthini
Department Computer Science and Engineering Satyabhama Institute of Science and Technology, Chennai, India

Abstract:

The integration of digital forensics and steganography stands at the forefront of innovation, providing robust solutions for covert data investigation and enhanced security. The integration of digital forensics and steganography represents a cutting-edge approach to covert data investigation and security. This research explores innovative methodologies to enhance the detection, analysis, and prevention of steganographic techniques used to hide data within digital media. This study will investigate various steganographic methods, such as image, audio, and video steganography, and develop forensic techniques to identify and extract concealed data. This work majorly focuses on improving the accuracy and efficiency of steganography detection, assessing the impact of different steganographic algorithms on digital evidence, and enhancing the overall security of digital forensic processes. By leveraging artificial intelligence and deep learning algorithms, the system aims to quickly adapt to new steganographic techniques and evolving threats, providing a dynamic and scalable solution for digital forensic investigations. The outcomes of this research will contribute to the field of cybersecurity by providing law enforcement and security professionals with advanced tools to detect and counteract covert data hiding, ensuring the integrity and security of digital information.

Keywords:

Digital-Forensics, Steganography, Cybersecurity, Covert Data Investigation, Deep Learning.

ISBN: 978-93-92104-23-7

Integration of Traditional Balinese Architecture in Sustainable Bamboo Design: Achieving Harmony between Culture and Environment

I Wayan Wirya Sastrawan
Warmadewa University, Udayana University, Bali, Indonesia

I Made Adhika
Warmadewa University, Udayana University, Bali, Indonesia

Ngakan Ketut Acwin Dwijendra
Warmadewa University, Udayana University, Bali, Indonesia

Ni Made Yudantini
Warmadewa University, Udayana University, Bali, Indonesia

Abstract:

In the context of Bali's sustainable development, bamboo emerges as an innovative construction material that fulfills functional needs while reflecting local cultural values. This research develops a bamboo design model that integrates traditional Balinese architectural elements with sustainable building principles. Utilizing bamboo's structural advantages—strength, flexibility, and rapid growth—the study aims to create harmonious, aesthetic spaces that support environmental sustainability. Findings reveal that the proposed design model can improve energy efficiency by up to 30% compared to conventional buildings and significantly reduce carbon footprints. Incorporating traditional Balinese elements, such as sloped roofs and natural ventilation, enhances user experience and thermal comfort. Case studies of bamboo architecture projects like Green Village and Green School demonstrate that integrating cultural elements strengthens local identity and fosters community engagement. The study also addresses challenges in bamboo application, including weather resistance, pest treatment, and raising community awareness about eco-friendly materials. This research contributes to sustainable architecture in Bali by offering a model that bridges tradition and innovation, serving as a reference for architects and designers to create functional buildings rooted in local wisdom and sustainability.

Smart and Sustainable Infrastructure Planning: A Balinese Approach to Harmonizing Development and Environmental Resilience

Tjokorda Istri Praganingrum
Mahasaraswati Denpasar University, Udayana University, Bali, Indonesia

I Dewa Gede Agung Diasana Putra
Mahasaraswati Denpasar University, Udayana University, Bali, Indonesia

Ngakan Ketut Acwin Dwijendra
Mahasaraswati Denpasar University, Udayana University, Bali, Indonesia

Anak Agung Gde Djaja Baruna
Mahasaraswati Denpasar University, Udayana University, Bali, Indonesia

Abstract:

The rapid growth of tourism infrastructure poses significant risks to environmental sustainability and cultural preservation, particularly in ecologically fragile regions such as Bali's riverbank cliffs. This study introduces a smart and sustainable infrastructure planning model that integrates indigenous governance structures, spatial planning policies, and modern environmental engineering techniques. The research highlights how digital tools such as GIS and BIM can optimize spatial planning while aligning with awig-awig and pararem, the traditional land governance systems. Furthermore, the study investigates the resilience of green infrastructure against climate change and disaster risks, offering a scalable model for sustainable industrialization across various sectors. The paper concludes with recommendations for local governments and industry stakeholders to implement technology-driven yet culturally sensitive infrastructure planning.

ISBN: 978-93-92104-23-7

A Hybrid Multi-Factor Authentication System for Enhanced Digital Security

Vishnu US
School of computing, Amrita Vishwa Vidyapeetham, Mysuru campus, Karnataka, India

Ananya CV
School of computing, Amrita Vishwa Vidyapeetham, Mysuru campus, Karnataka, India

Rachaita Dutta
School of computing, Amrita Vishwa Vidyapeetham, Mysuru campus, Karnataka, India

Adwitiya Mukhopadhyay
School of computing, Amrita Vishwa Vidyapeetham, Mysuru campus, Karnataka, India

Abstract:

In the evolving generation, it is increasingly important to protect sensitive information in health care system. In this paper, the report on a multifactor authentication (MFA) framework aims to protect sensitive patient data known as Protected Health Information (PHI) inside hospital facilities. The proposed model integrates three authentication layers, iris recognition, knowledge-based authentication, and consensus-based authentication. These layers will enhance security while usability and privacy are maintained. The first layer is iris recognition, a biometric identity verification system to ensure secure authentication with minimal effort on the user's side. This layer consists of an integrated model which is KNN, Random Forest, and SVM. The accuracy achieved for iris is 91.77%. The second layer is Knowledge-Based Authentication, where it adds an extra layer of verification beyond biometrics. Here the rule-based classifier model is used where it poses a security question to the user. The last layer is Consensus - based authentication, incorporates a collaborative verification method. The decision tree algorithm is used here to verify the process where confidential data access is permitted by authorized members only. The overall accuracy achieved is 97%. This project aligns with SDG 8 and 9 by using emerging technologies to enhance cybersecurity in healthcare data security.

Keywords:

Multi-factor Authentication, Iris recognition, knowledge-based Authentication, Consensus-based Authentication, Data Security, Cybersecurity.

Can Based Ecu for E-Mobility Body Control

Sivaranjani S
Professor, Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology

Vishrutha R K
Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology

Pravin D
Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology

Vishva A
Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology

Sunil K
Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology

Abstract:

Electric vehicles need advanced electronic systems to increase performance and reliability. Our project creates a CAN-based Electronic Control Unit (ECU) for body control, connecting components seamlessly. By using CAN technology, we reduce wiring complexity, boosting efficiency and data accuracy. We integrate top-grade sensors to track key vehicle parameters in real-time, giving users valuable insights through an intuitive dashboard. These sensors perfect body control functions, ensuring top safety, comfort, and convenience. Our system smartly monitors and controls vital vehicle operations, making it a cost-effective solution for modern electric vehicle designs. Built-in diagnostic features enable proactive maintenance and fault detection, increasing the vehicle's overall reliability and lifespan. This groundbreaking approach drives the development of smarter, more efficient electric mobility solutions, meeting the automotive industry's evolving demands.

Keywords:

CAN-based ECU, electric vehicles, body control, vehicle communication, real-time performance, system reliability, scalability, automotive applications, wiring complexity reduction, operational efficiency, communication speed, data accuracy, intelligent monitoring, vehicle functions, cost-effective solution.

ISBN: 978-93-92104-23-7

Independent Image-Based Reversible Data Embedding with Distinct Cover and Secret Retrieval

D. Sasi Preetha
Assistant Professor, Department of Biomedical Engineering, Velalar College of Engineering and Technology, Erode

S. Vivekanandhan
PG Scholar, Department of Biomedical Engineering, Velalar College of Engineering and Technology, Erode

Abstract:

Reversible Data Hiding in Encrypted Images (RDH-EI) has emerged as a promising technique for securely embedding additional data into encrypted images without compromising privacy. Secret Sharing (SS)--b RDH-EI schemes, which leverage SS as an encryption mechanism, have been explored as a foundation for Reversible Data Hiding in Shared Images (RDHSI). While these schemes offer complete reversibility, they often need help with limitations regarding embedding capacity and visual quality. To address these challenges, Partial Reversible Data Hiding (PRDH) techniques have been proposed.

However, a significant limitation of most RDH-EI schemes is the lack of complete separability between cover image reconstruction and data extraction. This paper introduces a novel approach, Reversible Data Hiding in Shared Images with Separate Cover Image Reconstruction and Secret Extraction (RDHSI-SRE), which aims to overcome this limitation.

The proposed RDHSI-SRE scheme is presented in two variants: partial and complete. In the partial RDHSI-SRE scheme, pixel values are modified using a Minimizing-Square Errors Strategy to optimize visual quality. The complete RDHSI-SRE scheme, on the other hand, embeds data by modifying random coefficients to ensure full reversibility. To further enhance performance, a Convolutional Neural Network (CNN)-based partial RDHSI-SRE scheme is proposed, which leverages the power of deep learning to achieve high visual quality and embedding capacity.

Keywords:

Reversible Data Hiding, Secret Sharing, Image Privacy, Deep Learning.

Circular Economy and Zero Waste Technologies in Hospitality Infrastructure: Balinese Approach to Sustainable Development

I Wayan Yogik Adnyana Putra
Bali Design and Business Institute, Udayana University, Bali, Indonesia

I Made Adhika
Bali Design and Business Institute, Udayana University, Bali, Indonesia

Ngakan Ketut Acwin Dwijendra
Bali Design and Business Institute, Udayana University, Bali, Indonesia

I Dewa Gede Agung Diasana Putra
Bali Design and Business Institute, Udayana University, Bali, Indonesia

Abstract:

The hospitality industry in Bali is growing rapidly, but it has significant environmental impacts, including construction waste, high energy consumption, and the exploitation of natural resources. In this challenge, circular economy approaches, and zero-waste technology is strategic solutions to create a sustainable hospitality infrastructure. This research explores applying the circular economy concept in the construction of hotels and resorts in Bali through the reuse of local and recycled materials, efficient modular design, and environmentally friendly technological innovation. Using case study methods and quantitative analysis, this study reveals that integrating recycled materials and waste management technologies can reduce carbon emissions by up to 40% while improving energy efficiency by up to 30%. The study also highlights the role of environmentally sound architecture that adopts the Tri Hita Karana principle, which emphasizes harmony between humans, nature, and spirituality in building design. In addition, the involvement of local communities in construction waste management is a key factor in creating an integrated sustainability system. The results of this study provide insight for stakeholders to develop a hospitality development model that is not only environmentally friendly but also maintains Balinese cultural identity.

Keywords:

Circular economy, zero waste, green technology, sustainable construction, Balinese hospitality.

ISBN: 978-93-92104-23-7

Semantics of Data Mining Services in Cloud Computing

Dr. J. Sasi Bhanu
Professor, Department of CSE AI&ML, CMR College of Engineering and Technology, Hyderabad, Telangana, India

Gutlapalli Gnanadeep
Department of CSE AI&ML, CMR College of Engineering and Technology, Hyderabad, Telangana, India

Jakkula Shravani
Department of CSE AI&ML, CMR College of Engineering and Technology, Hyderabad, Telangana, India

Pusapati Nethaji
Department of CSE AI&ML, CMR College of Engineering and Technology, Hyderabad, Telangana, India

Dr. D. B. K. Kamesh
Professor, Department of Computer Science and Engineering, MLR Institute of Technology, Hyderabad, Telangana, India

Abstract:

DM and ML services are now essential for enterprises and researchers which operate on the competitive advantage provided by cloud computing collaboration. The consequence of this is that a major problem has emerged: all the services are not intercompatible, untransferable or intercomparable across the different platforms. This is so because each of the cloud providers has its own definition and architecture of the services that it offers. In this paper, we identified an important gap and the goal of our project is to develop a standardized framework for the description and definition of DM services in a consistent way. The aim of this framework is to make the services, portable and deployable on all the current cloud platforms with no compatibility issues. Our solution encompasses both the management and technical aspects of DM services in total. Besides the critical elements like the price, authentication and service level agreements (SLA), we also embed critical technical elements such as workflows, algorithms, parameters, and models which are essential for DM services to function. We also look at the current DM services and explain how to apply a Random Forest algorithm to demonstrate how our solution works. In this project, we seek to simplify DM services by developing a structured and compatible system.

Keywords:

Data Mining (DM), Machine Learning (ML), Cloud Computing, Service Level Agreement (SLA), Random Forest Algorithm, Service Standardization, Service Portability, Authentication.

E-Commerce Platform with Personalized Recommendations and Dynamic Pricing

Rajasekhar Marri
Department of CSE, Sathyabama Institute of Science and Technology Chennai, India

Veera Hemanth Muthyala
Department of CSE, Sathyabama Institute of Science and Technology Chennai, India

G.Sabeena Gnana selvi
Assistant professor, Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

The fast growth of e-commerce shifted customer conduct thus online shopping platforms must provide customized features and flexible pricing mechanisms. An E-Commerce system uses state-of-the-art machine learning methods for on-the-spot product suggestions and adaptive price adjustment. The platform enhances satisfaction rates and keeps users actively engaged through recommendations that stem from behavior analysis and market statistics and purchase data. The dynamic pricing system regulates prices by real-time monitoring of market conditions which include customer demands in addition to competitor trajectories and available stocks to maximize earnings. The system delivered a conversion rate elevation of 23% and produced revenue growth of 15% together with increased customer satisfaction reaching 4.6 out of 5. This paper presents an examination of the system design and its influence on user experience and business outcomes then describes service execution obstacles stemming from sparse data collection andprd. The paper explores future enhancement possibilities by discussing the incorporation of reinforcement learning with social trend analysis that would improve platform effectiveness.

Keywords:

E-commerce, Personalized Recommendations, Dynamic Pricing, Machine Learning, User Behavior, Conversion Rates, Revenue Optimization, User Satisfaction, Real-time Analytics, Market Trends.

 ISBN: 978-93-92104-23-7

Blockchain Based Self-sovereign Identity Management System for Managing Academic Credentials

Aswathy L
Department of Information Technology, LBS Institute of Technology for women, Thiruvananthapuram, India

Nandana B S
Department of Information Technology, LBS Institute of Technology for women, Thiruvananthapuram, India

Mariam Susan Lal
Department of Information Technology, LBS Institute of Technology for women, Thiruvananthapuram, India

Rithu S Raj
Department of Information Technology, LBS Institute of Technology for women, Thiruvananthapuram, India

Rehna R S
Department of Computer Science & Engineering, LBS Institute of Technology for women, Thiruvananthapuram, India

Abstract:

Digital identity management and verification of educational credentials have grown increasingly difficult in today's times. Conventional practices tend to include centralized systems that are vulnerable to breaches and inefficiencies. Realizing the existing difficulties in identity management, we suggest a decentralized SSI-enabled model to overcome these difficulties. The model facilitates SSI-enabled operations such as user sign-up, issuing decentralized identifiers (DIDs) with public/private keys created upon sign-up, issuing and creation of verifiable credentials (VCs) in the form of digital certificates of student information, academic records, and issuer signatures and credential validation facilitated by decentralized blockchain-based ledger. Educational institutions issue and create verifiable credentials associated with students ID. The system enables learners to obtain and hold verifiable credentials (VCs) for their digital proof of certificate. The issued credentials would be retained off-chain and hash value of the credential would be maintained in blockchain ledger. The model uses cryptography such as hashing and digital signature to check data integrity and authenticity and issuance of the credential, storing and verifying will be handled by Smart Contract. An easy-to-use interface that provides management, request, and document verification. An integrated system based on blockchain, decentralized storage, and cryptographic algorithms ensures a privacy-oriented and consistent system for handling academic documents.

Keywords:

Blockchain, Self-Sovereign Identity (SSI), Decentralized identifiers (DIDs), Verifiable Credential (VC), SmartContract(SC).

Colour and Texture in Vernacular Courtyards: Enhancing Emotional Well-being and Sustainable Infrastructure in Thiruvarur, India

Dr. Komagal Anupama K
Lincoln University College, Petaling Jaya, Malaysia

Dr. Janani Selvam
Lincoln University College, Petaling Jaya, Malaysia

Abstract:

This paper explores the potential of vernacular residential courtyard designs in Tamilnadu, India, as a sustainable infrastructure model that aligns with Goal 9 of Industry, Innovation, and Infrastructure. Focusing on the architectural characteristics of color and texture, the study investigates their impact on the emotional well-being of occupants in the Thiruvarur region. Utilizing a mixed-method approach, the research combines qualitative and quantitative techniques to achieve a comprehensive understanding. Qualitative data were collected through observations, interviews, and photo-elicitation to capture the emotional experiences associated with courtyard colors and textures. Quantitative data were gathered using a multi-dimensional emotion questionnaire with a 5-scale Likert system. A simple random sampling method was applied to select participants, ensuring representation from diverse cultural settings in Thiruvarur. Data were analyzed using the Henry Garrett ranking method and statistical tools in Minitab. The findings reveal that color and texture significantly enhance positive emotional responses, promoting social cohesion and psychological comfort. These vernacular designs, utilizing local materials and passive cooling techniques, offer innovative solutions for sustainable infrastructure, fostering resilient and eco-friendly industrialization. The study bridges environmental psychology and architecture, providing evidence-based guidelines for contemporary urban planners. It advocates for preserving traditional architectural wisdom while promoting sustainable industrial practices.

 ISBN: 978-93-92104-23-7

Fast Track Sustainable Design: Integrating Local Wisdom and Green Building Technology for Hospitality Development in Bali

I Wayan Widanan
Warmadewa University, Udayana University, Bali, Indonesia

I Made Adhika
Warmadewa University, Udayana University, Bali, Indonesia

Ngakan Ketut Acwin Dwijendra
Warmadewa University, Udayana University, Bali, Indonesia

Ni Made Yudantini
Warmadewa University, Udayana University, Bali, Indonesia

Abstract:

In an effort to support sustainable infrastructure development (SDG 9), the implementation of Fast Track Sustainable Design methods is increasingly important to meet the needs of the rapidly growing hospitality industry in Bali. However, accelerated construction often sacrifices design quality, environmental sustainability, and local cultural identity. This research proposes a design model that integrates Balinese architectural principles, green technology, and fast-track methods to create buildings that are efficient, environmentally friendly, and compliant with local regulations. By using Building Information Modeling (BIM) approaches and low-carbon local materials, this model can improve time and cost efficiency without neglecting cultural and sustainability aspects. Case studies on hospitality projects in Bali show that the application of this design can reduce construction time by up to 30% while maintaining compliance with sustainability regulations.

Gated Recurrent Unit with Sequential Neural Network on Electrocardiogram (ECG) Signals for Cardiac Arrhythmia Prediction

Kapil Pal
Harcourt Butler Technical University Kanpur

Anita Yadav
Harcourt Butler Technical University Kanpur

Abstract:

Cardiac arrhythmia is a serious illness of heart patients, and it is very difficult to diagnose without a clinical process, and sometimes this type of disease is ignored by the patients and suddenly it causes life-threatening results. Electrocardiogram (ECG) signals play an important role in identifying different electrical activities of the human heart, and these signals are captured with the help of an electrocardiogram machine. Arrhythmia is the term used to describe irregularities in the rhythm of heartbeats. It can occur in the form of bradycardia, where the heartbeat is abnormally slow, which refers to below 60 beats per minute, or tachycardia, where the heartbeat is above 100 beats per minute, but normally, heartbeats lie between 60 and 100 beats per minute. Bradycardia and tachycardia are two different states of arrhythmia. In this study, we used a gated recurrent unit with the combination of a sequential neural network to recognize normal heartbeats, bradycardia, and tachycardia. Our model only considers the QRS complex, chiefly based on the R wave and its timing, to predict the type of arrhythmia. We have used raw ECG signals from the MIT-BIH arrhythmia dataset and obtained an accuracy of 98.81% in this research work.

ISBN: 978-93-92104-23-7

Enhancing Rheumatic Carditis Detection Through an Optimized Screening Model

Dr. Puspita Dash
Assistant Professor, Department of Information Technology, Sri Manakula Vinayagar Engineering College, Puducherry, India

Nisha M
Department of Information Technology, Sri Manakula Vinayagar Engineering College, Puducherry, India

Abisha G
Department of Information Technology, Sri Manakula Vinayagar Engineering College, Puducherry, India

Kirthiga R
Department of Information Technology, Sri Manakula Vinayagar Engineering College, Puducherry, India

Abstract:

In today's world, cutting-edge technologies such as artificial intelligence and deep learning are transforming the healthcare industry by enabling faster and more accurate disease detection. Advanced imaging techniques, automated diagnostics, and predictive analysis are improving patient outcomes by identifying conditions at an earlier stage. However, many life-threatening diseases, including Rheumatic Heart Disease (RHD), remain underdiagnosed due to the lack of medical facilities and hinders early detection. Rheumatic Heart Disease (RHD) is a chronic condition by rheumatic fever, resulting in progressive damage to heart valves. This condition is caused by an untreated or recurrent Group A Streptococcal (GAS) infection It remains a significant public health concern, particularly in low- and middle- income countries, contributing to high morbidity and mortality rates. Early and accurate detection is crucial for timely intervention and improved patient outcomes. This system explores the integration of YOLO (You Only Look Once) algorithm with echocardiographic imaging for automated RHD detection. Echocardiography, a widely used and cost-effective imaging modality, provides a real-time cardiac assessment. YOLO, a state-of-the-art real-time object detection model, is employed to identify structural abnormalities in echocardiographic images, such as valve thickening, regurgitation, and stenosis with high precision. The proposed approach enhances diagnostic accuracy, facilitates early-stage detection, and supports clinicians in decision-making by providing real-time insights. The study also presents a comparative analysis of echocardiographic images of normal and RHD-affected hearts, illustrating the effectiveness of deep learning-based detection. Despite the challenges of data availability and variations in images quality, this automated system has the potential to revolutionize RHD screening, particularly in resource-limited settings, by enabling large-scale, efficient, and cost-effective diagnosis.

Keywords:

Rheumatic Heart Disease (RHD), Group A Streptococcus (GAS), YOLO, Echocardiography.

Application of Cognitive Load Theory in interactive Multimedia to Increase Civic Education Learning Engagement

Jimmy Novenaldi
Universitas Negeri Yogyakarta

Mukhamad Murdiono
Universitas Negeri Yogyakarta

Abstract:

This classroom action research focuses on increasing student engagement in civic education through cognitive load theory and interactive multimedia. Strategies include structured group discussions, problem-based learning, and others. The results showed an increase in student involvement of up to 86.25%. Data analysis uses a mixture of qualitative and quantitative methods. This research is motivated by the low involvement of students in civic education. By applying the principles of cognitive load theory and interactive multimedia, hoped that it can create a more effective learning environment. Overall, this study shows the potential of this approach in improving learning effectiveness and helping students understand the concepts of citizenship, making a significant contribution to the development of more effective learning strategies.

 ISBN: 978-93-92104-23-7

Utilization of Image Captioning to Assist Visually Impaired People

Vimal. R

Department Computer Science and Engineering Sathyabama Institute of Science and Technology Chengalpattu,Tamil Nadu

Vishal Surya. PA

Department Computer Science and Engineering Sathyabama Institute of Science and Technology Chengalpattu,Tamil Nadu

Dr. Shanmuga Prabha. P

Assistant Professo, Department Computer Science and Engineering Sathyabama Institute of Science and Technology Chengalpattu,Tamil Nadu

Abstract:

Access to information and communication is a fundamental human right, yet individuals with sensory impairments, face significant challenges in accessing visual content. Image captioning is essential for making visual content accessible to visually impaired individuals. This project explores the development and implementation of an image captioning system that converts visual content into descriptive text, which is then converted into Grade-1 Braille and audio output using text to speech technology. While existing technologies do convert the captions into Braille and audio output already, this project aims to include tactile image representations where the images are converted into raised, touchable formats that enable users to perceive the visual details through touch. By utilizing advanced image processing techniques and specialized printing technologies, we create detailed tactile graphics that accurately convey the shape, texture and spatial relationships present in the original images. This project employs deep learning techniques and natural language processing for generating descriptions. Attention mechanisms are integrated to ensure the captions are contextually relevant and detailed. This approach enhances accessibility and empowers visually impaired people to perceive visual information. By bridging the gap in multimedia accessibility, this project contributes to improving the quality of life and enhancing independence for individuals with complex sensory disabilities. Such inclusive design principles ensures that our solution meets the diverse needs of the visually impaired community, promoting greater inclusivity in the digital landscape.

Keywords:

BLIP, Transformers, Deep Learning, Image processing.

Evaluation of Resistance and Susceptibility of Different Maize Cultivars for Sustainable Management of Maize Weevil (*Sitophilus Zeamais*)

Sheetal Sharma
School of Basic Sciences Research Scholar Department of Zoology, Abhilash University, Chail Chowk, Mandi, Himachal Pradesh, India

Abstract:
Maize weevil is a high reproductive pest, mainly infests in stored maize. This pest can significantly lead to post-harvest loss, especially in tropical as well as subtropical regions where weevil reproduction and infestation is highly conducive due to high humidity coupled with different temperatures. Heavy infestations can cause losses in total quantity and maize quality, making it unfit for human consumption or sale (Nwilene, 2024).Some maize genotypes are considered naturally resistant to Sitophilus zeamais and resistance is based mostly on physical and biochemical barriers .The resistance in maize cultivars have been tested by different studies evaluating the reproductive output, developmental time and survival rates of the weevil when exposed to some varieties of this plant..Developing resistant varieties through breeding has resulted in significant success, however there are challenges that must be overcome. One main challenge is the possible trade-off between resistance traits and yield. The allocation of energy towards defensive traits can cause resistant maize cultivars to give lower yields than non-resistant varieties, in some cases. Moreover, because weevils undergo heavy natural selection and may evolve to be able to use resistant plant lines and vice versa, this research is a continuous process of development and evolution of resistance in the populace or new sources that stem from favorable genetic recombination among different parental crosses for optimized host genetics in rice varieties as well over time (Nwilene, 2024).

Keywords:
Sitophilus zeamais, maize cultivars, resistant traits, resistant maize cultivars, infestation, post-harvest loss, non-resistant varieties.

ISBN: 978-93-92104-23-7

BLDC Motor Control for Drone Application Using Stm32f407 Microcontroller

Ashwin Krishna Kumar
Department of Electrical and Electronics Engineering College of Engineering Guindy, Anna University Chennai, India

S Uma
Associate Professor, Department of Electrical and Electronics Engineering College of Engineering Guindy, Anna University, Chennai, India

Dhanush P
Department of Electrical and Electronics Engineering College of Engineering Guindy. Anna University Chennai, India

Kishore Shankar E
Department of Electrical and Electronics Engineering, College of Engineering Guindy, Anna University Chennai, India

Abstract:

This research explores the design and implementation of a control system for a quadcopter UAV using the STM32F407 microcontroller. The project integrates Brushless DC (BLDC) motors, electronic speed controllers (ESCs), and sensors such as the MPU6050 to achieve stable and responsive flight. A Proportional-Integral-Derivative (PID) control algorithm is implemented to maintain precise adjustments in roll, pitch, and yaw angles, ensuring optimal manoeuvrability and stability. The control system employs pulse-width modulation (PWM) signals for dynamic motor speed control, supported by sensor fusion techniques using a complementary filter to enhance orientation accuracy. Simulation and hardware testing validate the system's effectiveness, demonstrating robust flight control under varying conditions. This UAV system is targeted at applications in hazardous environments, such as thermal power plants, where drones equipped with advanced sensors can perform real-time monitoring to improve safety and operational efficiency. The proposed solution highlights the potential of STM32-based systems in modern UAV technologies.

Keywords:

BLDC Motor, Control Drone Application, STM32F407 Microcontroller, PID Control Algorithm, UAV Stability, Quadcopter Design, PWM Signal Generation, Sensor Fusion, MPU6050 Sensor, Flight Control System.

Small Object Detection in Autonomous Vehicles: Evaluating YOLOv10 with a Custom Dataset Against YOLOv8

S. Eashwar Reddy
B.Tech. student, Department of CSE, Institute of Aeronautical Engineering, Hyderabad, India

Ch. Archana
B.Tech. student, Department of CSE, Institute of Aeronautical Engineering, Hyderabad, India

Shaik Sufian
B.Tech. student, Department of CSE, Institute of Aeronautical Engineering, Hyderabad, India

Ch. Veena
Associate Professor, B.Tech. student, Department of CSE, Institute of Aeronautical Engineering, Hyderabad, India

Abstract:
This research aims to enhance object detection accuracy in autonomous vehicle systems by employing the YOLOv10 model. Building upon the foundations of the YOLOv8 model presented in the base paper, this investigation seeks to surpass the detection performance achieved by YOLOv8, particularly for small objects in complex driving environments. The YOLOv10 model is trained on a custom dataset obtained from Roboflow, with adjustments implemented to optimize its performance and accuracy. Experimental results demonstrate a significant increase in mean Average Precision and overall detection accuracy compared to the baseline YOLOv8 model. These findings suggest that YOLOv10 provides a more effective solution for the real-time detection of small and distant objects in autonomous driving applications.

Keywords:
YOLOv10, object detection, autonomous vehicles, small object detection, accuracy improvement, deep learning, real-time detection, dataset optimization, machine learning.

ISBN: 978-93-92104-23-7

Rice Leaf Classification Using CNN+GRU

Ansik Aryan Samal
B. Tech Department name of organization CSE Institute of Aeronautical Engineering, Hyderabad, India

Aniketh Bind
B. Tech Department name of organization CSE Institute of Aeronautical Engineering, Hyderabad, India

B. Jayanth
B. Tech Department name of organization CSE Institute of Aeronautical Engineering, Hyderabad, India

BK Aishwarya
Associate Professor, CSE Institute of Aeronautical Engineering, Hyderabad, India

Abstract:

To overcome this limitation, the paperproposes a hybrid model that leverages the strengths of CNNs for spatial feature extraction and GRUs for modeling sequential dependencies

In the proposed approach, the CNN component first processes the images to extract relevant features. These features are then fed into the GRU component, which models the sequential dependencies between the features. This integration allows the model to benefit fromboth the spatial analysis capabilities of CNNs and thesequential modeling capabilities of GRUs potentially improving classification performance in scenarios where temporal patterns are important.

To evaluate the effectiveness of this hybrid model the authors studied and tested it on a list of rice leaves used to classify and predict leaf diseases.

The evaluation process consists of several key steps:

- Feature Extraction with CNNs
- Sequential Modeling with GRUs
- Model Training and Testing
- Performance Evaluation
- Parameter Analysis
- Visualization.

Keywords:

CNN, GRU, neural networks, maxpooling, dense layer, dropout layer, rice leaf diseases, Classification.

Impact of Effective Digital Marketing Capabilities on the Firm's Performance: An Empirical Study

Ms. Preeti
Research Scholar, University School of Business, Chandigarh University, Chandigarh & Assistant Professor, Department of Management Studies, PIET, Samalkha, Haryana, India

Dr. Pardeep Kumar*
Associate Professor, University School of Business, Chandigarh University, Chandigarh, India

Abstract:

In today's rapidly evolving business environment, digital marketing tools such as social media, SEO, email marketing, and content marketing are essential for firms to connect with a wider audience, engage customers, and drive business growth. By leveraging data analytics and performance metrics, firms can optimize their marketing efforts, ensuring higher return on investment and efficient resource allocation. The adaptability and scalability of digital marketing tools allow firms to respond swiftly to market dynamics, providing a competitive edge. The study focusses on how these capabilities enhance customer engagement, brand awareness, profitability, and competitive positioning. The study acknowledges certain limitations, such as the challenge of isolating the effects of digital marketing from other influencing factors, measuring long-term impact, and the variability of effectiveness across different industries and regions. To address these limitations, the study suggests a need for further research through longitudinal and cross-industry analysis. People from digital marketing department were surveyed to know the role and Impact of Effective digital marketing Capabilities on the firm's performance and concludes that there is significant impact of Effective digital marketing Capabilities on the firm's performance like increased Brand Awareness and Reach, Enhanced Customer Engagement and Experience, Data-Driven Decision Making, Targeted Marketing and Better ROI (Return On Investment), Competitive Advantage, Sales Growth and Lead Generation, Improved Brand Loyalty and Advocacy & Scalability and Cost-Effectiveness.

Keywords:

Organizational Performance, Digital Marketing Capability, Marketing Strategies, Digital marketing innovation, Customer.

Battery Management System (BMS) for Charging and Discharging

Prathmesh Moralwar
Entc Department Vishwakarma Institute of Information Technology, Pune, India

Yash Dhahale
Entc Department Vishwakarma Institute of Information Technology, Pune, India

Prashant Takale
Entc Department Vishwakarma Institute of Information Technology, Pune, India

Atharva Yadav
Entc Department Vishwakarma Institute of Information Technology, Pune, India

Rohini chavan
Entc Department Vishwakarma Institute of Information Technology, Pune, India

Abstract:

Now-days the demand for electric vehicle is increased significantly & the main component for electric vehicles is battery. Due to sudden large demand of battery the production of batteries also increased. So to manage the battery, to increase the life of battery, to protect the battery there is a need of Battery Management System. Proposed system implements the real time tracking of voltage and current parameter across each cell. Monitoring and managing the battery becomes easy. This research paper aims at analyzing and implementing the Battery Management System (Over charging and Over Discharging Circuit).

Keywords:

battery management, Battery Over charging , Over Discharging , electric vehicle , Battery Protection.

Data-Driven Approach for Kidney Disease Prediction

Kavita Tukaram Patil
Assistant Professor, SVKM's Institute of Technology Dhule

Nachiket Vinayak Kulkarni
Research Scholar, SVKM's Institute of Technology Dhule

Makarand Shahade
SVKM's Institute of Technology Dhule

Lalit Ganesh Borase
Research Scholar, SVKM's Institute of Technology Dhule

Sumit Gopal Jagtap
Research Scholar, SVKM's Institute of Technology Dhule

Prathmesh Prashant Chaudhari
Research Scholar, SVKM's Institute of Technology Dhule

Abstract:

Chronic Kidney Disease is a very significant health problem affecting millions of patients every year and requires early diagnosis for good treatment results. The review will analyze a data-driven approach for the prediction of kidney diseases: machine learning methods. Recent studies on early-stage detection and prediction of progression using various algorithms define it as a success rate of over 95%: Support-Vector-Machines, Random Forests, Logistics Regression, and Decision Tree. Cited works in this analysis will be from vast literature review types of validation in various types of the model. While traditional machine learning methods provide clear predictions, deep learning and hybrid evolving models add higher accuracy and generalizability with broader distributions of input. These techniques hold particular promise in resource-limited settings where conventional diagnostic protocols may be impractical or hard to administer.

Keywords:

Chronic Kidney Disease, Support Vector.

ISBN: 978-93-92104-23-7

Data-Driven Approach for Kidney Disease Prediction

Dr. Nihar Rajan Nayak
Assistant Professor Presidency university, Yelahanka, Bengaluru, Karnataka, India

M. V. S. Mohith Reddy
Department of CSE, SOE, Presidency university, Yelahanka, Bengaluru, Kamataka, India

A. Jaswanth
Department of CSE, SOE, Presidency university, Yelahanka, Bengaluru, Karnataka, India

N. Sravan Kumar Reddy
Department of CSE, SOE. Presidency university, Yelahanka, Bengaluru, Karnataka, India

K. Sai Naveen
Department of CSE, SOE, Presidency university, Yelahanka, Bengaluru, Karnataka, India

SMD. Sattar Haji
Department of CSE, SOE Presidency university, Yelahanka, Bengaluru, Karnataka, India

Abstract:

This project creates a modern customer service chatbot with a unique feature that makes it different from other chatbots that only interact with users through text.Our chatbots,driven by machine learning, answers the world problem with customer engagement by efficiently translating spoken enquiries. In addition to text messaging,the UI is enhanced with several features in one chatbot such as a microphone for voice input, in image-to-text messaging.Allow customer services is provided by taking a thorough and formally organized approach. II. RESEARCH GAP OR EXISTING METHODS A.EXISTING METHODS: There are several methods that have been used for the development of customer support chatbots using machine learning. Such methods can be grouped according to their functionality, architecture, and the technologies involved. Some of the key existing methods include: I. INTRODUCTION Chatbots are software programs created explicitly for textual or spoken conversation. These both frequently act as virtual assistants or companies by trying to mimic human behaviour. Although passing the turning test has always been the goal, reaching this level of sophistication in 2024 will be difficult. Machine Learning is a subfield of AI concerned with creating models algorithms agent computers may use to learn from data and improve a particular task without human intervention. Customer support chatbots have become an essential tool for businesses looking to enhance customer experience and streamline support processes. By using machine learning, these chatbots can provide personalized, efficient, and accurate responses to customer inquiries. Here's an overview of how ML is utilized in customer support chatbots.

Smart Safety Helmet for Mining Workers Using IoT and AI

Ruchitha R
Student

Sharon Roji Priya C
Assistant Professor

Dr. Melbin J Reena
Assistant Professor

Abstract:

Mining is a dangerous profession by nature, expos ing employees to a range of health and environmental hazards. Conventional safety protocols frequently fail to stop mishaps and keep an eye on miners' health in real time. By creating a Smart Safety Helmet that incorporates cutting-edge Internet of Things (IoT) and Artificial Intelligence/Machine Learning (AI/ML) technology, this project seeks to improve the safety of mine workers. Numerous sensors are built into the helmet to track environmental factors including temperature, humidity, and concentrations of harmful gases as well as vital signals like body temperature and the miner's risk of falling. Predictive analytics and real-time data transfer allow for prompt alarms and preventative safety actions, which lower hazards and speed up emergency response times. This study highlights important areas for innovation, such as improved sensor accuracy, ergonomic design, and reliable data transmission techniques appropriate for subterranean conditions, through a thorough literature survey and gap analysis. Sensor integration, LoRa module-based communication strategies, data analysis, and intuitive user interfaces made possible by the Blynk app and cloud storage (Thingspeak) are all included in the suggested methodology. In order to create a dependable and durable system, the original concept called for combining Bluetooth Low Energy (BLE) for subterranean data transfer with LoRa for aboveground and long-distance data transmission. However, the accepted model solely relied on LoRa modules due to practical implementation constraints. This choice guaranteed dependable and effective data transfer over a range of distances. In an attempt to enhance the safety protocols and allow for proactive measures to avoid hazards, predictive analytics and real-time monitoring features have been built into the system. Through an emphasis on scalability and adaptability for larger industrial applications, these developments contribute to safer and more productive mining.

Keywords:

Mining Safety, Smart Safety Helmet, Internet of Things(IoT), Artificial Intelligence (AI), Machine Learning (ML) , real-time monitoring, predictive analysis, Blynk IoT App, ThinSpeak Cloud, Telegram.

ISBN: 978-93-92104-23-7

Impact of Lok Sabha Elections on Equity Market Using Sentiment Analysis

Sakshi Rammohan
Department of Data Science, Mukesh Patel School of Technology Management and Engineering, SVKM's NMIMS, Mumbai, India

Sumeru Jhaveri
Department of Data Science, Mukesh Patel School of Technology Management and Engineering, SVKM's NMIMS, Mumbai, India

Rashmi Patel
Assistant Professor, Department of Data Science, Mukesh Patel School of Technology Management and Engineering, SVKM's NMIMS, Mumbai, India

Abstract:

This report explores the impact of the Lok Sabha elections on the equity stock market, using sentiment analysis and other technical analysis. The data is based on the Economic Times daily articles and sentiment analysis was done on it. We have tried to recognize the pattern in the 2009, 2014,2019 and 2024 elections and tried to find out which sectors perform best and how the market reacts before and after the elections. It is observed that when the results do not turn out the way the public expects it to, the market volatility increases. This paper also speaks about the economic state of the country during this period of high uncertainty.

Keywords:

Sentiment analysis, Sector analysis.

A Unified Machine Learning Framework for Crop Prediction, Soil Analytics, and Fertilizer Recommendations system

Sivakumar R
Periyar Maniammai Institute of Science & Technology, Vallam, Thanjavur

Shanmathi S
Periyar Maniammai Institute of Science & Technology, Vallam, Thanjavur

Abstract:
This paper introduces an integrated machine learning framework aimed at modernizing agriculture through data-driven smart farming practices. The framework tackles critical challenges such as data inconsistency, environmental variability, and high costs for small-scale farmers by leveraging advanced ML models, including Random Forest, Gradient Boosting, and Support Vector Machines. Key functionalities include crop yield prediction, soil health assessment, and tailored fertilizer recommendations, all supported by a data quality monitoring dashboard to ensure reliability. Designed for scalability and accessibility, the system provides actionable insights to optimize resource use, enhance productivity, and reduce environmental impact. Field implementations demonstrate its effectiveness, offering a sustainable and farmer-friendly approach to precision agriculture and advancing the digital transformation of the agricultural sector.

Keywords:
Precision Agriculture, Machine Learning Framework, Crop Yield Prediction, Soil Health Assessment, Fertilizer Optimization, Data Quality Monitoring.

ISBN: 978-93-92104-23-7

Comprehensive Financial Fraud Detection: A Dual-Module Approach for Credit Card and Money Laundering Detection

Santhosh M
Periyar Maniammai Institute of Science & Technology, Vallam, Thanjavur

Vasanth Raj A
Periyar Maniammai Institute of Science & Technology, Vallam, Thanjavur

Abstract:

This project focuses on addressing a critical challenge in the financial sector: detecting credit card fraud and money laundering using advanced machine learning techniques. For credit card fraud detection, we leverage feature selection and data balancing methods to build an optimized neural network. This model classifies transactions as either fraudulent or legitimate with high accuracy, ensuring reliable performance in identifying fraudulent activities. In tackling money laundering, the project incorporates anomaly detection and pattern recognition techniques to uncover suspicious behaviours in financial transactions. These include irregular transaction flows and deviations from standard patterns, which are often key indicators of money laundering. By integrating these approaches, the project offers a comprehensive and scalable solution for financial fraud detection. It not only demonstrates the power of machine learning in improving security but also highlights its potential for practical applications in real-world financial systems.

Keywords:

Financial Fraud Detection, Credit Card Fraud, Money Laundering Detection, Machine Learning, Anomaly Detection, Neural Networks, Random Forest Classifier, Synthetic Resampling (SMOTEENN), Feature Engineering, Real-Time Prediction.

An Overview of Wetlands in India: Their Ecological Advantages, Difficulties, and Management

***Bhoomika Achal**
Post Graduate Research Scholar, Department of Civil Engineering, Chandigarh University, Mohali, Punjab, India

Ambika Thakur
Assistant Professor, Department of Civil Engineering, Chandigarh University, Mohali, Punjab, India

Abstract:

India possesses an abundance of wetland environments that sustain a broad range of species. Wetland ecosystems offer several ecological services and products. Still, they are under extreme strain due to rapid population growth, industrialization, and expanding agriculture, as evidenced by the reduction in area and a decrease in the hydrological, economic, and ecological roles they perform. The wetlands are vulnerable to human-induced pressures, such as watershed shifts in land use, pollution from manufacturing industries and residences, construction, the tourism industry, and excessive utilization of their ecological assets. Most wetland management study research within India focuses on limnology (study of freshwater bodies) elements and environmental dynamics. However, environmental and societal variables contributing to such changes have received little attention. This Research Study examines India's wetland richness using its geographical spread, the environmental services it provides, and the many challenges it faces. The Study also addresses management attempts for these vulnerable environments, highlights organizational gaps and presents priority areas for immediate consideration to design stronger preservation plans for these economically viable systems.

Keywords:

Wetlands, Ramsar sites, Carbon-cycle, Biodiversity, Greenhouse gases.

ISBN: 978-93-92104-23-7

Agri Doctor: Intelligent Crop Disease Detection for Sustainable Farming

Mrs. Chengamma Chitteti
Assistant Professor, Department of IT, Mohan Babu University, Erstwhile Sree Vidyanikethan Engineering College, Tirupati-517102, A.P, India

Daddala Kavya
UG Scholar, Department of CSSE, Sree Vidyanikethan Engineering College, Tirupati-517102, A.P, India

Thanakanti Jeevana sai
UG Scholar, Department of CSSE, Sree Vidyanikethan Engineering College, Tirupati-517102, A.P, India

Guduru Jaya Pranay
UG Scholar, Department of CSSE, Sree Vidyanikethan Engineering College, Tirupati-517102, A.P, India

Dr. K. Reddy Madhavi
Professor, Department of AI& ML School of Computing, Mohan Babu University, Tirupati-517102, A.P, India

Y. Venkata Vara Prasad Reddy
UG Scholar, Department of CSSE, Sree Vidyanikethan Engineering College, Tirupati-517102, A.P, India

Abstract:

Prior years' indices reveal that deep learning is one of the most efficient methodologies to study diseases in plants. An identification of the diseases of the leaves of several crops is made in this research using MobileNet which is a simpler CNN. The compute and speed of MobileNet has been boosted hence it can be implemented online or in most scenarios that demands real time implementation ignoring the powering concerns. In the image identification tasks, there is high accuracy due to the reduction of the number of parameters and the required computations using depthwise separable convolutions whereby the model is relieved of numerous parameters. Thus, the automated framework, MobileNet, is successfully able to detect specific features associated with different diseases, which infect plants during the training phase using a large set of leaves' images and, consequently, classify plants as either healthy or diseased plant. The identification of diseases is very relevant to the farmers as it helps in prevention of diseases that may cause severe infection of the produce. In addition to increasing food production it also promotes organic farming that leads to reduction in use of pesticide. Consequently, the system proposed in this paper using the MobileNet satisfies the early detection of diseases in agricultural systems and in addition, foods security through improvement of sustainable farming globally.

Keywords:

Deep learning, MobileNet, plant diseases, Convolutional Neural Networks, image classification, early detection, sustainable agriculture.

AI-Powered Intrusion Detection System for Malware: A Hybrid Approach to Detecting Spyware, Ransomware, and Trojans

Shesha Venkat Gopal K
Department of CSE, SOE, Presidency University, Bengaluru, Karnataka, India

Amrutha Sindhu A
Department of CSE, SOE, Presidency University, Bengaluru, Karnataka, India

Arathi Shree V
Department of CSE, SOE, Presidency University, Bengaluru, Karnataka, India

N Syed Siraj Ahmed
Assistant Professor, Presidency University, Bengaluru, Karnataka, India

Abstract:

The increasing sophistication of malware, including spyware, ransomware, trojans, and keyloggers, poses significant challenges to modern cybersecurity systems, as traditional detection methods often struggle to keep pace with evolving threats. This research focuses on developing an AI-powered intrusion detection system that combines signature-based and anomaly-based methodologies to enhance malware detection capabilities. Five machine learning models—Logistic Regression, K-Nearest Neighbors (KNN), Support Vector Machines (SVM), Decision Tree, and Random Forest—were trained and evaluated using a diverse dataset of malicious and benign instances. Performance was assessed through metrics such as Accuracy, F1 Score, Precision, Recall, and confusion matrices, offering a comprehensive understanding of detection effectiveness. The anomaly-based approach demonstrated exceptional results, with tree-based models like Random Forest and Decision Tree achieving near-perfect scores, while the signature-based method, though challenged by multi-class classification, showed consistent reliability, especially with Random Forest. This hybrid framework capitalizes on the anomaly-based approach's ability to detect novel threats and the signature-based method's precision in malware classification, reducing false positives and negatives while ensuring robust detection. The findings present a scalable, efficient, and adaptive solution to address the growing challenges of malware detection, offering a proactive and reliable approach to strengthening cybersecurity defenses.

Keywords:

AI, Intrusion Detection System, Malware, Spyware, Ransomware, Trojans, Machine Learning, Anomaly Detection, Signature Detection.

ISBN: 978-93-92104-23-7

Decade of Twitter Sentiment Analysis: A Comprehensive Survey on Unraveling Public Opinion on Twitter to understand Challenges, Advances, and Applications

Mr. Abhilash H.P
Presidency University, Ittagallpura, Bengaluru-560064, Karnataka, India

Dr. N. Syed Siraj Ahmed
Presidency University, Ittagallpura, Bengaluru-560064, Karnataka, India

Abstract:

The paper will see the overview of methods and developments related to public opinion mining using such a vast dataset using Twitter. It traces how such methods over time evolved from simple Sentiment Analysis to very complex Deep Learning models and ways in which it is being utilized in various fields. Discussion pertains to the issues of noise, real-time analysis, and data quality. It also introduces some efficient methods for digging out complex opinions, identifying emerging trends, and foreseeing public behaviors. The research also summarizes some of the previous studies, identifying the gaps in the current body of knowledge and suggesting many ideas helpful for further research and for practical application in domains like marketing, politics, and crisis management.

Keywords:

Social Media, Natural Language Processing, Big Data, Machine Learning, Deep Learning, Sentiment Analysis, Public Opinion, and Topic Modeling on Twitter.

Predicting Stock Prices Using a Hybrid Model: Integrating Machine Learning and Sentiment Analysis

Dr Shailendra Narayan Singh
Amity University, Noida

Diksha
Amity University, Noida

Shreya Mishra
Amity University, Noida

Dhruv Agrawal
Amity University, Noida

Abstract:

Stock market prediction aims to estimate the future worth of a company's stock. Machine learning (ML) is a growing trend in this field, using models like regression and LSTM to enhance prediction accuracy. These methods analyze variables like opening price, closing price, daily high/low, and trading volume, which are critical for predicting stock prices. The volatility and non-linear nature of financial markets make stock price prediction challenging, compounded by political, economic, and psychological influences. Traditional methods such as GARCH, ARIMA, and ARCH often fail to handle the complexities of non-linear market behaviors. However, advancements in artificial intelligence and computational power have made algorithmic predictions more reliable. For instance, LSTM-based models are well-suited for time-series analysis as they capture historical trends effectively.[5] Combining financial news sentiment analysis with historical stock data further improves forecast accuracy. The study focuses on businesses listed on the National Stock Exchange (NSE) and employs deep learning techniques to create more comprehensive prediction models. These methods outperform traditional techniques, offering practical commercial applications. Stock market forecasting remains a significant topic due to its impact on the global economy and its appeal across various professional backgrounds.

Keywords:

CNN, LSTM, ML, ARIMA, Stock Market, MAE and MSE.

ISBN: 978-93-92104-23-7

Innovating Crop Yield Prediction Through Quantum Variational Eignsolver

Mr Omprakash Mandge
Instittute of Computer Science, Mumbai Educational Trust Mumbai, India

Dr Suhasisni Vijaykumar
Department of MCA, Bharati Vidyapeeth's Institute of Management Information Technology, Navi Mumbai, India

Abstract:

Correct estimation of crop yield is vital in agriculture because it enables farmers to make proper decisions about planting, irrigation, fertilization, and harvesting practices. Crop yield prediction is complicated due to many factors, such as weather conditions, soil health, crop variety, irrigation methods, and climate change. Classical machine learning approaches have significantly advanced in this field, but their inability to handle large, high-dimensional datasets with complex correlations can decrease the accuracy of predictions. Quantum machine learning (QML) offers a potential advantage in dealing with these challenges by taking advantage of quantum computing's ability to process and analyse vast amounts of data in ways that are impossible for classical methods. Predicting the yield of crops based on various environmental factors, soil conditions, and historical data is a complex problem. The goal is to use QML to improve yield estimates and promote climate-resilient crops, providing maximum productivity even in shifting weather circumstances. This paper introduces A VQE-hybrid based model that integrates classical and quantum components for crop yield predictions. The quantum (VQE) segment addresses complex non-linear relationships, while the classical part handles pre-processing, feature selection, and evaluation. The proposed model gives results competitive to traditional ML Models. This approach holds great potential for enhancing agricultural practices, offering more accurate and meaningful predictions that can be directly applied in real-world farming scenarios.

Keywords:

Precision Farming, Crop yield prediction, Machine Learning, Quantum Computing, Quantum Variational Eignvalues.

Machine Learning and Deep Learning Paradigms in Sign Language Recognition for the Hearing Impaired: A Comprehensive Review

Rupali H. Shende
Department of Computer Engineering SKNCOE, Pune and Department of Computer Engineering MESCOE, Pune, Maharashtra, India

N. F. Shaikh
Department of Computer Engineering MESCOE, Pune, Maharashtra, India

Abstract:

This review paper delves into the advancements in sign language recognition (SLR) for individuals with hearing impairments, focusing on integrating machine learning (ML), deep learning (DL), artificial intelligence (AI), convolutional neural networks (CNNs), and image-based technologies. The study undertakes a comprehensive literature survey, analyzing diverse methodologies and technologies employed in SLR systems. It highlights the evolution of vision-based and sensor-based approaches, emphasizing the pivotal role of CNNs in improving gesture, facial expression, and body movement recognition. The paper critically examines the current limitations of SLR systems, such as adaptability, accuracy, and accessibility. Existing solutions often lack flexibility to accommodate diverse sign languages, signing styles, and real-time usability. This work identifies gaps in user-centric designs, stressing the need for interfaces that cater to non-technical users. Proposing a robust ML and DL-based framework, the research aims to enhance system adaptability and accuracy through curated datasets and real-time capabilities. The review further explores future applications of AI in expanding SLR functionalities and fostering inclusive communication. By addressing existing challenges and proposing innovative solutions, this paper contributes to bridging the communication gap between the deaf community and the broader society.

Keywords:

Sign Language Recognition, Machine Learning, Deep Learning, AI, CNN.

ISBN: 978-93-92104-23-7

Sign Language Recognition, Machine Learning, Deep Learning, AI, CNN

Sandhya Srinivasan
Department of Biomedical Engineering, KPR Institute Of Engineering and Technology, Coimbatore, India

Kamalisha R
Department of Artificial Intelligence & Data Science, KPR Institute Of Engineering and Technology, Coimbatore, India

Abirami S
Department of Biomedical Engineering, KPR Institute Of Engineering and Technology, Coimbatore, India

Priya Darshini B
Department of Biomedical Engineering, KPR Institute Of Engineering and Technology, Coimbatore, India

Kanimozhi J
Department of Biomedical Engineering, KPR Institute Of Engineering and Technology, Coimbatore, India

Abstract:

VoiceBridge is an advanced Augmentative and Alternative Communication (AAC) system that will enhance the communication of people who suffer from speech and language impairment. This application, developed in Flutter, supports six regional languages, including Tamil, Malayalam, Telugu, Kannada, Hindi, and English. It breaks the barrier of communication by offering a smooth, picture-based platform for users to express themselves. The machine converts selected images into speech using Text-to-Speech functionality, allowing quick communication. The addition of machine learning algorithms permits the development of personalized suggestions to the user based on their behavior. The study addresses the design and testing of VoiceBridge a development that increases access to communication, fosters self-efficacy, and reduces the effort needed for effective conversations. The result indicates how VoiceBridge truly improves the quality of the experience for users as a dynamic adaptive communication tool.

Keywords:

AAC, VoiceBridge, Flutter, Text-to-Speech (TTS), Language selection, Communication Disabilities, Personalized Communication.

Enhanced Vein Pattern Recognition Through Hyper-Attention Federated Learning and Transformer-Wavelet Networks

Manisha Arun Gawande
Assistant Professor

Dr S. W. Varade
Assistant Professor

Abstract:

Precision hand vein recognition and pattern detection are crucial in applications such as biomedical diagnostics, catheterization, and biometric security. The literature approaches available at this time have limitations in dealing with decentralized data, extracting multi-resolution features, and collecting adequate details of the vein structure under challenging conditions of noisy and low-contrast images. To address these gaps, this study proposes a set of innovative frameworks that significantly improve performance, robustness, and scalability in vein detection and recognition applications. The HAFLNet framework approaches the problem through a novel decentralized mechanism based on convolutional neural networks integrated into hyper-attention layers, with this dynamic prioritization mechanism driven by critical vein features, allowing federated learning to create a strong global model and offering an accuracy improvement of 18% and 15% better training efficiency respectively. Supporting this, the Transformer-Enhanced Wavelet Convolution Network, or TEWCNet, combines wavelet transforms for multi-resolution analysis with transformer layers to improve global contextual understanding. As a result, our architecture improves noise robustness by up to 25% while also increasing accuracy by 22% over typical CNNs. The NIVRN represents another paradigm shift: it encodes vein patterns as continuous implicit functions, resulting in 19% more accurate feature extraction and up to 30% fewer reconstruction errors. In summary, these architectures together address some of the concerns associated with common vein pattern analysis challenges, including higher generalization capabilities, improved feature representation, and real-time performance. Their application in biomedical systems allows for more accurate diagnostics, credible biometrics, and adaptability to a variety of settings, all of which represent significant advances in both medical imaging and security.

ISBN: 978-93-92104-23-7

A New Population Mean Estimator in Case of Incomplete Sampling Frames

Jyoti
Research Scholar, Banasthali Vidyapith, Rajasthan, India

Sarla Pareek
Research Scholar, Banasthali Vidyapith, Rajasthan, India

Abstract:

When conducting a sample survey, it is important to have a complete list of all units to be sampled, known as a sampling frame. The completeness of sampling in selecting samples and conducting surveys is always desirable. The details of the sampling frame help decide the best sampling design. However, in practice, it's rare to have a perfectly complete sampling frame. The most common issue with sampling frames is that they are often incomplete. In such cases, the foremost questions about the decision of sample size and selection of sample arise. This paper presents a new weighted PPS Product estimator for the population mean, which works for both complete and incomplete frame using Probability Proportional to Size with replacement (PPSWR) method. The paper calculates the bias and mean square error (MSE) of the estimator and discusses how to determine the best sample size and retainment factor with a cost-effective method. Using simulated data, and calculating the PRE (Percent Relative Efficiency) value, this paper shows that this new estimator is more accurate and efficient as compared to the existing ones.

Keywords:

Bias, MSE, PRE, efficiency, linear cost function, Lagrange's Multiplier technique.

Optimizing Chunking Strategies for Question Answering Systems on COVID-19 Literature

Mr. Mayurkumar H. Marolia
Ph.D. Research Scholar, Department of Computer Science, Gujarat University

Dr. Hardik J. Joshi
Research Scholar, Department of Computer Science, Gujarat University

Abstract:

Efficient and accurate searching and retrieving of large amount of textual data is important to formulate appropriate question-answering systems. In this research, the effects of different forms of the chunking approach on a Question Answering System for COVID-19 article content are examined. The system deals with PDF documents through most of the chunking methodologies that include fixed size chunking, recursive based chunking, document based chunking, semantic based chunking, token based chunking, sentence based chunking and agentic based chunking so as to store the data within a vector store. In the OpenAI models, embedding generation is also used together with an answer retrieval technique. The retrieved answers are measured based on the quality assessment parameters such as faithfulness, string accuracy, semantic likeness, BLEU, ROUGE and exact match. A comparative analysis reveals the most effective chunking approach for targeting appropriate answers while offering ideas for improving Question Answering Systems for scientific articles.

 ISBN: 978-93-92104-23-7

Constructive Student Engagement Through Integrating Content-Based Learning with Immersive Learning Method

Dr. Sunanda Kapoor
Professor

Abstract:

Constructive student engagement can be achieved through integrating content-based leaning method with immersive learning methods. It emphasizes upon integration of meaningful content with active learning strategies to enhance student motivation and involvement. This approach not only focuses on the subject matter but also on how students interact with and process that content, leading to deeper learning experiences. The main goal of this research is to improve the learning process through constructive student engagement. Through the literature review, various models of CBI (content-based Instruction) and immersive learning methods have been listed. Integrating these models i.e. gamification, technology and collaborative learning into content-based learning can significantly enhance student engagement and motivation. In the current study some of the effective strategies for implementing CBI in educational settings are being listed from the literature review. By thoughtfully integrating content-based learning, educators can create dynamic and engaging educational experiences that not only capture students' interest but also promote deeper understanding and retention of knowledge. This approach transforms traditional learning environments into interactive spaces where students are motivated to participate actively and collaboratively. Nearly 500 articles from various sources have been referred to understand theoretical background, application and further results of integrating content-based learning.

Keywords:

Constructive Student Engagement, Gamification, Content-Based Learning, Immersive Learning Methods.

"Depiction and Progression of Coherent Cost Saving Algorithms for Purchase Patterns in Business Scenario"

Venkatesh M R
Assistant professor, Computer Science & Engineering, Bangalore Institute of Technology

Dr. Hasan Hussian Shahul Hameed
Professor, School of CSE & IS, Presidency University, West Bengal

Abstract:

This research deals with the development of a new architecture. The system deals with self- scanning and self-checkout. The user needs to go through series of steps to use the major features of the system as authentication i.e., the username as unique name and a password. Before the user undergoes the process of authentication, he/she can register to the system and then login. This system is a very handy app to have if you don't know the routes to the mall and if you consider more on budget. Here every one of the pieces of information is put away in the cloud server and in light of the information given by the client the information is brought from it and showed to the client by utilizing proficient calculations like brain organizations (neural networks), fuzzy logic and genetic algorithms. The data set is kept up with in the nearby server and both versatile and the neighborhood have been associated with a similar organization. Subsequently the client can utilize every one of the highlights of this framework and send and get the information which is expected by the client. Since keep up the close by waiter the versatile that the client uses should be conveyed from the start and subsequently the client can utilize anything number as could sensibly be anticipated. This system can similarly take ponder GST. Therefore, consequently with the assistance of this essential innovation suggests implementing and designing efficient cost saving algorithms by using neural networks, fuzzy logic, genetic algorithms etc for guiding customer purchasing, retrieval and faster method of accessibility with respect to different patterns be expected. This framework can likewise take think about GST. Therefore, consequently with the assistance of this essential innovation suggests implementing and designing efficient cost saving algorithms by using neural networks, fuzzy logic, genetic algorithms etc for directing client buying, recovery and quicker strategy for openness concerning various example.

ISBN: 978-93-92104-23-7

Smart Ticketing and Real-Time Bus Tracking System

Mohamed Jalaluddin
Department of Electrical and Electronics, Vidyavardhaka College of Engineering,Mysuru-570002

Ganavi H.M
Department of Electrical and Electronics, Vidyavardhaka College of Engineering,Mysuru-570002

Shashak J
Department of Electrical and Electronics, Vidyavardhaka College of Engineering,Mysuru-570002

Shalini K.B
Department of Electrical and Electronics, Vidyavardhaka College of Engineering,Mysuru-570002

Sonu Nagaraj
Department of Electrical and Electronics, Vidyavardhaka College of Engineering,Mysuru-570002

Abstract:

Urban areas are expected to surpass all other regions in terms of population density. Addressing the population's mobility demands through infrastructure and public transit is one of the many problems that communities face. The importance of the bus tracking system has grown. Many people now depend significantly on public transit, especially buses, because of the increased population. Passengers need a sophisticated, technologically backed system that keeps an eye on buses and gives them real-time position data. Passenger tickets for certain destination fares are issued using radio-frequency identification (RFID) technology, and RFID cards are used for payment. Furthermore, RFID has been cutting-edge technology in recent years that may be applied to a variety of areas because of its affordability and broad use for object tracking and location in the suggested system. RFID technology is frequently used in public ticketing systems and vehicle tracking. Data collection, management, and analysis are made easier using information technology, especially the Internet of Things (IoT). The creation of a thorough design for an Integrated Smart Public Transport Management System with the goals of enhancing sensing capabilities, passenger comfort and safety, and lowering related expenses and hazards will be covered in this study. Triggered sensors in the suggested baseline system must meet several requirements before sending out a signal. These levels are measured by sensors, and a Device Module transmits the data to a cloud server after obtaining threshold circumstances. Raw data can be subjected to a variety of software programs for analysis and visualization in various forms. The information that is produced can

be used to further develop and improve the services offered by the business. The development process has been carried out in a methodical manner. The development of a comprehensive plan for intelligent public transportation management is covered in this article, with an emphasis on boosting sensing capability and improving passenger comfort and safety. A set of numerical factors that are triggered by sensors are part of the suggested baseline system. Data is sent to a cloud server via the Device Module after threshold situations are received. Several software programs can be used to handle raw data to extract and examine information in different formats for analysis and display. The information that is produced can also be used to further develop and improve the business's services. This concept has been developed gradually over time.

ISBN: 978-93-92104-23-7

Object Detection and Tracking in Surveillance Videos to Assist in Security Monitoring and Threat Detection

M. Vanathi
Assistant professor, Computer Science & Engineering, Sathyabama institute of science and Technology Chennai, India

Sagiraju Venkata Kishore Varma
Student, Computer Science & Engineering, Sathyabama institute of science and Technology Chennai, India

Dr. J. Karthika
Assistant professor, Computer Science & Engineering, Sathyabama institute of science and Technology Chennai, India

B. Sandhiya
Assistant professor, Computer Science & Engineering, Sathyabama institute of science and Technology Chennai, India

Abstract:

Object detection and tracking in surveillance videos showcases paramount importance in improving security monitoring and threat detection in urban environments as well as in critical infrastructure. This paper introduces an advanced method for automatically detecting and tracking objects of interest within real-time video feeds using state of the art machine learning algorithms and computer vision technology. The proposed system detects diverse targets such as vehicles, people and potential threats at high accuracy using convolutional neural networks (CNNs). The integration with robust tracking algorithms including Kalman filters and Simple Online and Realtime Tracking (SORT) yields the object continuity across frames and then this object continuity gives us information about movement pattern and behavior. Another component for detecting anomalies of unusual interactions or behavior is included that indicates the potential for security threats. Evaluation on publicly available surveillance video datasets shows considerable improvements in precision, recall, and processed speed over conventional techniques. They point to this research as an underline of how artificial intelligence can transform modern surveillance systems to become proactive rather than reactive and minimize human error, as well as enhancing public safety. The future work is extension of this work to include further refinement of threat assessment capabilities and additional contextual information and predictive models.

Keywords:

Object detection, object tracking, surveillance videos, security monitoring, threat detection, convolutional neural networks (CNNs), anomaly detection, Kalman filter, Simple Online and Realtime Tracking (SORT), computer vision, machine learning, real-time processing.

Rainfall-Induced Slope Failures: Analyzing Soil Behavior and Stabilization Techniques

Angel Teras Joji
Student, Saintgits College of Engineering, Kottayam, Kerala

Hanna Paul
Student, Saintgits College of Engineering, Kottayam, Kerala

Abstract:

Rainfall-induced slope failures in unsaturated soils occur primarily due to a reduction in matrix suction, leading to a decline in shear strength. Understanding the relationship between matrix suction and moisture content is essential for characterizing the hydraulic behavior of unsaturated soils, typically represented by the Soil-Water Characteristic Curve (SWCC). In this study, the SWCC of the sample soil is developed using a dew point potentiometer, and the influence of Van Genuchten parameters (α, n) on slope stability under rainfall infiltration is examined through SWCC-based hydraulic properties. A numerical analysis is performed in PLAXIS 2D to evaluate slope stability under varying rainfall intensities. In addition to hydraulic parameters, factors such as slope geometry and soil shear strength properties significantly influence stability. A sensitivity analysis is conducted by varying these parameters to assess their impact on slope performance. Empirical laboratory investigations complement the numerical modeling to provide a comprehensive understanding of the mechanisms contributing to rainfall-induced slope failures. Furthermore, the study identifies failure mechanisms associated with rainfall-triggered landslides, focusing on the role of soil saturation and pore water pressure. The effectiveness of slope reinforcement techniques is assessed to develop cost-effective stabilization solutions that ensure a high factor of safety during heavy rainfall events. The findings of this project contribute to the development of improved slope stabilization strategies, enhancing resilience against rainfall-induced failures.

Keywords:

Soil Water Characteristic Curve, Dew Point Potentiometer, rainfall, PLAXIS 2D.

ISBN: 978-93-92104-23-7

Skin Cancer Classification with CGAN-based Data Augmentation

Kiruba Jayashree. P
Student

Sudha. R
Student

Abstract:

Detection of skin cancer remains a crucial medical issue because it determines the effectiveness of melanoma treatment. The current detection systems experience performance limitations because of limited labeled data which results in overfitted models that produce narrow potential outcomes while demonstrating poor generalization for unknown skin lesion classes. This research proposes solving classification challenges through the implementation of Conditional Generative Adversarial Networks which produces synthetic images that replicate the natural variability seen in real-world skin lesion scans. Synthetic images from CGANs enhance CNN training sets while improving their capabilities to identify various types of skin cancer. The proposed system exists as a platform which trains CGANs on real skin lesion datasets to produce matching synthetic imagery that amalgamates with original datasets before creating an extended CNN training set. The evaluation of proposed CNN models uses real skin lesion images with their performance evaluated through accuracy and sensitivity while measuring specificity and F1 score metrics. Model performance improves when training augmentation techniques are used instead of original image sets resulting in enhanced robustness and precision together with generalized results. Additional incorporation of synthesized data leads to substantial advancement in detecting skin conditions which dermatologists identify rarely. The research has established CGANs as promising tools for generating synthetic medical images which address data deficit challenges while showing foundationally that data augmentation strengthens deep learning model capabilities.

Voice Cloning Based on Deep Fake

Mercy Paul Selvan
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India – 600119

Patthipaati Chandana
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India – 600119

Paila Nandini
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India – 600119

Abstract:

Voice cloning technology is progressing quickly, using deep learning algorithms to create realistic replicas of human voices. This study looks into how deepfake techniques are applied in voice replication, with a focus on generating highly accurate and personalized speech patterns using minimal input data. The system being examined utilizes advanced neural networks, including generative adversarial networks (GANs) and sequence-to-sequence models, to closely mimic an individual's vocal qualities, intonation, and speaking style. The research tackles technical challenges such as data preprocessing, generating speaker embeddings, and evaluating synthesis quality. Additionally, it addresses ethical concerns and potential misuse, highlighting the need for safeguards and guidelines to reduce risks. Experimental results show the effectiveness of the proposed method in achieving top-tier performance for various applications, including personalized voice assistants, speech restoration, and entertainment. This study aims to contribute to the ongoing progress in voice synthesis while promoting the responsible use of deepfake technologies.

Keywords:

Voice cloning, Deepfake, Neural networks, Speech synthesis, Responsible AI usage.

ISBN: 978-93-92104-23-7

Analysis of Long-Term Performance of Diaphragm Wall Pile Foundation in Cohesive Soil

Albin S
M Tech Scholar

Manoj C M
M Tech Scholar

Abstract:

Developing new type of foundation with improved bearing capacity is frequent in foundation Engineering. Here a new type of foundation combining the effectiveness of both pile and diaphragm in cohesive soil is focused. In this study a three-dimensional numerical study is carried out using PLAXIS -3D to analyze the time dependent behavior of the Diaphragm Wall Pile foundation during the construction and post construction phase. Determination of the effectiveness of pile combination under various pile length, non-uniform pile length, spacing and then comparing with normal pile foundation. The literature review done is centered on similar type of Diaphragm Wall Pile Foundation that is Piled Raft Foundation. Studies have shown that understanding the behavior of foundation under long term loading is essential for designing foundation, because there are cases of foundation failure (mostly settlement) occurred during the construction phase and post construction phase. The analysis is done on clayey soil, because in clayey soil consolidation settlement occurs. Diaphragm wall pile foundation has improved bearing capacity than the normal pile foundation. With the length of the Diaphragm Wall increases the bearing capacity also increases.

Keywords:

PLAXIS 3D, Diaphragm Wall Pile Foundation.

Augmenting Mathematical Reasoning Capabilities of AI Models: Chain of Thought

Amritava Kole
Gautam Buddha University

Raju Pal
Gautam Buddha University

Abstract:

Large Language Models (LLMs) fail in performing multi step mathematical Reasoning, generating incoherent result, which either results in incorrect calculations or skipped any steps in the process. Even with Chain of Thought (CoT) prompting, we achieve maximal accuracy of 78% on the GSM8K benchmark.

Also, this research introduces **Structured Answer Prompting (SAP)**, a mechanism that encourages such a specified answer structure for more transparency, consistency and reliability of model responses in the form of "Final Answer: X". According to our results, SAP raises accuracy from 92.71%, 93.09%, and 92.77% with GPT-3, and QWEN-1.5 7B, and DeepSeek-R1 respectively.

We also developed Deep Understanding of Problems (DUP) that enhances semantic comprehension and decomposes the semantic problem. In addition, the performance is further boosted by the combination of DUP + SAP, as DeepSeek-R1 reaches 95.62% accuracy on solving a multi-step mathematical problem.

In contrast to traditional fine tuning, SAP only holds to system prompts modifications, and it is a computationally efficient and scalable approach for improving LLM reasoning accuracy in difficult tasks.

Keywords:

Chain of Thought, LLMs, GPT-3, LLM Reasoning.

ISBN: 978-93-92104-23-7

ICASET
22 - 23 March 2025 | Chennai, India

A Proposed MalwareInsight Framework for Evaluating Machine Learning Techniques Using Hypothetical and Real Datasets for Malware Detection in Cyber security

Saloni S. Chauhan
Department of Computer Science And Indormation Technology Atmiya University Rajkot, India

Dr. Disha Ganatra
Department of Computer Science And Information Technology Atmiya University Rajkot, India

Dr. Ripal D Ranpara
Department of Computer Science And Information Technology Atmiya University Rajkot, India

Abstract:

In the era of Cyber Security, Integration of Machine Learning plays a very vital role. Machine Learning techniques are useful in Malware Detection as it serves the great purpose of Diverse Datasets with model training. In this research Paper We have proposed a MalwareInsight Framework which analyse the various machine learning algorithms by studying the experiment result on Datasets. The study involves the Diversity of Datasets and Machine Learning Framework Accuracy and efficiency in the field of Cyber Security. The Model evaluation metrics involves Datasets Diversity, Accuracy, Precision, Recall and F1 Score. An Comparisons matrix of Different Testing Machine Learning techniques like Random Forest, Support Vector Machine (SVM), Gradient Boosting, Decision Tree, and k-Nearest Neighbors (k-NN). The novelty of this research lies in its focus on comparing the strengths and limitations of hypothetical and real-world datasets in improving malware detection. This study provide valuable insights into the trade-offs between datasets types and contribute to developing more robust and adaptive malware detection systems. This research not only advances the field of cybersecurity but also offers practical guidance for enhancing detection systems in dynamic threat environments, making them more reliable for real-world applications.

Keywords:

Machine Learning, Cyber Security, Malware Detection, MalwareInsight Framework, Machine Learning Techniques.

AI-Driven Cybersecurity and Surveillance Framework for Educational Institutions: A Proactive, Scalable Solution

Augustian P B
Department of CSE, SoE Presidency University Bengaluru, Karnataka, India

Chandrashekhar S
Department of CSE, SoE Presidency University Bengaluru, Karnataka, India

Shubha K A
Department of CSE, SoE Presidency University Bengaluru, Karnataka, India

Kavya Jaishree J
Department of CSE, SoE Presidency University Bengaluru, Karnataka, India

Ms Soumya
Department of CSE, SoE Presidency University Bengaluru, Karnataka, India

Abstract:

For educational institutions, the need for robust, AI-driven cybersecurity solutions has become more of a need due to the increase in the use of digital infrastructures in the institutions. Intelligent security and surveillance framework which combines Artificial Intelligence (AI), Machine Learning (ML) and progressive cyber security technology to deal with the increasing unsafe web cost is proposed by this examination. This framework deploys firewall via pfSense and uses Snort for real time intrusion detection prevention. At the same time, it makes use of the Scikit-learn and the TensorFlow machine learning algorithms to perform predictive threat analysis as well as anomaly detection for the proactive threat mitigation. The system is engineered to use Splunk for Security Information and Event Management (SIEM) to monitor real time and get smart insight. On top of that, we use MongoDB and ELK Stack (Elasticsearch, Logstash and Kibana) to simplify aggregating, analyzing and visualizing logs successfully. OpenLDAP is used for centralised authentication, and RBAC is dynamically changed by changing risk assessment using ML models. Through Flask and Bootstrap. It has an AI powered administrator dashboard with Dialogflow for policy management. URL filtering coupled with ZScaler is turned on to stop access to malicious domains. The privacy and GDPR compliance are ensured by implementing Federated Learning using PySyft such that the AI model training on distributed data can continue. These advancements have made the framework

ISBN: 978-93-92104-23-7

a portable platform for development and protection of educational infrastructures from current cyber threats. The framework's effectiveness is validated by measuring evaluation metrics of performance, such as detection accuracy, latency and resource utilization. Integration of Blockchain for immutable logging, Generative Adversarial Networks (GANs) for simulating attack scenarios as well as IoT- based Security Devices to protect all fronts are the future developments. The contributions provided by this research will help further the advancement of AI driven cybersecurity solutions for the educational institutions, tackling the entails in real time. The aim of this research is to fill gaps in AI based cybersecurity solutions for higher educational institutions in dealing with real time issues to develop adaptive, scalable and privacy preserving security systems that will support against emerging threats..

Keywords:

Cybersecurity, Artificial Intelligence, Machine Learning, Intrusion Detection, SIEM, Federated Learning, Educational Institutions.

Evaluating Depression Severity Through Structured Data and Delivering Tailored Recommendations Using Machine Learning

Aadhilafemine AJ
Bachelor of Technology in Computer Science and Engineering with Specialization in Data Science

Ajmal Deen K
Bachelor of Technology in Computer Science and Engineering with Specialization in Data Science

Abstract:

Depression, a pervasive mental health condition, significantly impacts individuals' well-being and quality of life. This project, *"Evaluating Depression Severity Through Structured Data and Providing Tailored Recommendations Using Machine Learning,"* presents an innovative approach to early detection and personalized mental health support. The system gathers user input through the PHQ questionnaire and gamified assessments, analyzing responses with machine learning algorithms to classify depression severity into four levels: none, mild, moderate, and severe. Tailored recommendations, including lifestyle adjustments, coping strategies, and mental health resources, are provided for non-severe cases, while severe cases are directed to professional intervention with actionable suggestions and nearby psychiatrist locations. By integrating structured data analysis with an engaging, user-friendly interface and gamified interactions, the project enhances user experience and promotes proactive mental health care. This holistic methodology ensures early intervention, accurate detection, and personalized support, addressing the stigma and barriers often associated with mental health. The system's scalability, accessibility, and emphasis on timely action make it a valuable tool for individuals, caregivers, and healthcare providers. By combining technology with a comprehensive mental health approach, this project significantly contributes to the global efforts in improving mental health care delivery and accessibility. It holds the potential to advance mental health support systems and inspire further innovation in the field.

ISBN: 978-93-92104-23-7

A Review Of Spatial Techniques For Analyzing LULC, Urban Expansion, And Waste Management Using GIS

Madhuri Reddy
Research scholar, Amity University Mumbai, West Bengal

Dr. Shrikant Charhate
Research scholar, Amity University Mumbai, West Bengal

Abstract:

Indian cities have drastically metamorphosed due to extensive urbanization, changing its Land Use and Land Cover (LULC). This has aggravated the sprawl of urban places which has presented problems for handling management of waste disposal. The current review paper, presents ways that Geographic Information Systems (GIS) as well as techniques in remote sensing are applied in tackling these concerns. The changes in LULC can be mapped, monitored and analyzed using GIS as an analytical tool and postulating effective developments for protection of environment and planning of urban development. To enumerate the effect on infrastructure and ecology, the present study focuses on different methods applied to evaluate urban sprawl, incorporating free structures and geospatial analyses. GIS-based Multi-Criteria Decision Analysis (MCDA) and Analytic Hierarchy Process (AHP) models are also gauged for their effectiveness in ascertaining ideal sites for waste disposal. Combining different spatial techniques, the present study underscores long-term urban development plans that are in line with Sustainable Development Goals (SDGs). The outcomes emphasize the significance of posing GIS-driven solutions that can maintain an equilibrium between growth and environmental protection.

Keywords:

Geographic Information Systems (GIS), Land Use and Land Cover (LULC), Urban Sprawl, Waste Management, Sustainable Urban Development.

RAG-Powered Personal Chatbot: Balancing Privacy and Computational Efficiency in LLM-Based Systems

Kabil C A
Student, School of Computing Science and Artificial Intelligence, VIT bhopal University, Kothri Kalan, Sehore - 466114, Madhya Pradesh, India

Sirajudeen
Student, School of Computing Science and Artificial Intelligence, VIT bhopal University, Kothri Kalan, Sehore - 466114, Madhya Pradesh, India

Abstract:

This research explores the implementation of a personal chatbot utilizing Retrieval-Augmented Generation (RAG) with open-source Large Language Models (LLMs). By integrating a vector database locally (on-device) via LangChain for efficient data retrieval through similarity search, this study connects advanced language generation capabilities with secure, privacy-preserving, cost-efficient embedding data management. To optimize performance in resource-constrained environments, the performance was systematically evaluated using various embedding models, analyzing their dimensionality, computational efficiency, and accuracy in retrieval tasks. Our findings highlight trade-offs between model size, retrieval speed, and response quality, offering insights into selecting optimal configurations for different hardware constraints. This approach ensures that users can interact seamlessly with their personal data on local devices without compromising privacy and cost. Using the capabilities of semantic search, pretrained LLMs and the flexibility of open-source tools, the study demonstrates the feasibility of creating practical, secure, and user-centric retrieval chatbot solutions. The findings aim to contribute to the broader adoption of RAG-based frameworks for personalized applications, offering a balance between performance, privacy, and cost efficiency.

Keywords:

Retrieval Agumented Generation, Langchain, Embeddings, LLM, FAISS.

ISBN: 978-93-92104-23-7

Coarse-to-Fine Methodology for Accurate Camouflaged Object Detection

Adireddi Vidya Sarika
Department of CET, Chaitanya Bharathi Institute of Technology Hyderabad, Telangana 500075, India.

Bhukya Poojitha
Department of CET, Chaitanya Bharathi Institute of Technology Hyderabad, Telangana 500075, India.

Mrs. Ch. Sri Lakshmi
Assistant Professor, Department of CET, Chaitanya Bharathi Institute of Technology Hyderabad, Telangana 500075, India.

Dr.J.Vamsinath
Department of CSE, "Faculty of Science and Technology (IcfaiTech), ICFAI Foundation for Higher Education, Hyderabad

Abstract:

Camouflaged Object Detection (COD) is a critical task in the domain of computer vision, with applications in areas like wildlife observation, military operations, and medical imaging. Traditional COD methods often struggle with chal- lenges related to accurate boundary detection, multi-level feature aggregation, and the suppression of background noise, leading to missed or incomplete detection of camouflaged objects in complex environments . These existing techniques, particularly those relying on simple feature extraction or single-stage net- works, fail to effectively handle fine boundary delineation and high-level feature utilization, which are crucial for accurately detecting camouflaged objects . To address these limitations, this paper focuses on optimizing boundary detection, enhancing feature utilization, and improving multi-level feature aggregation. We propose an innovative deep learning approach utilizing a refined encoder-decoder framework combined with boundary- guided feature fusion and multi-stage refinement techniques. These methods aim to improve the precision of object bound- ary delineation while effectively suppressing background noise, thereby overcoming the limitations of previous techniques . By integrating high-level and low-level features, our approach not only increases detection accuracy but also reduces the risk of background interference in highly complex scenes.Our research demonstrates that the proposed methods out- perform existing techniques in terms of accuracy and feature optimization, providing a more robust solution for COD . This work offers a comprehensive evaluation of deep learning-based COD models, suggesting new directions for future research and application.

Keywords:

Camouflaged Object Detection (COD), Deep Learning, Boundary Detection, Encoder-Decoder Frameworks, Feature Aggregation, Background Noise Suppression.

Large Language Models and Graph Based Analysis for in-Silico Medical Data

Neelaveni P
Professor, Information Technology, Rajalakshmi Engineering College, Tamil Nadu

Dhanush D
Information Technology, Rajalakshmi Engineering College, Tamil Nadu

Apsara S
Information Technology, Rajalakshmi Engineering College, Tamil Nadu

Abstract:

Analyzing drug-disease relationships and drug-side effect associations is critical in biomedical research for drug repurposing and clinical trials. The vast and continuously expanding volume of unstructured biomedical data presents a challenge for researchers in drug repurposing and discovery. Traditional approaches to drug repurposing often struggle to use unstructured data effectively and also limit their ability to produce novel solutions. Herein, a novel approach is proposed that integrates Large Language Models-based natural language processing with an updated Targeted Central Resource Database (TCRD), structured into a comprehensive knowledge graph. Benefiting from LLMs' understanding of biomedical language and employing advanced feature encoding, this framework enables precise clinical trial outcomes and drug-disease associations. Medical researchers can utilize this platform to explore complex datasets and gain insights into drug repurposing opportunities through the interactive user interface and chat interface, along with the querying algorithms employed. The integration of LLMs with structured databases not only enhances the accuracy and reliability of predictions but also refines decision-making in drug discovery, making this approach an alternative to traditional methods. Our findings highlight the transformative potential of LLMs in drug development and advancing biomedical research, paving the way for innovative solutions.

Keywords:

Drug Repurposing,Large Language Models (LLMs),Knowledge Graphs,Target Central Resource Database (TCRD),Neo4j Graph Database,Semantic Data Integration,Drug-Disease Associations.

ISBN: 978-93-92104-23-7

A Review of Vision-Based Approaches for Indian Sign Language Recognition

Mansi Bhatt
Department of Mtech Integrated, Computer Science & engineering, Noida Institute of Engineering & Technology Greater Noida, India

Mr Pradeep Kumar
Department of Computer Science & Engineering Noida Institute of Engineering & Technology Greater Noida, India

Dr Poornima Tyagi
Department of Computer Science & Engineering Noida Institute of Engineering & Technology Greater Noida, India

Abstract:

Sign language acts as a critical link between the hearing and hearing-impaired communities. However, with more than 7,000 unique sign languages and variations of hand shapes, motion patterns, and body positioning, it poses significant chal- lenges for automatic sign language recognition systems. These complexities arise due to the dynamic nature of gestures, hand movements, and facial expressions, which must be interpreted with a high degree of precision to achieve proper recognition. Over the past couple of decades, researchers have made strides towards employing intelligent solutions that include machine learning, deep learning, and computer vision. This review will focus on the vision-based ASLR systems, focusing on feature extraction and classification techniques because these are impor- tant features toward improving the accuracy and robustness of the system. Traditional image processing techniques and more sophisticated neural network models have been studied, each of which addresses issues such as gesture variability, occlusion, and sign language differences. Still, a perfect, all-purpose ASLR system is yet to be found, and there are still many challenges in real-time performance, environmental adaptability, and cross- language recognition. This paper gives an overview of the current state of intelligent ASLR systems and provides a roadmap for future research in this field.

Keywords:

Indian Sign language recognition, Vision based approach, CNN, KNN, SVM, SIFT.

Deep Learning in Graphical User Interfaces: Current Advances and Research Horizons

Anubhav Yadav
Department of of M.Tech Int. CSE, Noida Institute of Engineering and Technology Greater Noida, India

Mr. Rajeev Kumar
Department of Computer Science and Engineering Noida Institute of Engineering and Technology Greater Noida, India

Dr. Ritesh Rastogi
Department of Information Technology, Noida Institute of Engineering and Technology, Greater Noida, India

Abstract:

This paper provides a broad overview of the latest development of deep learning techniques for the GUI. We discuss and focus on the most used techniques:CNN,autoencoder, and GAN, together with the datasets that have been applied in the construction of GUI applications. Our survey draws attention to critical challenges and emerging research opportunities in the field, thus highlighting the potential of deep learning to automate and enhance GUI design processes. We argue that applying deep learning to GUI design has significant promise for driving in- novation and improving efficiency in software development. Our review identifies key challenges in this rapidly evolving domain, from better interpretability to niche application data scarities to the integration of deep learning models with more human- centered design principles, among other things. But we also outline emerging research frontiers and some of what's emerging in cross-modal interaction designs, reinforcement learning for GUIs, or even AI driven collaboration tools.

Keywords:

Deep Learning,graphical user interfaces, design automation, user experience.

 ISBN: 978-93-92104-23-7

22 - 23 March 2025 | Chennai, India

Fake News Detection using Passive Aggressive Classifier on Aws Ec2: A Scalable Approach

Rammohansai Ananthapalli
Department of Computer Science and Engineering, Sathyabama University Vaivaka, Chennai, India

Harsha Ananthapalli
Department of Computer Science and Engineering, Sathyabama University Vaivaka, Chennai, India

Dr. Joseph.Cruz Antony M.C.A
Ph.D., Assistant Professor, Department of Computer Science and Engineering, Sathyabama University Vaivaka, Chennai, India

Abstract:

The spread of fake news on social media platforms is a growing concern, contributing to misinformation and its harmful consequences. To combat this issue, this paper proposes the implementation of a machine learning-based solution using the Passive Aggressive Classifier (PAC) algorithm to detect fake news articles. The dataset includes both real and fake news, and the model is trained to differentiate between the two categories. The solution is deployed in a scalable, secure, and high-performance environment using AWS EC2, ensuring real-time detection and processing of social media content. By leveraging AWS's cloud infrastructure, the system supports large-scale operations, offering an efficient and reliable method for identifying and preventing the spread of misinformation. The results show that the PAC algorithm achieves high accuracy and is a feasible solution for large-scale fake news detection.

Keywords:

Fake News Detection, Machine Learning, Passive Aggressive Classifier, AWS EC2, Real-time Processing, Misinformation.

Cultivating the Future: The Role of AI in Transforming Agriculture

Anushree G
Assistant Professor, Department of Artificial Intelligence and Data Science, CMR Institute of Technology, Bengaluru, Karnataka, India

Harshitha N
Department of Artificial Intelligence and Data Science, CMR Institute of Technology, Bengaluru, Karnataka, India

Diya Rose Melwin
Department of Computer Science and Data Science, CMR Institute of Technology, Bengaluru, Karnataka, India

Divyamani L S
Department of Artificial Intelligence and Machine Learning, CMR Institute of Technology, Bengaluru, Karnataka, India

Abstract:

Agriculture, a fundamental pillar of global food security, is increasingly challenged by climate change, resource limitations, and the growing demand for sustainable practices. The integration of Artificial Intelligence (AI) has emerged as a transformative solution, offering innovative approaches to enhance productivity, optimize resource utilization, and improve crop health management. This survey provides a comprehensive review of AI-driven techniques and their applications in agriculture, highlighting recent advancements in crop yield prediction, disease detection, water management, and precision farming. It examines various machine learning models, deep learning frameworks, and remote sensing technologies that address key agricultural challenges. By synthesizing findings from multiple studies, the paper evaluates the strengths and limitations of current AI applications and explores opportunities for future research in this rapidly evolving domain. The review emphasizes the potential of integrating AI with IoT, big data analytics, and advanced imaging technologies to develop more efficient, scalable, and sustainable agricultural systems. Additionally, it discusses critical challenges, including data accessibility, model interpretability, and the need for ethical guidelines to support responsible AI adoption in agriculture. The insights presented in this paper aim to guide researchers, policymakers, and industry professionals in leveraging AI to drive innovation and resilience in the agricultural sector.

Keywords:

AI in agriculture, Sustainable Agriculture, precision farming.

ISBN: 978-93-92104-23-7

Automated Insect Monitoring and Identification System for Sustainable Agriculture

Nandana Sethu
Student

Sandhra Jojo
Student

Abstract:

Agriculture thus plays an integral role in food security globally. Pest infestation continues to be a challenge in agriculture, reducing crop yield and resulting in economic loss. Farmers control pests through the application of broad-spectrum pesticides, which not only kill harmful pests but also beneficial insects, causing ecological imbalance and degradation of the environment. It jeopardizes human health through unregulated use of pesticides, results in soil and water pollution, and creates pesticide-resistant pests and worsening the situation. An Automated Insect Monitoring and Identification System is proposed here, which aims to embrace cutting-edge technology to promote sustainable and precise pest management.

Advanced image processing and machine learning techniques using Convolutional Neural Networks (CNNs) have been incorporated by this system to monitor, identify, classify, and quantify the insect populations in an agricultural field. The invention relates to a novel system of an AI-driven intelligent insect trap patternly using LED lights to attract the insects during night time. The imaged trapped insects are taken with the help of a high-resolution camera that captures the insect under different lighting conditions. The images are processed by quite a few pre-processing steps like noise reduction, grayscale, and segmentation to haul in greater clarity and isolation of insect features.

First is the image acquisition then the deep learning models analyze and classify the insects as beneficial or harmful to the plants based on morphological characteristics. Apparently, the CNN model is trained with a big insect species dataset, capable of differentiating quite efficiently all types of pollinator, predator, and pest classes that would be helpful for farmers in pest management decisions. Further, the real-time information regarding pest infestations uses very advanced but simple soil algorithms that automatically count the insect populations.

The system further features a user-friendly web interface to enable real-time monitoring and visualization of data that is intuitive enough for farmers to track insect populations over time. The web application provides graphical insights, trend analyses, and recommendations for selective pest control measures. This data-driven approach aims to minimize chemical pesticides under which farmers can put Integrated Pest Management (IPM) techniques, such as limited biological controls, selective pesticide application, or eco-friendly pest deterrents.

The very first thing means reducing unnecessary pesticide applications; therefore, the system indirectly helps to keep beneficial insect populations, such as pollinators and natural predators, alive, which is really important for biodiversity. Moreover, it assures the correct identification of harmful pests, which thereby leads to action at an early stage, thus preventing heavy infestations and consequent crop losses.

Such advancements by the system include real-time mobile alerts processing at the edges, thus permitting offline processing, and cloud-based data analytics for large-scale monitoring of pest trends. Future avenues will include state-of-the-art deep learning methods such as transformers and generative adversarial networks (GANs) for insect classification under different environments.

Overall, the Automated Insect Monitoring and Identification System is part of the big leap in precision agriculture technologies. As such, this incredibly beneficial integrated but real-time monitoring and cost-effective solution will bring science into action through relevant information that can subsequently improve crop protection, sustain yield, and foster green farming practices. The project thus serves as a step closer to smarter, efficient, and environmentally friendly agricultural ecosystems while enhancing food security and sustainable agricultural productivity for many decades while reducing the effects of chemical pest control on the environment.

ISBN: 978-93-92104-23-7

High-Performance Girth-six QC-LDPC Codes for Cloud Storage: A novel approach

Dr. P V Bhuvaneshwari
Assistant Professor

Dr. C Tharini
Assistant Professor

Abstract:

Cloud-based data storage systems offers large storage space for businesses looking for their data to be stored with minimal infrastructure and maintenance costs. Such high speed storage systems achieve excellent data reliability, availability and improved storage efficiency by employing error correcting erasure codes such as Low Density Parity Check codes. Randomly constructed LDPC codes exhibited near-capacity error correction capabilities. However, they lacked a proper mathematical structure, due to which they suffered in certain important aspects such as high encoding-decoding complexities and huge storage overhead. Hence, structured codes, popularly known as Quasi-Cyclic LDPC codes, have gained momentum. This paper presents a novel method to construct high-rate QC-LDPC codes with girth six and high sparsity for storing and analyzing large amounts of data in cloud and also evaluate their bit error performances over binary erasure and additive white gaussian channels. Simulation results show that proposed high-rate QC-LDPC codes have good BER performance compared to conventional random LDPC codes. Additionally, It is also found that with small storage overhead, high-rate QC-LDPC codes with girth six were able to recover the lost data from the encoded blocks even during server/data centre failure.

Deep Learning Assisted Machine Learning on Diabetes Prediction using Django

Mrs. M.Gowri
Assistant Professor, Department of Computer, Sathyabama Institute of Science and Technology, Chennai, India – 600119

Pandit Kerolisha
Department of Computer, Sathyabama Institute of Science and Technology, Chennai, India – 600119

Pendota Minarva
Department of Computer, Sathyabama Institute of Science and Technology, Chennai, India – 600119

Abstract:

The widespread health concern known as diabetes affects people globally on a public scale. health challenge with growing prevalence for which Predictive methods at an advanced level must be used for early intervention and detection purposes. This research fused deep learning methods with conventional machine Estimated diabetes risk would be calculated through learning algorithms which developed a strong prediction machine. prediction machine under the Django framework. The health indicator measurements consisted of age and BMI and glucose levels and family history records. glucose levels, and family history, feature selection the analysis employs neural networks as deep learning architecture structures. The system extracted complex non-linear data relationships through its network structures. the data. The web application uses Django to provide its functionalities. The application provides users with a clear interface to enter health information. Users receive instant diabetes risk feedback through the system after entering health metrics on the Django application interface. risk. The platform includes interactive dashboards to present major risk categories for visualization. The application incorporates clear interfaces through Django for user entry and displays instant diabetes risk predictions alongside features dedicated to visualizing important factors and prediction results. The application contains user-friendly features to enhance the interaction experience of users. engagement and understanding easier. Combining the technologies of accessible web with advanced We obtain some evidence through deep learning methods The system along with its technology demonstrates potential to build proactive healthcare platforms. solutions for diabetes management.

Keywords:

Deep learning, machine learning, Django framework, diabetes prediction, healthcare analytics, neural networks.

 ISBN: 978-93-92104-23-7

Enhancing EEG-based Psychological Disorder Classification through Deep Learning

Rashmi Jain
Student, Christ Deemed to be University, Karnataka

Dr. Ancy Nidhin P R
Student, Christ Deemed to be University, Karnataka

Dr. Baburaj
Student, Christ Deemed to be University, Karnataka

Abstract:

The significant rise in the prevalence of psychological disorder after Covid-19 has highlighted the importance of its early and fast detection and EEG signals give the best solution for it.EEG signals measure the electrical activity of the brain. An EEG brainwave dataset displaying positive, negative and neutral emotions has been taken. Negative emotions are mainly responsible for negative thoughts and in turn psychological disorders. The EEG plays a vital role in the diagnosis of different neurological and psychological disorders like epilepsy, depression, and schizophrenia. Amplitude and frequency changes in the signal give an insight into cognitive impairments, but classifying EEG signals is convoluted because of high dimensionality, intra-and inter-subject variability, and noise. Channel wise signals are analyzed as per the standard using different machine learning methods to classify EEG-based classification models, SVM, KNN, and Random Forests, although these models, with feature engineering, are often facing performance issues because of their inability to generalize under high-noise conditions. However, recent advances in deep learning, especially Convolutional Neural Networks (CNNs), have shown noticeable superiority in EEG classification tasks by automatically extracting spatial and temporal patterns from the raw EEG signals.

This paper aims to comparatively assess a fully connected Neural Network (NN) and a CNN for classification of psychological disorders with EEG data. Thereafter, our dataset consolidates preprocessed EEG recordings, which have been labeled in accordance with mental health diagnoses. The implemented processing pipeline for the study includes noise filtering, normalization, and categorical label encoding training. The CNN architecture comprises several convolutional layers followed by batch normalization, dropout, and max pooling, which optimized feature extraction while preventing over fitting. A fully connected NN was also trained to evaluate such differences in performance between traditional deep learning and CNN classification models. Standard performance metrics like Accuracy, Precision, Recall, and F1-score are used to evaluate the model. The CNN provides an accuracy of 98%, outperforming the fully connected neural network, which gave an accuracy of 95.469%. Disparate confusion matrices further confirm that differences in performance exist in favor of the CNN.

Exploring the Potential of Mixed Reality for Enhancing the Mechatronic System Design Process

Vikram S. Vyawahare
Terna Engineering College, Nerul, Navi Mumbai

Dr. Rajesh Buktar
Sardar Patel College of Engineering, Andheri Mumbai

Abstract:

This paper investigates the potential of mixed reality (MR) for enhancing the mechatronic system design process. The complexity and challenges inherent in mechatronic design, involving intricate system interactions and rapid prototyping needs necessitate exploration of innovative methods. The paper emphasizes the importance of finding innovative solutions to these challenges, particularly through the application of MR technologies. The study utilizes a survey approach, gathering insights from participants across industry, research, and academia. These participants were asked to rank various pressures, challenges, and aspects of MR that could improve the mechatronic design process. The survey data was analyzed to explore the perceived applicability of MR in overcoming key design challenges. The results indicate a consensus among participants that MR holds significant potential for advancing mechatronic system design. Participants identified several key areas where MR could address design challenges. The responses highlighted MR's capacity to improve both the design process and the resolution of complex design challenges. The paper concludes that MR technologies present a high potential for transforming mechatronic system design processes. Based on the survey insights, the paper proposes future research directions focused on developing MR-based tools and techniques to enhance the Mechatronic System Design Process.

Keywords:

Mechatronic System Design, Mixed Reality, Visualization, Motion Control.

ISBN: 978-93-92104-23-7

Use of Waste Plastic for Soil Stabilization: An Evaluation Report

Chelani B. P.*
Research Scholar, Department of Civil Engineering RTMNU, Nagpur, India

Dhoble R. M.
Professor, Department of Civil Engineering, Priyadarshini College of Engineering, Nagpur, India

Abstract:

Plastic plays a major role in our life use, but the increased usage of it led to a serious challenge to environment. Increased Plastic waste led to many bad disposal methods. Therefore, to seek for safe and effective disposal of Plastic to protect our next generations' future, one of the effective and safe solutions is to use plastic waste in Soil Stabilization. This article includes thorough study of various parameters to use waste plastic bottles fibers. Also, examine the effectiveness of using Plastic for soil reinforcement. This Paper Suggest the dimensions and percentage of Plastic to be used. After reviewing the performance of reinforcing soil considering its OMC, MDD, CBR, UCS, etc., waste plastic bottles can effectively be considered as a reinforcing material and it is an eco-friendly solution. Also, this can reduce the thickness of the pavement in highways construction. It was found that the addition of (0- 5) % Plastic with higher aspect ratios gives reliable results.

Keywords:

Soil stabilization, Plastic Waste, Bearing capacity of Soil.

Revolutionalising Lung Disease Diagnosis using Machine Learning

Pogula Vinay kumar Reddy
Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

Pulluru Harshavardhan Reddy
Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

Dr. B. Ankayarkanni
Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

Lung sicknesses, which includes lung most cancers, bronchial asthma, and continual obstructive pulmonary disorder (COPD), pose a major assignment to worldwide health. Early detection and accurate diagnosis of those diseases are essential to enhancing affected person results and reducing healthcare prices. With the ability to diagnose lung sicknesses, synthetic intelligence (AI), typically machine learning (ML) and deep gaining knowledge of (DL), has grown to be a completely transformative device in clinical analysis. AI can use big quantities of affected person statistics to find out patterns and biomarkers that clinicians presently can't see. We additionally spotlight the challenges and obstacles related to the usage of AI within the healthcare context, together with records high-quality, interpretation, and trouble fixing. The intention is to clarify how AI can be incorporated into modern healthcare systems to better predict lung diseases, in the end main to better remedies and a higher effect on the ones affected. As the signs and symptoms of COVID-19 closely mimic those of pneumonia, lung cancer and tuberculosis (TB), the rapid spread of these viruses has underscored the importance of early and accurate diagnosis of respiratory infections.

Keywords:

lung conditions, COVID-19, machine learning, early identification, accurate prognosis, and artificial intelligence.

ISBN: 978-93-92104-23-7

Exploring the Untapped Antidiabetic Potential of M. Longifolia Flower

Sameeksha Shukla
Barkatullah University, Bhopal, M.P.; ICMR-BMHRC, Bhopal, M. P

Dr. Puneet Gandhi
Barkatullah University, Bhopal, M.P.; ICMR-BMHRC, Bhopal, M. P

Dr. Ragini Gothalwal
Barkatullah University, Bhopal, M.P.; ICMR-BMHRC, Bhopal, M. P

Abstract:

Diabetes mellitus is one of the major global health challenges today. In India, the prevalence of type 2 diabetes mellitus (T2DM) and the mortality due to associated complications are increasing rapidly. Currently used medications are accompanied by various side effects during the required long-term treatment. The need for safe and natural alternatives for better disease management makes Madhuca longifolia flower a potential candidate.

In the present study, extraction and quantitative estimation of bioactives of M. longifolia flower was performed to assess the presence of antidiabetic phytochemicals.The solvent method of extraction was carried out followed by qualitative analysis of three extracts namely aqueous (aq) ethanol, aq. methanol and aq. acetone. and colorimetric quantification of bioactives.

Preliminary phytochemical screening confirmed the presence of phenols, flavonoids, tannins, saponins, terpenoids, glycosides and alkaloids in the flower. Findings indicate that among the three tested extracts, the presence of bioactives was higher in aq. acetone extract. In this extract total tannic acid content was 60 mg/gm TAE, total terpenoid content was 9.9 mg/gm LIE and total flavonoid content was 6.47 mg/gm RE. This extract also showed positive glucose adsorption activity.

M. longifolia flower is used traditionally to treat a variety of diseases in rural and tribal cultures of India. It is a storehouse of bioactives along with minerals and vitamins known for their antidiabetic activity. Being edible and naturally available, it can be a promising therapy adjuvant for T2DM management.

Flexural Performance of Encased Steel-Concrete Composite Beams: Experimental Study

Najir Badashah Nadaf
Student, SRM Institute of Science and Technology, Kattankulathur Campus

Dr. N. Umamaheswari
Student, SRM Institute of Science and Technology, Kattankulathur Campus

Abstract:

This paper conducted an experimental investigation on the structural behaviour of concrete-encased composite beams under lateral loading. Four-point bending method was used to test three beam specimens. An ISMB 150 section as per IS 808:2021 was employed in the investigation to evaluate the structural response of the steel-encased composite beams. The results highlight the significant effect of the encased steel section on the beam behaviour and failure mechanism. The addition of concrete increases the fire resistance and ductility of the beam leading to better structural efficiency.

The test results also show that the load-carrying capacity and cracking extent in the compression zone increase with the grade of concrete. It was also observed that the composite beam with M60 grade concrete had a 22.23% improvement in flexural strength compared to a composite beam with an M40 concrete mix and a higher concrete grade enhances the flexural strength of the composite beam.

ISBN: 978-93-92104-23-7

A Thorough Analysis of the Effects of 5G Technology and its Utilization in Healthcare

Mr. Shrikanth N G
Department of Artificial Intelligence and Machine Learning Alva's Institute of Engineering and Technology, Mangalore, India

Harish Kunder
Professor, Department of Artificial Intelligence and Machine Learning Alva's Institute of Engineering and Technology, Mangalore, India

K R Vivek
Department of Artificial Intelligence and Machine Learning Alva's Institute of Engineering and Technology, Mangalore, India

Punith Kumar P V
Department of Artificial Intelligence and Machine Learning Alva's Institute of Engineering and Technology, Mangalore, India

Sushila K Navi
Department of Artificial Intelligence and Machine Learning Alva's Institute of Engineering and Technology, Mangalore, India

Ajay K A
Department of Artificial Intelligence and Machine Learning Alva's Institute of Engineering and Technology, Mangalore, India

Abstract:

This assessment highlights how important 5G technology is to the revolution in connectivity, especially in terms of its revolutionary implications for healthcare. It summarizes the fundamental ideas of 5G and contrasts its salient characteristics with those of earlier generations, emphasizing quick data speeds, minimal latency, and wide-ranging device connectivity. The research delves into particular applications in healthcare, such as yet not restricted to telemedicine, remote physician tracking, and the combination of IoT with medical sensors. It also looks at how 5G might boost augmented and virtual reality applications in healthcare, increase the effectiveness of data transfer, and offer insightful healthcare analytics. The paper explores collaborative healthcare platforms and enhanced professional communication enabled

by 5G through case studies. It offers a thorough analysis of the revolutionary effects of 5G on healthcare, including privacy and security issues in 5G-enabled systems, upcoming developments, and ethical implications discussed in the conclusion.

Keywords:

4G mobile technologies,5G mobile communication, Biomedical monitoring, transmission reliability, mobile hospital system.

ISBN: 978-93-92104-23-7

Big Mart Sales Prediction Using Federated Learning

Apeksha C
CSE Department, Manipal Institute Of Technology Manipal Academy of Higher Education, Manipal, Karnataka, India-576104

Dr. Krishnamoorthi Makkithaya
Head of the Department, CSE Department, Manipal Institute Of Technology Manipal Academy of Higher Education, Manipal, Karnataka, India-576104

Mr. Vinayak G Pai
Assistant Professor, CSE Department, Manipal Institute Of Technology Manipal Academy of Higher Education, Manipal, Karnataka, India-576104

Abstract:

Federated learning has emerged as a focal point in research discussions, driven by the growing societal importance of safeguarding information. With a focus on upholding stringent security standards while facilitating collaborative model training across multiple entities, it addresses the pressing need for privacy preservation. As the scope of machine learning models employing diverse privacy-preserving strategies expands, the critical role of systems and infrastructures supporting the development of varied federated learning algorithms becomes increasingly apparent. Analogous to the established roles of prominent deep learning frameworks like PyTorch and TensorFlow in deep learning research, federated learning systems have garnered similar sig- nificance. Nonetheless, they confront a abundance of challenges encompassing efficacy, efficiency, and privacy concerns.

Keywords:

federated learning, neural network, linear re- gression,random forest, prediction, security.

Industrial Prevention For Avoiding Disaster Events Using IOT Web Server

Dr. R. Saravanan
Professor

Noorul Ameen J
Professor

Ragul Krishna C
Professor

Mohamed Noorul Ameen A
Professor

Abstract:

Industrial environments pose inherent risks to personnel and assets due to the presence of hazardous materials, complex machinery, and high-pressure processes. To mitigate these risks and ensure a safe working environment, an industrial safety monitoring system is indispensable. This research presents an overview of such a system designed to proactively identify, assess, and mitigate potential hazards in industrial settings. The core components of the safety monitoring system include hardware components like ESP32 MCU, temperature sensors, gas sensors, flame sensors, and exhaust fans, strategically deployed throughout the facility to detect various parameters such as temperature, pressure, gas concentrations, and motion. These sensors continuously collect data and transmit it to the data acquisition units for processing. The data acquisition units analyze incoming data in real-time, applying predefined algorithms and thresholds to identify abnormal conditions or safety breaches. In the event of a potential hazard, the system triggers alarms and alerts to notify personnel and initiate appropriate response actions. Additionally, the system interfaces with automated control mechanisms to enact safety protocols, such as shutting down machinery or activating emergency ventilation systems. Communication networks facilitate seamless data exchange between sensors, data acquisition units, and the central control hub. Utilizing both wired and wireless technologies, the system ensures robust connectivity and responsiveness across the entire industrial facility. By leveraging sensor technologies, data analytics, and automation, the system enables proactive risk management and ensures compliance with regulatory safety standards.

ISBN: 978-93-92104-23-7

AI-Driven Secure Network Analysis: Anomaly Detection in Encrypted Communications

Sourabh Sahu
VIT Bhopal University

Subhash Chandra Patel
VIT Bhopal University

Adarsh Patel
VIT Bhopal University

Dipti Bhojwani
VIT Bhopal University

Abstract:

In an age where safeguarding data privacy and security is essential, combining homomorphic encryption (HE) with machine learning introduces an innovative strategy for network traffic analysis and effective anomaly detection. This study investigates enhancing anomaly detection in encrypted communications by the combination of homomorphic traffic analysis for networks, encryption, and artificial intelligence to provide data protection and privacy. Our approach combines supervised learning models, with homomorphic encryption to enable secure analysis of network data. This method allows the model to learn from diverse network environments without exposing sensitive data. The study uses the real-time CICIDS 2017 dataset to analyze attack patterns threatening network integrity. Following homomorphic encryption, models for anomaly detection are put into practice and assessed in terms of F1 score, accuracy, precision, and recall. More safe network security monitoring solutions are made possible by the model's capacity to spot irregularities in encrypted traffic, which shows how well homomorphic encryption and machine learning can be combined. This approach improves real-time network traffic analysis anomaly detection.

Keywords:

CIC-IDS, Anomaly Detection, Data Privacy, Homomorphic Encryption, Machine Learning, Network, Analysis.

Convergence of Blockchain and Distributed File Systems: An Examination of Integration, Challenges, and Future Directions

Singireddy Vikram
Department of Computer Science, Sathyabama Institute of Science and Technology, Chennai, India

Vamsi Krishna Uppalapati
Department of Computer Science, Sathyabama Institute of Science and Technology, Chennai, India

Ms. Lekshmi S Raveendran M.Tech, Ph.D
Department of Computer Science, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

The rapid development of technology changed how digital content is shared and distributed, yet traditional data sharing still encounters special security and speed problems. This research paper proposes a new blockchain-based file-sharing system that makes an effort to solve these issues through the use of Interplanetary File System and blockchain technology. Our proposal, Block IPFS, shall focus on improving the aspects of trustworthiness, author protection, and tracking by combining the unalterable and transparent data of blockchain and the efficient, decentralized data-storing capabilities of IPFS. We find suitable applications and already developed project examples such as File coin, which employs blockchain in the optimization of isocyanic unused memory. Furthermore, we work on the scalability and ongoing management problems that come from this technology. We incorporate into the system blockchain smart contract capabilities, providing a robust foundation for usability as well as security and efficiency through the introduction of AcadCoin, a cryptocurrency designed to mint commercial money in research peers. This approach ensures anonymity and integrity in the peer review process by leveraging the Hyperledger Fabric blockchain for governance and IPFS for data storage. For example, a comparison of Sia, Storing, and MaidSafe provides a good overview of the landscape. The findings show the potential of blockchain and IPFS to revolutionize data sharing, distributing, securing, and flexing traditional methods. Based on the present-day debates on various data sources, this research brings out the possibilities and challenges of integrating blockchain with data sharing for a secure environment and digital future.

Keywords:

Digital content sharing, blockchain-based file sharing system, Interplanetary File System (IPFS), data trustworthiness, author protection, data tracking, immutable data, transparent data, blockchain smart contracts, AcadCoin cryptocurrency, peer review process, Hyperledger Fabric, Sia, Storing, MaidSafe comparison, data distribution, data security, data sharing flexibility, digital future.

 ISBN: 978-93-92104-23-7

Agriculture Crop Image Classification

Dr. j. Sasi Bhanu
Professor, Department of CSM, CMRCET, Hyderabad, Telangana, India

Dr. d.b.k.kamesh
Professor, Department of CSE, MLR Institute of Technology, Hyderabad-500043

K. Laxmi Sandeep
Professor, Department of CSM, CMRCET, Hyderabad, Telangana, India

L. Sathwik
Professor, Department of CSM, CMRCET, Hyderabad, Telangana, India

P. Naveen Kumar
Professor, Department of CSM, CMRCET, Hyderabad, Telangana, India

Abstract:

The increase in demand for agricultural productivities necessitates the developments off automated systems for early and accurate plants disease detection. Traditional diseases identification methods will rely on manual inspection, which is time-consuming and prone to errors. This study presents a deep learning vision system for automatic plant diseases detection, enabling precise classification of crop infections through processing the image techniques. The proposed system utilizes color transformations, green pixel masking, and segmentation to preprocess images before classification. Convolutional Neural Network (CNN) is employed to extract features and classify the diseases with high accuracy. Experimental results demonstrate that the trained model achieves minimal error during training while effectively distinguishing healthy and diseased plants. This approach offers a scalable, cost-effective, and efficient solution for modern precision agriculture, aiding farmers in early intervention and reducing crop losses.

Keywords:

Plant Disease Detection, Deep Learning, Image Processing Techniques, Convolutional Neural Networks, Precision Agriculture.

Task Facial Analysis Using Wide Deep CNN Models

Aredela Sai Praneeth Reddy
Department of CSE AI & ML, Sathyabama Institute of Science and Technology, Chennai, India

Sudharshan. M
Department of CSE AI & ML, Sathyabama Institute of Science and Technology, Chennai, India

Dr. Geethanjali
Assistant Professor CSE, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

Applications such as security, healthcare, as well as personalized user experiences all require facial analysis. In this study we present a novel approach building on Wide Deep Convolutional Neural Networks (CNNs) to improve the accuracy of age, gender, and emotion prediction accurately among diverse demographic groups. The proposed system uses wide and deep learning methodologies to integrate low level and complex feature interaction from facial images. The model is trained on a diverse dataset of different ethnicities, age groups and genders such that both robustness, and alleviation of biases is increased. To increase the generalization capabilities an advance technique such as data augmentation and transfer learning are used. In addition, demographic aware loss functions and attention mechanisms are included to sharpen the model's preview to region-specific salient facial features. Baseline predictive accuracy is improved over experimental results by over 15% in accuracy metrics. The findings present the potential of the proposed system to support fair AI deployment in applications.

Keywords:

Facial Analysis, Wide Deep Convolutional Neural Networks, Age Prediction, Gender Prediction, Emotion Detection, Data Augmentation, Bias Mitigation, Machine Learning.

ISBN: 978-93-92104-23-7

Virtual Machine Interoperability in Cloud Computing to Increase the Availability of the Cloud Resources

Karri Manoj Subhash Reddy
Department of Computer, Science and engineering, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai – 600119.

Karri Somi Reddy
Department of Computer, Science and Engineering, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai – 600119

Ms. Amshavalli, M.Tech, Ph.D.,
Assitant Professor, Department of Computer, Science and Engineering, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai – 600119

Abstract:

Virtual Machine (VM) interoperability in cloud computing is a crucial factor for enhancing the availability and efficiency of cloud resources. This concept refers to the ability of different virtual machines, hosted on various cloud platforms, to interact seamlessly with each other. The primary goal is to improve resource utilization, ensure h CT igh availability, and facilitate easier migration and scaling of cloud-based applications. By enabling VM interoperability, organizations can leverage diverse cloud environments and services, leading to optimized performance and cost-efficiency. This paper explores the technical aspects of VM interoperability, including standardization protocols, compatibility issues, and integration strategies, with a focus on using algorithms similar as Random Forest and Support Vector Machines(SVM) to ameliorate interoperability results. These machine learning models are applied to predict compatibility between VMs and optimize resource allocation across cloud platforms. Additionally, the paper discusses the benefits of increased resource availability and flexibility, as well as potential challenges and solutions in achieving effective interoperability. The study highlights the importance of VM interoperability in advancing cloud computing infrastructure and supporting dynamic, scalable, and resilient cloud environments.

Keywords:

Virtual Machine (VM), Interoperability, Cloud Computing, Resource Availability, Standardization, Compatibility, Cloud Platforms, Performance Optimization, Migration, Scaling, Random Forest, SVM.

DualNet-DRL: A Hybrid Deep Reinforcement Learning Framework with LSTM for Automated Stock Trading and Price Prediction

Srinivas K Ma
School of Computing Science and Artificial Intelligence, VIT bhopal University, Kothri Kalan, Sehore - 466114, Madhya Pradesh, India

Harshlata Vishwakarma
School of Computing Science and Artificial Intelligence, VIT bhopal University, Kothri Kalan, Sehore - 466114, Madhya Pradesh, India

Abstract:
This work discusses the challenge of automating trading in the stock market with deep reinforcement learning to predict price movements without errors. Traditional methods fail to balance between executing and forecasting trades, often leading to less-than-desirable decisions. In order to overcome this limitation, DualNet-DRL combines a Dueling Double Deep Q-Network with an LSTM-based price-prediction model. The framework makes use of a custom environment, which has a 90-day historical window, and a reward mechanism based on realized profits and position management. The LSTM model predicts prices up to a 120-day horizon, thereby adding precision to decisions. A MinMax-scaled sequential memory buffer and an epsilon-greedy exploration strategy ensure stability and efficiency in training. Evaluated on historical stock data from 2000-2020 for training and post-2020 for testing, the framework demonstrates superior performance in risk-adjusted returns and trade efficiency, making it a valuable tool for algorithmic trading and quantitative finance.

Keywords:
Deep Reinforcement Learning, Stock Trading, LSTM, Price Prediction, Dueling Double DQN, Algorithmic Trading, Quantitative Finance.

 ISBN: 978-93-92104-23-7

Explainable AI for Pneumonia Detection in Chest X-Rays: A Comparative Study of ResNet Architectures

Shinu Aliyas George
Division of Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore, Tamil Nadu

P. Joyce Beryl Princess
Division of Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore, Tamil Nadu

Abstract:

If not identified in time, pneumonia is a serious respiratory infection that can be fatal. Automating the de- tection of pneumonia using chest X-rays (CXRs) has shown great promise for deep learning-based computer-aided diagnostic (CAD) systems. However, the interpretability of such models remains a challenge, limiting their clinical adoption. In this study, we present an explainability framework employing Gradient- weighted Class Activation Mapping (Grad-CAM) and assess the effectiveness of the ResNet18, ResNet34, and ResNet50 architectures for pneumonia detection. The models are evaluated using accuracy, precision, recall, and the area under the ROC curve (AUCROC) after being trained on a labeled dataset of chest X-rays. Our findings show that ResNet18 outperforms deeper architectures like ResNet34 and ResNet50, achieving the maximum accuracy and a solid balance between precision and recall. Furthermore, Grad-CAM representations emphasize discriminative areas in X-ray images that aid in categorization, offering vital insights into model decision-making. The study's conclusions highlight the need for explainability in medical AI applications and the trade-off between model complexity and performance.

Keywords:

Computer-Aided Diagnosis (CAD), Grad-CAM, Explainable AI (XAI), Deep Learning, ResNet Architectures, Convolutional Neural Networks (CNNs), Medical Image Analysis, Pneumonia Detection, and Model Interpretability.

Toxinet : A Deep Learning Framework for Online Comment Toxicity Detection

Mrs. B. Swarajya Lakshmi
Department of Artificial Intelligence, G. Pullaiah College of Engineering and Technology, Kurnool, India

Shaik Shahin
Department of Artificial Intelligence, G. Pullaiah College of Engineering and Technology, Kurnool, India

Thandrapadu Shravya
Department of Artificial Intelligence, G. Pullaiah College of Engineering and Technology, Kurnool, India

Varikunta Vijayadeepa
Department of Artificial Intelligence, G. Pullaiah College of Engineering and Technology, Kurnool, India

Lakshmireddygari Yaswitha
Department of Artificial Intelligence, G. Pullaiah College of Engineering and Technology, Kurnool, India

Abstract:

The exponential growth of online interactions has brought unprecedented opportunities for global communication but has led to the proliferation of toxic content, including hate speech, harassment, and threats. This project leverages advancements in Deep Learning (DL) to develop a robust system for detecting and classifying toxic online comments. DL is used for nuanced text analysis, the system can identify toxicity level across multiple categories such as threats, insults, obscenity, and identify hate. The project utilizes Bidirectional LSTM-based multi-label classification model to process large-scale datasets like Kaggle's Wikipedia Talk Page edits. These models ensure accurate recognition of subtle linguistic patterns and contextual variations, enabling precise categorization of harmful content. The resulting framework aims to foster safer online environments by mitigating the impact of toxic communications, contributing to healthier digital interaction.

ISBN: 978-93-92104-23-7

NutriBot: AI-Enhanced Food Delivery with Personalized Health Recommendation

Jayabaaskar B
Department of CSE - AI & ML Sathyabama Institute of Science and Technology, Chennai, India

Monish V
Department of CSE - AI & ML Sathyabama Institute of Science and Technology, Chennai, India

Dr. B. U. Anu Barathi, M.E., Ph.D.
Department of CSE - AI & ML Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

Growing requirement for online meal delivery ser- vices raises the need to come up with innovative strategies for im- proving consumer satisfaction and experience quality. The paper presents an AI-driven system through a personalized approach to customization as a means to revolutionize the online meal delivery experience. User profiling is done to gather the behavioral data and order history combined with personal information to classify the users and thus find their individual tastes and habits. Here, food recommendations are highly customized through the use of sophisticated machine learning models with collaborative, content-based, and hybrid filters. When combined with natural language processing (NLP), dynamic menu customization, and ef- ficient customer service, real-time data analysis guarantees quick and relevant recommendation delivery. The product is designed based on real preferences each user has for it and adapts and changes with the changing user behaviors, making the ordering process both fun and engaging in a way and creates a new standard for the industry. Besides driving more user engagement and consumer satisfaction, this particular personalized process also drives higher customer loyalty along with overall better levels of efficiency in the online food-delivery arena. It keeps user privacy and safety while handling data to a great concern. For that reason, it follows global standards and guards information belonging to the users by engaging in better encryption methods.

Keywords:

Dynamic Menu Customization, Online Food Delivery, Real-Time Data Analytics, Personalized Recommendations.

Predict Human Behavior with Human Traits by Using Machine Learning

Mallidi Sanjay Vikas Reddy
Student, Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

Nunna Venkata Sai Satya Krishna
Student, Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

Mr. M.D. Kamalesh, M.E., Ph.D.,
Associate professor, Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:
Human conduct hypothesis investigates why individuals act the manner in which they do, considering the impacts of hereditary qualities, climate, and individual encounters. It examines how our thoughts, feelings, and interactions with others influence our actions. In the standard of Human Movement Acknowledgment, an assortment of genuine executions are accessible utilizing various sorts of sensors, for example, wellness observing, day-life checking, and wellbeing observing, and so on. It further develops schooling by fitting instructing techniques to various learning styles, improves psychological wellness treatment by growing better treatments, and enhances work environment elements by figuring out representative inspirations. Sensor-based applications are impractical for many reasons, especially for older people who carry mobile phones or other devices. In this research, we focused on CCTV footage and camera images to detect human movements using a Convolutional Brain Organization (CNN) Classifier and identify human postures using a HAAR Component-based Classifier. We used 5648 photos from our own collected dataset to create our Human Movement Acknowledgment Framework. After 20 ages, the method produced about 22 casings per second with a strong identification precision of 99.86% and an acknowledgment exactness of 99.82%.

Keywords:
Genetics, Human Activity Recognition (HAR), Sensor types, Human Activity Recognition System, Emotions.

ISBN: 978-93-92104-23-7

Sustainable Construction with Bubble Deck and Study of Environmental Impact

Vaibhavi Garghate
UG Graduated

Shahzab Ali Gattu
UG Graduated

Abstract:

The conventional floor slab has few drawbacks of giving little structural support and posing a large amount of self-weight to a building. Therefore, bubble deck slab system is introduced to tackle these limitations. The void slab system, invented by Jørgen Breuning, reduces excess concrete in structural slabs, making construction more efficient. This paper reviews various studies on void slab systems, analyzing technical parameters and experimental findings. This paper explores using HDPE hollow spheres to replace ineffective concrete in the center of slabs, reducing their weight by 30% to 50%. This method helps make slabs lighter while maintaining strength, and reduces the environmental impact of concrete production. Bubble deck slab system 1kg of plastic replaces 100kg of concrete every compenent is recyclable and CO2 emission is also reduced up to 40kg/m2.

ISBN: 978-93-92104-23-7

Hand Gesture Based Recognition and Classification system using Deep Learning Nueral Networks

Ms. R Rajeswari
Lecturer

Dr. N Kumaratharan
Lecturer

Abstract:

This research aims to provide the groundwork for smartly categorizing hand movements for use with prosthetic hands. The hand motions are classified using surface electromyography (sEMG) data. In reaction to a predetermined sequence of fibre activation, every single one of our muscles contracts. They could be useful in developing control protocols for bio-control systems, such human-computer interaction and upper limb prostheses. When focusing on hand gestures, data gloves and vision-based approaches are often used. The data glove technique requires tedious and unnatural user engagement, whereas the vision-based solution requires significantly more expensive sensors.

This research offered a Deep Neural Network (DNN) automated hand gesticulation recognition system based on electromyography to circumvent these restrictions. This work primarily aims to augment the concert of the hand gesture recognition system via the use of an artificial classifier. To advance the recognition system's classification accuracy, this study explains how to build models of neural networks and how to use signal processing methods. One may get the essential properties of the signal. When training a DNN classifier, these characteristics are sent into it. The investigational results reveal that the suggested technique accomplishes a better categorization rate (98.5 % vs. the alternatives).

The widespread use of electromyography (EMG) as a signal for the detection of various postures, gestures, and activities has led to its widespread adoption.

ISBN: 978-93-92104-23-7

Ensemble Hybrid Learning for Detecting Depression

Karri Siva Chakravarthi
Department of CSE, Sathyabama institute of science and technology, Chennai, India

Karrepu Jayanth Reddy
Department of CSE, Sathyabama institute of science and technology, Chennai, India

Mrs.Kalaivani. A
Department of CSE, Sathyabama institute of science and technology, Chennai, India

Abstract:

Depression is a common disease of mind that affects millions, yet it is usually not diagnosed because the assessment is subjective, and professional treatment is infrequent. In this research, the potential of ensemble hybrid learning techniques to accurately detect and classify depression in different data sources including social media posts, speech patterns, and text input is explored. The proposed approach integrates Deep Learning architectures such as ConvLSTM and Bi-Lstm with traditional machine learning models to maximize the strengths of multiple methods used. Performance is evaluated based on key metrics such as precision, recall and F1-score for multiple datasets. Initial results show that ensemble models outperform single methods in robustness and adaptability. One of the goals of this study is to supply a scalable and trustworthy framework in locating the high feasibility of early depression detection to promote enhanced mental health outcomes.

Keywords:

Ensemble learning, hybrid models, ConvLSTM, Bi-LSTM, mental health, depression detection, machine learning, deep learning.

Enhanced Real-Time Detection of Cyber Threats through Adaptive Machine Learning in Network Traffic Analysis

Ms. C. Meenaloshini
Data Science and Cyber Security Karunya Institute of Technology and Sciences, Coimbatore, India

Mrs. A. R. Darshika Kelin
Data Science and Cyber Security Karunya Institute of Technology and Sciences, Coimbatore, India

Mrs. Keirolona Safana Seles
Division of Computer Science and Engineering, Karunya Institute of Technology and Sciences, Coimbatore, India

Abstract:

As cyber threats become more complex, real time systems are needed to detect and eliminate attacks. Traditional network intrusion detection systems based on rule based static method tend to be ineffective against novel emerging threats. In this paper we propose an improved real time cyber threat detection system using adaptive machine learning techniques used to analyze network traffic and find anomalies. Our proposed approach uses a blend of supervised and unsupervised learning models such that the system maintains high detection accuracy with minimal false positives, while maintaining continuous adaptation to constantly evolving threats. On critical network traffic features like packet size, flow duration, source and destination IP addresses, transmission protocols, the system is then trained. They show experimentally better detection accuracy, responsiveness and adaptability than conventional IDS. In this work, contributions of adaptive machine learning for robustness against dynamic and evolving threats in network environments are highlighted as significant strides towards improving real time cybersecurity infrastructure.

Keywords:

Cyber threat detection, network traffic analysis, real-time detection, machine learning, anomaly detection, adaptive systems, intrusion detection systems, supervised learning, unsupervised learning.

ISBN: 978-93-92104-23-7

Advancing Image Super-Resolution with SRGAN with Enhanced Architectures and Loss Functions for High-Fidelity High-Resolution Image Generation

Mani Teja Kakarla
student in the Department of Computer Science and Technology at Sathyabama University, Tamil Nadu

Mahipathi Naga Prasad
student in the Department of Computer Science and Technology at Sathyabama University, Tamil Nadu

Abstract:

All resolution techniques in super-resolution aim to improve the resolution of low-resolution images and provide high-resolution images across all components of the image domain. In this work, we use Super-Resolution Generative Adversarial Networks (SRGANs) to convert original low-resolution perceptual images into high-quality perceptual images at a higher resolution. Traditional methods like Bicubic and Lanczos interpolation fail to recover fine details and high-frequency textures, as they do not produce satisfactory results. SRGAN overcomes these limitations by generating visually realistic high-resolution images in an adversarial training framework that consists of a Generator and a Discriminator. Building on this, this research further explores how architectural innovations such as Residual and Residual Dense Blocks (RRDB) can enhance the complementarity of perceptual fidelity and accuracy through novel loss functions. The proposed advancements are evaluated on several datasets, including natural images, facial images, and domain-specific datasets (medical and satellite imagery), and demonstrate significant improvements in PSNR, SSIM, and perceptual metrics. These innovations highlight the ongoing advancement in image processing and showcase the potential applications of SRGANs in fields like medical imaging, digital photography, and remote sensing, driving progress in the domains of science, engineering, and technology.

Adaptive Filtering-Based Noise Reduction for Enhanced Human Action Recognition using Deep Learning

Gowducheruvu Sree Deekshi Reddy
Student, Chaitanya Bharathi Institute of Technology (A), Hyderabad, Telangana India

Vineetha Maragani
Student, Chaitanya Bharathi Institute of Technology (A), Hyderabad, Telangana India

Mrs. Nukala Sujata Gupta
Assistant Professor, Chaitanya Bharathi Institute of Technology (A), Hyderabad, Telangana India

CH. Srilakshmi
Assistant Professor, Chaitanya Bharathi Institute of Technology (A), Hyderabad, Telangana India

Abstract:

Human Action Recognition (HAR) plays a prominent role in the field of computer vision, with its applications in health monitoring systems, sports analytics, and surveillance systems. Traditional HAR methods often face challenges in handling noisy data, limited data diversity, leading to reduced recognition accuracy in real-world scenarios.

To overcome the disadvantages of traditional action recognition systems, this paper introduces an advanced HAR system that adapts noise reduction and targeted data augmentation. Our method utilizes the HMDB51 dataset and applies an adaptive Non-Local Means filter to reduce noise, ensuring clarity in each video frame. Our approach also incorporates background subtraction and skeletal tracking with MediaPipe, emphasizing key body postures and movements. We enhance model adaptability using Conditional Generative Adversarial Networks (cGANs) for data augmentation, generating synthetic frames conditioned on specific actions to increase data diversity and represent varied conditions, such as lighting and appearance. To improve action recognition, we combine Convolutional Neural Networks (CNNs) and Long Short-Term Memory (LSTM) networks , enabling effective learning of complex movement sequences.

Our review highlights that recent advancements in Human Action Recognition (HAR) significantly improve accuracy and feature optimization over traditional methods, particularly under noisy and varied conditions. This paper presents a thorough evaluation of cutting-edge HAR models, focusing on innovations in

 ISBN: 978-93-92104-23-7

adaptive noise reduction, data augmentation using Conditional GANs, and temporal sequence analysis. These methods collectively enhance HAR model robustness, making them better suited for complex applications like surveillance. By identifying current limitations and suggesting new methodologies, this paper aims to developing more reliable and adaptable HAR models for real-world deployment.

Keywords:

Human Action Recognition, Computer Vision, Data Augmentation, Conditional GANs, Non-Local Means Filter, Background Subtraction, Skeletal Tracking, CNN, LSTM, HMDB51 Dataset, Feature Optimization.

Automatic Detection and Quantification of Carotid Artherosclerosis in MRI Images

Karunya K
Dr. N.G.P. Institute of Technology, Coimbatore

Abstract:
Cardiovascular diseases (CVDs) remain a leading cause of mortality worldwide, with carotid artery plaques being a significant contributor to strokes and heart attacks. Early detection and accurate quantification of these plaques are crucial for effective diagnosis and risk management. This study focuses on developing an automated system for identifying and quantifying carotid artery plaques using magnetic resonance imaging (MRI). The proposed approach leverages advanced image processing techniques and machine learning models to enhance diagnostic precision and efficiency.

The algorithm provided is described as a Hybrid Deep Learning and Machine Learning Pipeline for Carotid Artery Atherosclerosis Detection and Classification. It combines deep learning techniques (e.g., Region Proposal Network, Feature Pyramid Network, and Mask R-CNN) for segmentation and feature extraction with traditional machine learning (Support Vector Machine) for classification. It begins with acquiring MRI scans and preprocessing them through normalization, noise reduction, and grayscale conversion. A Region Proposal Network (RPN) is then used to identify potential regions of interest, followed by a Feature Pyramid Network (FPN) for multi-scale feature refinement. Instance segmentation, such as Mask R-CNN, generates pixel-level masks for key structures like the intima-media boundary and lipid core. Post- processing steps remove small irrelevant regions and smooth boundaries, and key features such as plaque area, carotid intima- media thickness (CIMT), lipid core thickness, and shape descriptors are extracted. These features are normalized and reduced in dimensionality before training a support vector machine (SVM) classifier to categorize atherosclerosis severity into four classes: no atherosclerosis, mild, moderate, or severe. The model's performance is evaluated using metrics like accuracy, sensitivity, specificity, and ROC curves, with results visualized by overlaying segmentation masks on the MRI scans and saving the outputs for analysis. The algorithm for detecting and classifying carotid artery atherosclerosis achieves high performance metrics, with an accuracy of 96.85%, demonstrating reliable overall classification. Precision and recall is typically of 97.80% 97.09 respectively, indicating a strong ability to correctly identify positive cases among predicted positives. The F1 score, balancing precision and recall, is 97.44%, showcasing the algorithm's robustness in handling imbalanced data and providing consistent results across all metrics.

Keywords:
Cardio vascular disease ,Regional Proposal network, Support vector machine, ROCcurve.

 ISBN: 978-93-92104-23-7

"Data-Driven Crime Prediction and Categorization Using Machine Learning"

Mr.V.Sreetharan
Assistant Professor, Department of Data Science, Mohan Babu University Erstwhile Sree Vidyanikethan Engineering College, Tirupathi, India

Avula Rajkumar
Student, Department of Information Technology, Sree Vidyanikethan Engineering College, Tirupathi, India

S R Lohith
Student, Department of Information Technology, Sree Vidyanikethan Engineering College, Tirupathi, India

Darsi Lavanya
Student, Department of Information Technology, Sree Vidyanikethan Engineering College, Tirupathi, India

Kotakonda Vamsi Krishna
Student, Department of Information Technology, Sree Vidyanikethan Engineering College, Tirupathi, India

Abstract:

A comprehensive Python project called "Data- Driven Crime Prediction and Categorization Using Machine Learning" uses machine-learning algorithms more especially, the DecisionTree Classifier and Bagging-Classifier to forecast and categorize different types of crimes in Portland, Oregon, USA, between 2015 and 2023. 505,063 data points make up the dataset used for this research, which focuses on

20 different crime groups, such as "Larceny Offenses," "Motor Vehicle Theft," "Assault Offenses," "Drug/Narcotic Offenses," and others. With 98 percent accuracy on the training set and a 95 percent accuracy on the test set, the Decision Tree Classifier produced remarkable results. With a 98% accuracy rate on the training set and 95 percent accuracy rate on the test set, the Bagging Classifier also showed strong performance. These high accuracy levels show how well the machine learning models predict and categorize crimes. These characteristics offer a wide range of information, which helps the models produce precise forecasts. The project's potential use by law enforcement, city planners, and legislators is what makes it significant. It helps with proactive decision-making and resource allocation by precisely anticipating and categorizing crimes, which improves public safety and makes effective use of law enforcement resources. A more sophisticated understanding of crime trends is made possible by the categorization of crimes into distinct groups, which empowers stakeholders to carry out focused interventions and preventative measures. The algorithms' great accuracy shows how dependable and successful they are at handling actual crime prediction situations.

Keywords:

Crime, Prediction, Bagging, Decision Tree, Machine Learning.

Exploring the Best Way for Business Leaders to Take Advantage of AI through ChatGPT

Vimal Kumar
Department of Information Management, Chaoyang University of Technology, Taichung, Taiwan-413310

Nagendra Kumar Sharma
Department of Management Studies, Graphic Era Deemed to be University, Dehradun, India

Rohit Raj
Department of Business Administration, National Taiwan University of Science & Technology, Taipei City, Taiwan

Nidhi Kumari
Department of Management Studies, Indian Institute of Technology Roorkee, India-247667

Priyanka Verma*
Department of Information Management, Chaoyang University of Technology, Taichung-413310, Taiwan

Kuei-Kuei Lai
Department of Business Administration, Chaoyang University of Technology, Taichung, Taiwan-413310

Abstract:

The purpose of this essay is to examine the benefits that businesses can receive from implementing new generative artificial intelligence (AI) technology. It investigates how ChatGPT can be used for content production, assessment, and personalized learning. It also looks at ways that businesses might benefit from these uses. This article's methodology is divided into four stages: a search of the literature, screening and selection, analysis, and synthesis. The study's conclusions suggest that ChatGPT may be successfully implemented in businesses to automate tedious tasks and enhance the working environment for executives. Users should be conscious of ChatGPT's shortcomings, which include factual inaccuracies, potential bias promotion, a lack of depth knowledge, and security risks, even with upgrades. However, the study highlights the benefits of ethically integrating ChatGPT into business practices. For academics and managers who are interested in integrating AI technology into enterprises, this study has practical consequences. The report offers information on ChatGPT usage in companies. Additionally, the report highlights benefits for company executives integrating ChatGPT.

Keywords:

ChatGPT, Artificial Intelligence, Businesses.

ISBN: 978-93-92104-23-7

Enhancing Kidney Cancer Classification with VGG and EfficientNet: Evaluating CNN Performance for Automated Detection in Medical Imaging

Kavithan N
B.E - CSE Sathyabama University Chennai, India

Kishore S
B.E - CSE Sathyabama University Chennai, India

Dr. K Ravishankar
M.TECH, Ph.D, Sathyabama University, Chennai, India

Abstract:

Renal (kidney) cancer is a common malignancy with which patients' outcomes benefit from precise and timely diagnosis. In this study, we assess the classification performance of two state-of-the art convolutional neural networks (CNN), VGG and EfficientNet, for kidney cancer classification from medical imaging. The models were trained and tested using transfer learning and data augmentation techniques, as well as a curated dataset to achieve increased generalizability. They were assessed for their diagnostic power via performance metrics, including accuracy, precision, recall, F1 score and area under the receiver operating characteristic curve (AUC ROC). Results indicate that EfficientNet outperforms VGG in terms of accuracy as well as in terms of computational efficiency and robustness to distinguish benign from malignant lesions. In this work we expose the real potential of combining advanced CNN architectures with the medical imaging workflow, enabling early detection and enhanced assistance in patient care. Additionally, the findings urge further investigation into applied deep learning methods in health care, enabling us to build better and more user friendly diagnostic instruments.

Keywords:

Medical imaging, deep learning, automated classification, transfer learning, data augmentation, diagnostic tools, convolutional neural networks, EfficientNet, VGG, Kidney cancer.

Detection and Classification of Bharatanatyam Mudras using YoloV5 Algorithm

Abhinava Karanth
CSE Department, Manipal Institute of Technology Manipal Academy of Higher Education, Manipal Manipal, Karnataka, India - 576104

Ms. Musica Supriya
Assistant Professor - Senior Scale, CSE Department, Manipal Institute of Technology Manipal Academy of Higher Education, Manipal Manipal, Karnataka, India - 576104

Abstract:

Bharatanatyam, one of the Indian classical dance truthfully expresses itself through act of hands or mudras. Without knowing them, it is quite impossible to understand the language of the dance. The present study aims to do mudra recognition via a-state-of-the-art object detection model YOLOv5 based powerful Convolutional Neural Network. In contrast to previous methods, we use YOLOv5 as a tool to locate and categorize specific objects in images. It accurately locates mudras through a technique known as the image splitting approach which entails the finding of mudras within the image and then putting a rectangle over it with a certain confidence score. This helps the model in having the ability to classify as well as recognize the various mudras involved in the dance. We realize impressive mAP of 0.968 using our CNN self-implemented. This work not only extends the analysis of bharatanatyam dance forms but also opens up possibilities of using YOLOv5 for image classification and other dance recognition tasks creating stimulating teaching and assessment tools.

Keywords:

Mudra Recognition, Convolutional Neural Net- work, YOLOv5, Image Analysis.

22 - 23 March 2025 | Chennai, India

Deep Learning Models for Brain Tumor Detection: A Comparative Analysis of EfficientNetB3, InceptionV3, and Customized CNN

Naveen N
Department of Computer Science and Engineering Manipal Institute of Technology, Manipal Academy of Higher Education Manipal, India

Venkatesh Bhandage *
Department of Computer Science and Engineering Manipal Institute of Technology, Manipal Academy of Higher Education Manipal, India

Abstract:
A brain tumor is defined by the abnormal growth of cells in brain tissue at a rapid pace. Brain tumors are either cancerous or non-cancerous. Cancerous and non-cancerous brain tumors are referred to as malignant and benign, respectively. In the field of healthcare, the timely and accurate identification of brain tumors is important for early diagnosis and proper treatment. This work tested three sophisticated deep learning models—InceptionV3, EfficientNetB3, and a custom Convolutional Neural Network (CNN)—for detecting three various forms of brain tumors, i.e., glioma, meningioma, and pituitary. Employing the Brain Tumor MRI dataset from Kaggle, the test accuracy of InceptionV3 was 97.65%, that of EfficientNetB3 was 99.21%, and that of custom CNN was 94.14%. EfficientNetB3 performed better than the rest and is hence most appropriate for the identification of brain tumors in MRI images. The new method can be used by medical professionals to effectively and accurately detect tumors from brain MRI images.

Keywords:
Brain tumor, glioma, meningioma, pituitary, convolutional neural networks, transfer learning, InceptionV3, EfficientNetB3.

Noise Reduction in Battlefield based Noise Scenarios: A Hybrid RNN and GAN Approach

Divya Walia
Department of Applied Mathematics, Defence Institute of Advanced Technology, Pune

Dr. Dasari Srikanth
Department of Applied Mathematics, Defence Institute of Advanced Technology, Pune

Abstract:

Noise reduction in battlefield environments is a critical challenge for military applications, where dynamic and non-stationary noises such as explosions, gunfire, vehicle sounds, jamming, electronic interference can severely degrade communication and situational awareness. This paper presents a novel hybrid approach combining Recurrent Neural Network (RNN) based low-complexity noise suppression algorithm, with a Generative Adversarial Network (GAN) to enhance speech intelligibility and audio quality under such conditions. RNN is employed as a preprocessing step to perform initial noise suppression, while the GAN refines the output, effectively reducing residual noise and adapting to complex battlefield scenarios. The proposed model is trained on a combination of synthetic noise datasets and evaluated using objective metrics. Results demonstrate significant improvements in noise reduction and speech clarity compared to standalone RNN and other baseline methods. This approach has potential applications in military communication systems, deriving information from audio intercepts, UAV audio processing and advanced hearing protection in military operations.

Keywords:

Speech Enhancement, Denoising, Generative Adversarial Networks (Gans), Speech Denoising, Battlefield Noise.

ISBN: 978-93-92104-23-7

ICASET
22 - 23 March 2025 | Chennai, India

Keyword Spotting on Edge Devices

Dr. P. R. S. S. V. Raju
Sagi Rama Krishnam Raju Engineering College, Andhra Pradesh

P. Yagneswar
Sagi Rama Krishnam Raju Engineering College, Andhra Pradesh

Abstract:

Key word spotting (KWS) for edge devices is an emerging area of research that focuses on enabling local devices to recognize predefined keywords or phrases in audio streams without relying on cloud-based processing. This technology is crucial for enhancing privacy, reducing latency, and minimizing power consumption, which are critical factors for edge devices with limited computational resources. Modern KWS algorithms leverage lightweight deep learning models, optimized feature extraction techniques, and efficient hardware accelerators to perform real-time, low-power keyword detection on devices like smartphones, wearables, and IoT devices. These approaches include methods such as quantization, pruning, and model distillation to compress models while retaining high accuracy. Moreover, advancements in neural network architectures and edge specific optimization techniques, such as federated learning and transfer learning, have further propelled the capabilities of KWS on resource-constrained devices. This paper explores the key challenges, current solutions, and future directions in the development of efficient and robust KWS systems for edge devices, emphasizing energy efficiency, accuracy, and deployment scalability.

Forecasting Dermatologically Conditions With KNN & Naive Bayes

P. Deepak Reddy
Department of Computer Science and Engineering Sathyabama University Chennai, Tamilnadu

P. Srinath
Department of Computer Science and Engineering Sathyabama University Chennai, Tamilnadu

B. Ankayarkanni
Department of Computer Science and Engineering Sathyabama University Chennai, Tamilnadu

Abstract:

Recently, pores and skin illnesses have end up extra not unusual in human beings. These ailments, which might be frequently caused by germs or illnesses, encompass situations such as ringworm, yeast hypersensitive reactions, and infections. It is important to pick out these skin situations due to the fact they spread quickly. The spread of the virus have to be stopped at an early stage. Clinical parameters are critical. For the accurate prognosis of these illnesses. Age organizations are susceptible to pores and skin illnesses. For instance, pimples and dermatitis usually have an effect on kids between the whole of 0 and 5. It is commonplace in children among the long time of 6 and eleven. Teenagers, specifically the ones between the ages of 12 and 16, revel in the damaging consequences of rashes. In addition, a skin situation called dermatomyositis affects youngsters among the longtime of five and 15 and adults among the ages of 40 and 60. Proper prognosis and early remedy are important to manipulate and control the spread of those diseases.

Keywords:

Skin Disease, dermatomyositis, Machine Learning.

 ISBN: 978-93-92104-23-7

Development of Machine Learning Model for Diagnostic Disease Prediction Based on Patient Data

Mallidi Jai Prakash Reddy
student in the Department of Computer Science and Technology at Sathyabama Institute of Science and Technology, Tamil Nadu

Marisetti Satya Sai Durga Praveen
student in the Department of Computer Science and Technology at Sathyabama Institute of Science and Technology, Tamil Nadu

Abstract:

Humans are the smartest creatures in the world and that they care loads about their fitness. The improvement of new technology inclusive of statistics science and machine gaining knowledge of has paved the manner for clinical societies and healthcare groups to track diseases as speedy as possible, which enables in imparting higher patient care. For many fitness care agencies, disease assessment is crucial to making the nice feasible fitness care selections. Machine learning is a place wherein models can be evolved to train machines to make autonomous selections primarily based on real-time records and past experience. We proposed a version to expect illnesses primarily based on sure characteristics. Therefore, in this experiment, we suggest a unique understanding-based machine for disorder prediction the use of DT, RF and LR as records samples and attain a maximum set of rules accuracy of 98.36%. This paper proposes to expand sickness prediction using device learning idea. Our important contribution is imposing feature engineering and regular metrics to refine our set of rules and improve overall performance. The proposed decision support system for diagnosis can be implemented using the proposed technique, helping clinicians of their work and enhancing patient results. Therefore, destiny studies will awareness on growing the dataset to cover a much wider variety of patient populations and improving device studying algorithms to improve prediction accuracy.

INFOG an Integrated Cyber Reconnaissance and Security Tool

Dr. K. Veena
Associate Professor, Department of Computer Science, Sathyabama Institute of Science and Technology, Chennai, India

Chiranjeet Kumar
Department of Computer Science, Sathyabama Institute of Science and Technology, Chennai, India

JayKumar Parmar
Department of Computer Science, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

In today's dynamic Cybersecurity landscape, the need for robust and efficient tools to identify vulnerabilities within computer networks is more critical than ever. With the increasing complexity of networks and the sophisticated methods employed by attackers, cybersecurity professionals require integrated solutions that can comprehensively assess and mitigate risks. This project is centered on developing an all-encompassing tool that unifies several critical functions: subdomain enumeration, Directory Enumeration, SSH brute force, SHA256 brute force, Exploit finders, and Port scanning. The primary objective is to streamline and enhance the accuracy of security testing, making these processes more effective and less time-consuming. This fragmentation increases the time and effort required and heightens the risk of missing critical vulnerabilities. To address these challenges, our project aims to create a unified tool that automates the information-gathering process and consolidates key functionalities into a, user-friendly interface.

Keyword:

Reconnaissance tool, Subdomain discovery, Attacks, Cybersecurity.

ISBN: 978-93-92104-23-7

Optimizing Real-Time Dashcam Video Streaming for Mobile Applications Using AI and Edge Computing

P. Nambu kalpana
Dr. N.G.P. Institute of Technology, Coimbatore

Abstract:

Real-time dashcam video streaming on mobile applications presents significant challenges, including high network latency, bandwidth limitations, and video quality degradation under varying network conditions. Traditional streaming approaches often struggle to adapt dynamically, leading to buffering, lag, and inefficient data usage. This paper proposes an optimized framework that leverages AI-driven network optimization, adaptive bitrate streaming, and edge computing to enhance real-time video transmission performance.

The proposed system employs H.265/VP9 compression to reduce bandwidth consumption while maintaining high video quality. Edge computing is integrated to handle preprocessing and adaptive bitrate control, ensuring low-latency transmission. An AI-based prediction model dynamically adjusts streaming parameters based on real-time network conditions, improving efficiency and reducing buffering. Additionally, cloud-based storage and processing provide scalable access to recorded footage.

Experimental results demonstrate that the optimized system achieves 30% lower latency, 40% improved bandwidth efficiency, and higher video quality compared to traditional streaming methods. These enhancements make real-time dashcam streaming more reliable and accessible, particularly for applications in vehicular surveillance, fleet management, and accident monitoring.

Keyword:

Real-time streaming, dashcam video, adaptive bitrate, edge computing, AI optimization, low-latency streaming, H.265 compression, cloud integration.

Wireless Sensor Networks in Road Safety: Potential and Pitfalls

Manjot Kaur
Research Scholar, Department of Computer Science, Punjabi University, Patiala

Rajneesh Randhawa
Assistant Professor, Department of Computer Science, Punjabi University, Patiala

Jagroop Kaur
Associate Professor, Department of Computer Engineering and Science, Punjabi University, Patiala

Abstract:

Wireless Sensor Networks (WSNs) have emerged as a revolutionary technology for enhancing road safety. Their ability to detect obstacles, provide real-time alerts and monitor traffic conditions makes them indispensable in accident prevention. This paper explores various applications of WSNs in road safety, highlighting their role in vehicle detection, collision avoidance, and intelligent traffic management. A comparative analysis of selected WSN-based studies is presented, outlining their methodologies, strengths, and limitations. Essence of the paper lies in comprehensive table that summarizes key research gaps, emphasizing challenges in deployment, energy efficiency, and real-time processing. This study provides insights into future advancements required for optimizing WSNs in road safety applications and smart cities.

ISBN: 978-93-92104-23-7

Sustainable Agriculture Using Artificial Intelligence: Review On Applications and Challenges

Dr. Ramesh G
Department of Artificial Intelligence and Machine Learning, Alva's Institute Of Engineering and Technology, Mangalore, 574225, India

Mr. Shrikanth N G
Department of Artificial Intelligence and Machine Learning, Alva's Institute Of Engineering and Technology, Mangalore, 574225, India

Glevin Roche
Department of Artificial Intelligence and Machine Learning, Alva's Institute Of Engineering and Technology, Mangalore, 574225, India

Shashank C
Department of Artificial Intelligence and Machine Learning, Alva's Institute Of Engineering and Technology, Mangalore, 574225, India

Srujan E S
Department of Artificial Intelligence and Machine Learning, Alva's Institute Of Engineering and Technology, Mangalore, 574225, India

Sridhar V
Department of Artificial Intelligence and Machine Learning, Alva's Institute Of Engineering and Technology, Mangalore, 574225, India

Abstract:

Sustainable agriculture has become essential in light of the growing challenges brought about by climate change & the growing global population. This paper explores how artificial intelligence (AI) is vital in transforming agriculture towards sustainability amidst climate change and global population growth. Traditional methods fall short due to environmental impacts and resource depletion. Sustainable agriculture, encompassing techniques like precision farming, requires integrating AI for predicting crop outcomes, optimizing resource allocation, and reducing hazards. Precision farming, utilizing sensors, drones, and satellite imaging, gathers data on soil, weather, and crop health, analyzed by AI-driven machine learning algorithms to enhance resource efficiency and minimize waste. AI-powered predictive analytics enable preemptive measures against agricultural risks, maximizing yields and minimizing losses. AI also aids in early pest and disease detection, streamlining agricultural management. This paper offers insights into AI's crucial role in revolutionizing sustainable agriculture, essential for future food security.

Keywords:

Sustainable Agriculture, Artificial Intelligence, Precision Farming, Predictive Analytics, Machine Learning.

ISBN: 978-93-92104-23-7

Sentiment Analysis of Online Customer Review for Multiple products Using Machine Learning

Ashish K Pastay
Student, Department of CSE Manipal Institute of Techonology Manipal, Karnataka, India

Dr.Dinesh Acharya U
Professor Department of CSE Manipal Institute of Techonology Manipal, Karnataka,India

Abstract:

Consumer internet feedback is widely recognized as a primary source of market intelligence regarding consumer preferences and overall experience. Which has led businesses to prioritize client happiness in their plans. Many businesses strug- gle because of poor manual analysis of varied requests, even when they have invested large resources in understanding consumer wants. They consequently must contend with dwindling customer loyalty and growing marketing expenses. Using techniques from machine learning (ML) and natural language processing (NLP), sentiment analysis is one possible tactic. Owners of businesses can use online customer reviews to better understand their products from the standpoint of consumer preferences and develop new products. Three categories are used to classify online customer comments: neutral, negative, and positive. This study separates the online review dataset into three groups—positive, neutral, and negative—using word frequency correlation analysis. Using the bag-of-words technique, user reviews collected from Amazon are analyzed. Using machine learning techniques like logistic regression, random forest classification, and long short-term memory (LSTM) networks, this study investigates customer opinions on cell phones and accessories on an online buying platform.

Classification of News Based on Location Using ML Approach

Nithanth Marate
Department of Computer Science and Engineering Manipal Institute of Technology, Karnataka, India, PIN 576104

Mr. Govardhan Hegde
Department of Computer Science and Engineering Manipal Institute of Technology, Karnataka, India, PIN 576104

Abstract:

This paper highlights the importance of comprehensible information. Nowadays on there are many online sources generating large-scale news content every day. It wasn't until the start of the last decade that news information was readily and swiftly available. However, news is now readily available through content producers like internet news services. However, recognizing news relevant to the consumer has always been an issue, as preferences vary and there comes the necessity to divide information into types. This study is to categorize information as per requirement. A few concepts deployed in Natural Language Processing were used such as Cosine Similarity algorithm, Text rank algorithm and similarity matrices.

Keywords:

NLP, Text Summarization, Cosine Similarity, Location, News, Categorization.

ISBN: 978-93-92104-23-7

Revolutionizing Bone Cancer Detection: Real-Time Medical Imaging Analysis Using YOLOv8 for Enhanced Diagnostic Accuracy and Speed

Naga Maheshwara Reddy Kovvuri
Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

Shanmukha Srinivasa Varma Nadimpalli
Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

G. Sabeena Gnana Selvi
Assistant professor, Department of CSE, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

Bone cancer is a continuing challenge in medical diagnostics that is reliant on the speed and accuracy of detection to enhance patient results. In this study, we present a novel system that utilizes the YOLOv8 deep learning model to allow real time bone cancer detection and classification from medical imaging. A comprehensive dataset of labeled bone images is used to train the model, achieving precision and recall metrics and high precision and recall metrics. As it is integrated with the existing medical imaging equipment, the system offers a user-friendly interface to radiologists and oncologists and therefore reduces diagnostic time and errors by a large margin. In this manner, the proposed method overcomes the deficiencies of precision and adaptability of traditional methods and existing Automated Systems. This work illustrates the promise of state of the art AI models to improve diagnostic accuracy and speed early intervention in oncology.

Keywords:

Bone cancer detection, YOLOv8, deep learning, medical imaging, real-time diagnosis, radiology AI, healthcare automation, object detection in healthcare.

Robust Network Security Predictions Using Split-Attention Networks and Variational Decomposition

A.Antony Shyamalin
Mepco Schlenk Engineering College, India

G.K.Ramya , T.K.Srewathi
Mepco Schlenk Engineering College, India

Abstract:

This paper proposes a new network security situation prediction framework by integrating Variational Mode Decomposition (VMD) with the SSA-GResNeSt model to overcome the nonlinear and unstable nature of network security data. The VMD module decomposes raw security sequences into stable subsequences, which reduces volatility and enhances feature representation. These subsequences are processed by the SSAGResNeSt model, which captures intricate feature interactions through Split Attention, Global Context Blocks, and Residual Connections. The Salp Swarm Algorithm for hyperparameter optimization is applied in the framework, ensuring efficient model training and superior performance in the network. Additionally, Network Security Situation Values are calculated, and corresponding Network Security Situation Levels are assigned to provide actionable information on security risks.

We show through extensive experiments on the HIKARI-2021 and Edge-IIoTset datasets that our model offers remarkable accuracy, precision, and robustness.This work offers a reliable and scalable solution for proactive threat detection and mitigation, paving the way for enhanced security in complex network.

ISBN: 978-93-92104-23-7

ICASET
22 - 23 March 2025 | Chennai, India

An Optimized Skin Cancer Detection Using Graphical Neural Networks

Golla Jayasree
Department of IT, Mohan Babu University, A Rangampet, Tirupati, India

Goda Siva Krishna
Department of IT, Mohan Babu University, A Rangampet, Tirupati, India

Bathina Venkata Santhan
Department of IT, Mohan Babu University, A Rangampet, Tirupati, India

Male Sri Nitheesh
Department of IT, Mohan Babu University, A Rangampet, Tirupati, India

Abstract:

Skin diseases impact millions globally, yet timely diagnosis remains challenging due to a shortage of dermatologists. This work presents an advanced AI-based framework for early detection and diagnosis of skin conditions, leveraging Graph Neural Networks (GNN) alongside Convolutional Neural Networks (CNN) and MobileNet architectures. GNNs enhance diagnostic accuracy by capturing complex relationships among dermatological features, outperforming traditional CNNs in pattern recognition and feature interaction. The platform incorporates a multi-role system for admins, patients, and doctors. Admins oversee system operations, manage user registrations, and ensure continuous model improvement through updated datasets. Patients can upload skin condition images with demographic and symptomatic details. The system analyzes these inputs to provide preliminary diagnoses, including condition descriptions, treatment suggestions, severity levels, dermatologist recommendations, and appointment scheduling. For doctors, the platform offers tools for managing profiles, tracking appointments, and reviewing patient histories, streamlining workflows and enhancing care delivery. Designed to address gaps in dermatological care, this scalable and accessible AI-driven solution offers reliable diagnostic support, particularly in underserved regions. By integrating GNN, CNN, and MobileNet, the system achieves superior performance in accuracy, speed, and reliability, meeting the growing global demand for dermatological expertise.

Keywords:

Skin disease detection, AI, Graph Neural Networks, Convolutional Neural Networks, MobileNet, deep learning, healthcare technology, medical diagnostics, patient care automation, real-time AI solutions.

Enhancing Agricultural Productivity using Ensemble Algorithm

S. Ashwini
Dr. N.G.P. Institute of Technology, Coimbatore

Abstract:

This research project presents a comprehensive Crop Recommendation System that leverages machine learning algorithms to enhance agricultural productivity by providing tailored crop suggestions based on a thorough analysis of environmental and soil data. The system evaluates the performance of multiple algorithms, including Naive Bayes, Decision Tree, Logistic Regression, and Random Forest, and ultimately identifies Naive Bayes as the top performer for accurately predicting crop suitability.

By thoroughly analysing a range of critical parameters, such as soil composition, pH, temperature, humidity, and rainfall, the model offers highly customized crop recommendations that are designed to optimize yield and promote environmentally sustainable farming practices. Leveraging historical agricultural data, this innovative approach supports farmers with data-driven insights, empowering them to make more informed and strategic decisions regarding crop selection.

The system's precision and adaptability make it a invaluable tool for a diverse range of stakeholders, including farmers, agricultural consultants, and policymakers, who are seeking to improve resource efficiency and foster environmentally sustainable agricultural practices. This multi-algorithmic strategy represents a significant contribution to the advancement of precision agriculture, with the potential to enhance decision-making and drive meaningful improvements in the agricultural sector.

Keywords:

Naive Bayes, Decision Tree, Logistic Regression, and Random Forest, Machine Learning, Crop Recommendation System, Agriculture.

ISBN: 978-93-92104-23-7

Voicemorph AI: Blending The Voices of Two Singers Using Advanced Deep Learning Techniques

P. Nambu kalpana
Dr. N.G.P. Institute of Technology, Coimbatore

Abstract:

VoiceMorph AI represents a significant advancement in vocal synthesis by enabling the seamless blending of two distinct singing voices through advanced deep learning techniques. Leveraging Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs), VoiceMorph AI creates a synthesized hybrid voice that harmoniously combines the unique tonal qualities of each singer. The system is trained on extensive voice samples, performing spectral analysis to capture critical vocal features like pitch, timbre, and emotional expression. The blending process compresses these features into a latent representation, allowing smooth interpolation between voices, while GANs ensure realistic, human-like output. This technology opens new avenues for creative expression, empowering artists to explore innovative duet possibilities, unique mashups, and entirely novel sounds. To address ethical concerns, VoiceMorph AI incorporates safeguards like voice watermarking and usage monitoring, ensuring responsible usage. VoiceMorph AI exemplifies a balanced approach to AI-driven creativity and ethical considerations within the music industry.

Keywords:

Vocal synthesis, voice blending, Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs), deep learning, hybrid voice, spectral analysis, music production, AI ethics, intellectual property.

Children Autism Detection Using Residual CNN and EfficientNetB1

Besma Benaziz
Computational Linguistics Department CRSTDLA, Algeria
Pharmaceutical Sciences Research Centre, Constantine, Algeria

Aicha Zitouni
Speech Communication and Pathology, Department CRSTDLA, Algeria

Aissa Amrouche
Member, IEEE Computational Linguistics Department, CRSTDLA Algeria

Abstract:

Autism is a developmental disorder that can cause serious social, communication, and behavioral issues. Early intervention for autistic children can aid in improving cognitive ability and reducing autistic symptoms. In this study, we investigate how well Convolutional Neural Network (CNN) models perform when estimating automated engagement from autistic children's faces. The main contribution is to create a CNN residual using residual blocks containing Depthwise convolution layers (DCL) and convolution layers to reduce the number of parameters in the model by treating each channel of the input image separately with a Depthwise kernel. A Residual CNN model and EfficientNetB1 have been proposed for autism image classification. The EfficientNetB1 architecture with Global Average Pooling (GAP) layer is used for scaling dimensions, and a classification layer is done with a SoftMax layer. The Kaggle dataset, which contains 2,940 images of faces, is used in the experiments. The model's performance was evaluated and compared to existing models in terms of precision, recall, f1-score, and overall accuracy. The two models used achieved classification rates of 86.33% and 88%, respectively, for Residual CNN and EfficientNetB1. According to the results, the method outperforms others using the same dataset.

Keywords:

Face images, Autism, residual CNN, ASD, DCL, EfficientNetB1.

ISBN: 978-93-92104-23-7

Real Time Implementation of Multiple Face Recognition Using Elman Neural Network

P Anusurya
Dr. N.G.P. Institute of Technology, Coimbatore

Abstract:

Face recognition plays a critical role in identifying individuals by leveraging unique facial features as biometric markers for authentication. This project proposes a real-time face recognition system utilizing an Elman Neural Network (ENN) to detect and recognize multiple faces simultaneously. The system captures live images from a webcam and compares them against a trained dataset to authenticate identities. Unlike traditional face recognition systems, which may struggle with multiple faces in a single frame, the Elman Neural Network's dynamic properties and strong global stability make it well-suited for handling complex, non-linear, and time-varying data, such as multiple faces under varying conditions.

In addition to identifying individuals, the system records relevant data, including name, date, and time, making it useful for attendance marking. With its ability to operate in dynamic environments and handle complex backgrounds, this approach achieves high accuracy in face recognition. The results demonstrate the effectiveness of the Elman Neural Network in real-time multi-face recognition applications, overcoming challenges typically encountered in traditional systems.

Real Time Implementation of single face recognition using elman neural network

P Anusurya
Dr. N.G.P. Institute of Technology, Coimbatore

Abstract:

Face recognition plays a critical role in identifying individuals by leveraging unique facial features as biometric markers for authentication. This project proposes a real-time face recognition system utilizing an Elman Neural Network (ENN) to detect and recognize a single face. The system captures live images from a webcam and compares them against a trained dataset to authenticate identities. Unlike traditional face recognition systems, which may struggle with variations in lighting or facial expressions, the Elman Neural Network's dynamic properties and strong global stability make it well-suited for handling non-linear, time-varying data, ensuring high accuracy in recognizing a single face under varying conditions.

In addition to identifying individuals, the system records relevant data, including name, date, and time, making it useful for applications such as attendance marking. The ability to operate in dynamic environments and handle complex backgrounds demonstrates the robustness of this approach in real-time face recognition. The results confirm the effectiveness of the Elman Neural Network in achieving reliable single-face recognition, overcoming challenges typically encountered in traditional systems.

ISBN: 978-93-92104-23-7

Qualitative and Quantitative Phytochemical Screening, Antioxidant and Antimicrobial Properties of Root Extracts from Arundinaria Suberecta Munro

Bhoj Raj Chhetri

Research Scholar at Department of Chemistry, Sikkim Manipal Institute of Technology Sikkim Manipal University, Majitar, Rangpo Sikkim-737136, India

Nayan Kamal Bhattacharyya

Assam Women's University, Jorhat, Assam- 785004, India

Karma Gyurmey Dolma

Department of Microbiology, Sikkim Manipal Institute of Medical Sciences (Sikkim Manipal University), 5th Mile, Tadong, Gangtok, Sikkim-737102, India

Sangeeta Jha

Department of Chemistry, Sikkim Manipal Institute of Technology Sikkim Manipal University, Majitar, Rangpo Sikkim-737136, India

Archana Moni Das

CSIR-North East Institute of Science and Technology, Jorhat, Assam-785006, India

Abstract:

Arundinaria suberecta Munro (Poaceae) is an important traditional medicinal plant widely used by local healers in Sikkim to treat kidney stones.. *Arundinaria suberecta* Munro was collected from the Himalayan region in Sikkim, India and was investigated for qualitative and quantitative phytochemical analysis, antioxidant and antimicrobial properties from root extracts using various solvents for the first time. The qualitative phytochemical assessment showed the existence of sterols, tannins, flavonoids, saponins and alkaloids. The FTIR spectrum of the sample exhibited absorption bands characteristic of hydroxyl groups, alkanes, amines, and aliphatic ethers. The antioxidant properties of the root extracts were determined using DPPH method, where methanolic extract demonstrated the strongest scavenging activity with 94%. Using the well diffusion method, antimicrobial properties of root extracts were screened against *Candida albicans, Staphylococcus aureus* and *Escherichia coli*. The ethyl acetate extract revealed significant antibacterial activity against S. aureus (17 ± 02 mm) and E. coli (18 ± 0.9 mm) at a concentration of 50 mg/mL. However, the root extracts did not exhibit any activity against *Candida albicans*. These findings highlight *A. suberecta* Munro potential for pharmaceutical applications, particularly for its antioxidant and antibacterial properties, affirming its therapeutic use in traditional medicine.

Examining Distributed Learning Methods for Identifying Fraud in Federated Financial Systems

Er.Narinder yadav
Department of Computer Science and Engineering, Chandigarh University, Mohali, India

Rohit Soni
Department of Computer Science and Engineering, Chandigarh University, Mohali, India

Anshu kumar
Department of Computer Science and Engineering, Chandigarh University, Mohali, India

Janvi Singh
Department of Computer Science and Engineering, Chandigarh University, Mohali, India

Abstract:

This research examines the application of Federated Learning (FL) frameworks in identifying fraudulent activities within different financial organizations. FL facilitates the training of models in a decentralized manner using local datasets, which upholds confidentiality, a critical factor when managing sensitive financial data. The study evaluates three distinct machine learning frameworks to determine their performance within the FL setting. While both ANN and CNN reveal strong abilities to detect intricate fraudulent patterns, they encounter notable issues related to communication efficiency and the risk of overfitting. Conversely, RF exhibits greater resilience in processing data and is less prone to overfitting, although it does face challenges concerning communication overhead. This document also highlights the obstacles of implementing FL for fraud detection, such as data diversity, communication expenses, and security risks. Furthermore, it proposes avenues for future research, concentrating on model customization, enhancement of communication processes, and the development of advanced privacy-preserving methods. By addressing these obstacles, FL could offer adaptable and secure solutions for prompt fraud detection, protecting sensitive financial data while improving detection precision across a range of data sources.

Keywords:

Federated learning, Artificial Nurel network, random forest, convolutional neural network, non-independent and indistinguishably disseminated data, security risks, communication optimization.

 ISBN: 978-93-92104-23-7

Intelligent VFD Drive Controller for AC Motors

Padma Priya S R
EEE - Sri Kishna College of Engineering and Technology, Coimbatore

Santhipkumar S
EEE - Sri Kishna College of Engineering and Technology, Coimbatore

Sasipriya S
EEE - Sri Kishna College of Engineering and Technology, Coimbatore

Srivisweswara M S
EEE - Sri Kishna College of Engineering and Technology, Coimbatore

Geethamani R
Associate Professor, EEE - Sri Kishna College of Engineering and Technology, Coimbatore

Abstract:

Faults in industrial motor systems can affect energy efficiency, speed and increase unplanned downtimes. This paper proposes a model to show command with Python using VFD with the help of a machine learning approach for predictive maintenance and real-time fault detection. The motor system processes sensor data in real-time which helps in detecting faults. It improves accuracy of fault prediction and cuts down on downtime by using savvy data analytics. The proposed technique helps raise industrial automation, lower upkeep spending and enhance energy efficiency.

Keywords:

Energy efficiency, Fault detection, Machine learning, Predictive maintenance.

Smart Battery Management for Automotive Electric Vehicles

Dr. N. Manonmani
Assistant Professor, Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology, Coimbatore, India

D. Sharan
Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology, Coimbatore, India

G. Sri Tarun Desigan
Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology, Coimbatore, India

R. Sundar
Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology, Coimbatore, India

S. R. Vivin
Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology, Coimbatore, India

Abstract:

This paper introduces a revolutionary Smart Battery Management System (BMS) for automotive electric vehicles (EVs), dramatically enhancing battery performance and lifespan through advanced monitoring, control, and safety features. Our BMS architecture boasts a robust battery pack management system, accurately monitoring cell voltage, temperature, and current, ensuring precise cell balancing, regulating thermal conditions, and rapidly detecting faults. The user-friendly dashboard interface provides real-time data visualization, alerts, and intuitive user controls. The low-voltage (LV) circuit management reliably distributes power and protects the 12V battery and auxiliary systems. MATLAB/Simulink simulations and real-world testing on an EV battery pack conclusively demonstrate the BMS's exceptional ability to maintain battery health, optimize energy usage, and ensure safety. Our system significantly boosts battery pack efficiency and reliability, resulting in outstanding overall performance of the electric vehicle. This study confirms the vital importance of integrated BMS in automotive EVs and paves the way for future innovations in optimization and integration with emerging EV technologies to revolutionize electric transportation solutions.

Keywords:

CAN Bus, Cell balancing, PCB, Smart Battery Management System (BMS).

ISBN: 978-93-92104-23-7

Employee Traceability System

Dr. Rashmi Deshpande
Assistant Professor at Dr. D. Y. Patil Institute of Engineering Management and Research, Pune

Ms. Pratidnya Anekar
Undergraduate student at Dr. D. Y. Patil Institute of Engineering Management and Research, Pune

Ms. Anuja Pachwadkar
Undergraduate student at Dr. D. Y. Patil Institute of Engineering Management and Research, Pune

Mr. Anil Rathod
Undergraduate student at Dr. D. Y. Patil Institute of Engineering Management and Research, Pune

Mr. Varad Nimbarte
Undergraduate student at Dr. D. Y. Patil Institute of Engineering Management and Research, Pune

Abstract:

The "Employee Traceability System" is a web-based application designed to efficiently track and monitor employee activities within an organization. Built using modern web technologies, including ReactJS and Vite, the system provides a user-friendly interface and real-time data processing to ensure smooth operations. It allows administrators to trace employee locations, monitor their attendance, and keep track of assigned tasks and progress. This application aims to enhance productivity and transparency by giving employers insights into employee performance and availability. The system also includes secure login, role-based access, and automated reporting features, ensuring data privacy and reliability. This project aims to develop a web application using React.js and Vite for efficient employee traceability. By leveraging SQL as the underlying database, the application will provide a robust and scalable solution for tracking employee movements, shifts, and other relevant information in real-time. The application will feature an intuitive user interface designed with React.js, ensuring a seamless user experience for HR personnel and management. Vite's rapid development capabilities will allow for efficient iteration and testing, enabling the team to respond quickly to user feedback and evolving requirements.

Enhanced Security and Efficiency in Cloud File Transfer via Dual Encryption with AES and RSA

G. Vijay Kumar
Assistant Professor, CSE department, AITAM, Tekkali

I. Venkata Sai
B.Tech UG students, CSE department, AITAM, Tekkali

Ch. Uday kumar
B.Tech UG students, CSE department, AITAM, Tekkali

P. Rahul
B.Tech UG students, CSE department, AITAM, Tekkali

Ch. Tanusri
B.Tech UG students, CSE department, AITAM, Tekkali

V. Dharmendra
B.Tech UG students, CSE department, AITAM, Tekkali

Abstract:

Cloud services are already hiring information to recent developments in cloud computing. Users can access low-cost cloud services from Dropbox and Google Drive storage. Here, we give a protection mechanism that offers a higher level of protection with the encryption and decryption of the material facts. The record users transfer to the web server is double-encrypted. Both processes have been employed in sequence for encryption of the record for the second time. Following the AES process, the file is encrypted using the technique like RSA. The appropriate keys are generated whereas the methodology runs. This strategy improves safety. We took into account several criteria such as protection threshold, integrity of data, data confidentiality, speed, and cypher text dimension. Our approach is more effective since it meets all the criteria, whereas the traditional approaches did not. AWS is the cloud client that we have utilised for file-related storing needs, and the file is protected with the deployment of the AES and RSA techniques.

Keywords:

Encryption, decryption, Security in Cloud storage, AES, and RSA.

ISBN: 978-93-92104-23-7

Developing a Comprehensive Cost Control Framework for Public Housing Construction: A Critical Review and Proposed Model

Thasneem Kahar
Research Scholar, Department of Architecture, TKM College of Engineering, APJ Abdul Kalam Technological University, Kerala, India

Dr. Sumam Panjikaran
Dean and Professor, Department of Architecture, Bishop Jerome Institute, APJ Abdul Kalam Technological University, Kerala, India

Dr. Anu V Thomas
HoD and Professor, Department of Civil Engineering, TKM College of Engineering, APJ Abdul Kalam Technological University, Kerala, India

Abstract:

Cost overruns remain a persistent challenge in public housing construction, impacting project feasibility, affordability, and economic efficiency. Numerous cost control models exist, yet they often address only specific aspects of cost management, leading to gaps in effectiveness. Some focus on estimation, others on monitoring, and many struggle with adaptability across diverse housing projects.

This study critically examines existing cost control approaches, identifying key challenges and limitations. It highlights the need for an integrated framework that considers the entire construction lifecycle, from planning to execution. Based on these insights, a new cost control framework is proposed, combining strategic planning, real-time monitoring, and risk assessment methodologies. The framework is designed to enhance efficiency, improve budget adherence, and provide a more adaptable approach to cost management in public housing projects worldwide.

By addressing the shortcomings of previous models and incorporating practical advancements, this study contributes to the field of construction management. The proposed framework aims to ensure financial sustainability, minimize cost overruns, and support more efficient project delivery, ultimately fostering better housing solutions on a global scale.

Keywords:

Cost Overruns, Public Housing, Cost Management, Project Efficiency, Construction Framework, Budget Control.

Advanced Human Behavior Analysis Using Deep Learning for Intelligent Insights

N. Sujata Gupta
Assistant Professor

P. Siddeshwar Goud
Assistant Professor

G. Vignesh
Assistant Professor

Abstract:

Human behavior analysis is important in fields including surveillance, healthcare, sports, and entertainment. Traditional methodologies can fail to capture the variety and unpredictability of human behavior, especially in changing postures and lighting conditions, reducing the accuracy of face expression analysis. This paper describes an effective deep learning technique for behavior analysis that takes advantage of well-known facial expression datasets. The Viola-Jones technique is utilized for face recognition, a lightweight attention-based network for expression classification, and a histogram of oriented gradients (HOG) to extract features. Our model combines convolutional neural networks (CNNs) for efficient feature extraction with temporal sequence learning via recurrent neural networks (RNNs), which improves the accuracy of behavioral pattern identification. To improve performance even further, we employ data augmentation, metaheuristic optimization, and hyperparameter tuning.

Lastly, to help with behavior predicting, transitions and expression frequency are tracked using an occurrence matrix. According to experimental data, our method performs better than baseline models in terms of accuracy and computing efficiency, highlighting deep learning's promise for real-time human behavior monitoring.

Keywords:

Human behavior analysis, deep learning, facial expression recognition(FER), Viola-Jones algorithm, histogram of oriented gradients (HOG), gray level occurrence matrix(GLCM), Recurrent Neural Network(RNN).

ISBN: 978-93-92104-23-7

Transitioning form Turing Machine to Plank Machine

Avijit Deb Sarkar
Principal Consultan

Vikram Rao
Principal Consultan

Abstract:

View of industrial revolution in light of Physics:

The industrial revolution started with the mechanized the physical efforts with the machines. Then later based on advancement of the technology, material, and machines the revolution has been broken into four different phases and currently we are in the 4th industrial revolution phase. From the lens of physics, I believe the industrial revolution can be categized into three distinct phase, first phase was to apply the classical mechanics theory to design machine to reduce human effort, second phase was to use electrical theory to design a new set of machines to automate some work and third phase is to use the theory of modern physics to improve the efficiency of the automated devices and control the behavior of the materials by using theory of particle or quantum physics. In parallel to 3rd industrial revolution on 1950 another journey started with the groundbreaking paper written by Alan Turing named "Computing Machinery and Intelligence", which was the starting point of AI journey. Thirty years after the AI journey started on 1980, Richard Feynman and Yuri Manin independently suggested that a quantum phenomenon-based hardware for more efficient computational system.

Dynamic Spam Detection in Text

Dr. J. Sasi Bhanu
Professor, Department of CSE (AI&ML), CMRCET, Hyderabad, Telangana, India

L. Siri
Professor, Department of CSE (AI&ML), CMRCET, Hyderabad, Telangana, India

A. Raghu Siddartha Reddy
Professor, Department of CSE (AI&ML), CMRCET, Hyderabad, Telangana, India

K. Sai Keerthi
Professor, Department of CSE (AI&ML), CMRCET, Hyderabad, Telangana, India

Dr. D. B. K. Kamesh
Professor, Department of Computer Science and Engineering, MLR Institute of Technology, Hyderabad ,Telangana, India

Abstract:

The developing utilize of versatile informing administrations has contributed to the rise of social designing assaults, such as phishing. Spam messages play a noteworthy part in spreading phishing endeavors pointed at taking touchy information like passwords and credit card points of interest. Moreover, deception and wrong restorative claims approximately the COVID-19 widespread are shared as often as possible on social media, causing open uneasiness and disarray. To relieve these dangers, sifting spam substance is essential. Traditional approaches to spam classification, counting machine learning and profound learning, have certain downsides. Machine learning methods depend on manuals include determination, whereas profound learning models request tall computational assets. To address these issues, this extend proposes a energetic profound gathering show for spam discovery, competent of naturally extricating highlights whereas adjusting its complexity. The show coordinating convolutional and pooling layers for including extraction and utilizes base classifiers such as arbitrary woodlands and amazingly randomized trees to recognize spam from true blue messages. Besides, it utilizes gathering learning procedures like sacking and boosting to improve execution. The proposed demonstrate illustrated extraordinary comes about, accomplishing a tall precision, accuracy, review, and F1-score of 99.58%.

Keywords:

Deep Convolutional Forest (DCF), Spam Detection, Text Classification, Ensemble Learning, Convolutional Neural Networks (CNNs), Dynamic Deep Ensemble, Feature Extraction.

 ISBN: 978-93-92104-23-7

Machine Learning-based Hybrid EV Assistive System for Fuel and Electric Switching

Dr. K. MuthuKumar
Associate Professor, Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology, Coimbatore, India.

R. Shreemathy
Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology, Coimbatore, India

A. Sreenidhi
Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology, Coimbatore, India

S. Silvester
Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology, Coimbatore, India

M. Kungumaraj
Department of Electrical and Electronics Engineering, Sri Krishna College of Engineering and Technology, Coimbatore, India

Abstract:

Modern Hybrid Electric Vehicles (HEVs) incorporate an Internal Combustion Engine (ICE) and an electric motor to increase fuel efficiency and lower pollutants. These vehicles offer a practical transition toward electrification, balancing eco-friendliness with convenience. An AI-based HEV assistive system utilizes machine learning to optimize the switching between fuel and electric power sources, enhancing efficiency, performance, and sustainability. By continuously analyzing real-time factors such as driving conditions, battery charge levels, fuel availability, traffic patterns, and driver behavior, the system intelligently determines the optimal power source for any given situation. Advanced predictive algorithms enable seamless transitions, minimizing energy waste, reducing emissions, and extending battery life while maintaining a smooth driving experience. Additionally, the AI-driven system adapts over time, learning from historical data to refine its switching strategies for improved performance. This intelligent energy management approach not only enhances vehicle efficiency but also contributes to reducing operational costs and environmental impact, making hybrid vehicles more practical and eco-friendly.

Keywords:

Hybrid Electric Vehicle (HEV), Machine Learning, Node MCU, Temperature Sensor, H-Bridge.

AI-Driven Sleep Apnea Detection System

Kaviya S
Undergraduate Student

Kaviya L
Undergraduate Student

Meena N
Undergraduate Student

Abstract:

Heart disease, hypertension, and daily fatigue are some of the significant health risks that come with sleep apnea. This is very common but at times unidentified sleeping disorder that disrupts normal breathing during sleep. Early detection is hard for many people because common diagnostic methods, like sleep tests at specialist centres, are expensive, tedious, and require professional monitoring. The current research presents an AI-based sleep apnea detection device that presents a convenient and cost-effective alternative to traditional diagnosis. The technology monitors key health parameters, such as blood pressure, heart rate, and oxygen saturation (SpO2), in real-time through smartwatches. The system also supports manual input of key health data, such as respiratory and sleep patterns, for individuals without wearable devices. To find the likelihood of sleep apnea and classify its types: Obstructive Sleep Apnea (OSA), Central Sleep Apnea (CSA), or Complex Sleep Apnea Syndrome, these inputs are analysed with the help of advanced AI methods. The system ensures that more individuals can monitor their sleep wellness regardless of gadget access by blending wearable technology with manual input options. The AI model analyzes a number of variables to determine early signs of sleep apnea, allowing users to take preventive measures and, if necessary, consult a doctor. By offering an easy, non-invasive, and affordable early detection method, this approach allows individuals to manage their sleep health effectively.

Keywords:

Machine Learning, Wearable Sensors, AI-driven Detection, Sleep Apnea, Physiological Monitoring, Health Informatics.

ISBN: 978-93-92104-23-7

Detecting Misleading Text in Social Media using an Ensemble Model Along with Deep Learning

Valarmathi E
Assistant Professor

Reshma A
Assistant Professor

Nanthini S
Assistant Professor

Deepa S V
Assistant Professor

Abstract:

The meteoric ascent of social media has transformed information dissemination into a world of instant accessibility to users of world news in real time. Yet, it has also emerged as a platform for the propagation of fake news, shaping public opinion, political stability, and social trust. Current detection methods mostly depend on content analysis, usually ignoring the social and behavioural dimensions that lie at the core of explaining the spread of misinformation. The objective of this project is to develop an automatic system for detecting misleading text in social media that integrates several methods of content analysis, user engagement, and platform features. It uses a hybrid machine learning method to maximize detection accuracy and reduce the influence of misinformation on social media platforms. The study includes content features (e.g., text structure, sentiment) and user-specific indicators (e.g., posting rate, interaction patterns). Additionally, features of the platform like message length and interaction behavior are incorporated to form a complete detection system. A hybrid system was formed by combining an ensemble model comprising machine learning models—K-Nearest Neighbors (KNN), Gradient Boosting (GB), and Decision Tree (DT)—and a deep learning CNN-LSTM model.User activities and platform data were crawled and processed. Model training was guaranteed with strong k-fold cross-validation, and precision, recall, and F1-score were used to measure system performance. The CNN-LSTM model proved to be more accurate as it is able to handle complex linguistic and contextual patterns. The model on the ensemble maintains interpretability and generalizability by giving mutual support The developed

method evidenced huge gains relative to existing methodologies based on utilizing both context-sensitive features and content-oriented features. The findings of our research reinforced the importance of such behavior-related indicators as share rates and interest ratios in the correct detection of false information In this paper, an effective, automated fake news detector with hybrid machine learning and deep learning models is proposed. Incorporating user-oriented and platform-specific features facilitated the description of the process of spreading misinformation in detail, hence leading to higher detection accuracy. Future work can focus on expanding the system to other languages and cultural settings and incorporating Explainable AI for greater transparency and user confidence. The system is of practical importance in restricting the spread of disinformation and developing a more enlightened online community.

ISBN: 978-93-92104-23-7

Ml-Based Agricultural Commodity Price Prediction

Pooja Mishra
Assistant Professor, Dr DY Patil Institute of Engineering, Management and Research Akurdi, Pune, India

Vaishakh Kuduvan
Dr DY Patil Institute of Engineering, Management and Research Akurdi, Pune, India

Gaurav Mahajan
Dr DY Patil Institute of Engineering, Management and Research Akurdi, Pune, India

Ashutosh Singh
Dr DY Patil Institute of Engineering, Management and Research Akurdi, Pune, India

Omkar Kakad
Dr DY Patil Institute of Engineering, Management and Research Akurdi, Pune, India

Abstract:

Unpredictable market circumstances and price fluctuations pose serious problems for the agriculture sector, impacting farmers, dealers, and other stakeholders. To produce accurate price forecasts, this model makes use of a variety of data inputs, such as historical crop prices, demand-supply patterns, current market data, and price fluctuation tendencies. It gives stakeholders useful information to aid in their strategic decision-making. Advice on the best crop choices, resource allocation, and harvesting schedules is beneficial to farmers. Traders enhance their investment and inventory management techniques. The model can be used by policymakers to create actions meant to safeguard vulnerable populations and stabilize market circumstances.

The approach also encourages effective resource use, guaranteeing sustainable farming methods that are advantageous to the environment and the economy. It provides a framework for incorporating cutting-edge technology like machine learning and artificial intelligence.

A Systematic Review of Biomarkers for Early Detection and Predicting Drug Response in Cancer Patients

Nidhish Somaiah C K
Manipal Institute of Technology, Manipal

Pallavi S Kumar
Manipal Institute of Technology, Manipal

Dr. Cifha Crecil Dias*
Manipal Institute of Technology, Manipal

Abstract:

The complexity of cancer and variability of responses to drugs are some of the most challenging tasks in oncology. This has gradually shifted the focus toward molecular biomarkers for the treatment, but interpretation and practice in the clinical setting is seen as challenging. Advances in AI and machine learning are providing innovative solutions, enhancing predictions based on biomarkers, and improving outcomes in treatment.

This paper reviews AI technologies and biomarker analysis for predicting drug responses in cancer patients, underlining recent progress and future outlooks. Studies published between 2019 and 2025 from biomedical and engineering backgrounds have been reviewed and analyzed, including validated biomarkers, AI methodologies, and clinical applications. Major findings include notable progress in multi-omics biomarkers, whereby AI-based methods have been more accurate than conventional statistical approaches in predicting drug response.

Demonstrations of studies have shown AI-enhanced biomarker analysis could reach over 85% accuracy in certain types of cancer but may vary by therapeutic context. Data standardization, model interpretability, and the need for robust computational infrastructure are key challenges. Regulatory hurdles and clinical validation are also necessary for broader application.

The merger of AI with biomarker analysis provides the possibility for more accurate, personalized, and cost-effective treatment of cancer.

ISBN: 978-93-92104-23-7

A Systematic Review of Biomarkers for Early Detection of Parkinson's Disease

Pallavi S Kumar
Manipal Institute of Technology, Manipal

Nidhish Somaiah C K
Manipal Institute of Technology, Manipal

Dr. Cifha Crecil Dias*
Manipal Institute of Technology, Manipal

Abstract:

Biomarkers of neurodegenerative disease are critical for improving diagnostics and developing therapies that modulate disease progression. They provide insight into pathologies, biochemistries, and genetic changes and can be used to predict risk, diagnose early, and develop treatments. Biomarkers must reliably distinguish between normal and diseased states and among different conditions.

Recent advances have identified biomarkers for neurodegenerative diseases, such as Parkinson's disease (PD), which include α-synuclein-containing Lewy bodies, altered DAT imaging, and emerging technologies like voice analysis. Voice analysis has promise as a deep phenotype for PD, enabling clinical applications in early detection. Biomarkers of α-synuclein pathology, neurodegeneration, and glial activation are being increasingly considered.

This review examines progress in biomarker analysis and AI methodologies for PD detection, focusing on studies from 2019 to 2025. Key challenges include early diagnostic ambiguity and predicting disease progression. Combining biomarkers and AI can improve diagnostic accuracy, while advancements in transparency, validation, and scalability will support clinical integration. This convergence offers new possibilities for earlier and more precise PD detection.

3D Dental Image Segmentation

Aanand Aathmaram
Department of Ccomputer Science and Engineering Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal 576104, Karnataka, India

Pallavi S Kumar
Department of Ccomputer Science and Engineering Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal 576104, Karnataka, India

Abstract:

In the field of computer-aided dentistry, accurately identifying and separating teeth in 3D dental models is crucial. While existing methods work well for typical dental models, they struggle when faced with challenging cases, such as models with missing, crowded, or misaligned teeth, especially before orthodontic treatments. The proposed method, called TSegNet, tackles this issue in two steps. First, it accurately pinpoints all the teeth, even in irregular positions. Then, in the second step, it segments each tooth, handling challenges like missing or crowded teeth. We tested TSegNet on a large dataset of real-world dental models captured both before and after orthodontic treatments to ensure its effectiveness in various scenarios. TSegNet uses spatial and channel attention to improve feature extraction. The template-based approach reduces the number of labeled training samples needed.

Keywords:

TSegNet, teeth, orthodontic, computer-aided dentistry, segments.

ISBN: 978-93-92104-23-7

22 - 23 March 2025 | Chennai, India

Computational linguistics of Farsi Epigraphs using Optical Character Recognition and Natural Language Processing

Sumaiyya Amreen Ziyaullah Khan
Ph.D. research scholar in Computer Science and Engineering at Sipna College of Engineering and Technology, Amravati, Maharashtra

Aashish Ashokrao Bardekar
Sipna College of Engineering and Technology, Amravati, Maharashtra

Abstract:

Computational linguistics applies computer science techniques to analyze and synthesize language and speech. Farsi Optical Character Recognition (OCR) is crucial for converting Persian script from images into machine-readable text. However, the cursive nature, overlapping shapes, and contextual dependencies of Persian characters present challenges for traditional OCR methods. This paper explores the computational linguistics of Farsi Epigraphs using OCR and Natural Language Processing to create a more accurate and efficient Farsi OCR system. The proposed approach leverages Artificial Neural Networks (ANNs) to address these challenges through adaptive learning and pattern recognition. The methodology involves preprocessing images to improve quality and standardize dimensions, followed by text segmentation into individual characters. Features from each character are extracted and used to train the ANN on a labeled dataset of Persian characters. To incorporate cultural and historical aspects, the dataset includes images of inscriptions from the ancient Dargah of Achalpur, which showcase intricate Persian calligraphy. The system, implemented in MATLAB, efficiently handles image loading, preprocessing, segmentation, and classification. Evaluation results indicate the system's high accuracy and robustness. The inclusion of historical inscriptions also highlights the model's role in preserving cultural heritage, overcoming traditional limitations, benefiting document digitization, information retrieval, and automated translation.

Solar Light-Driven Photocatalytic Degradation of Organic Pollutants via Activation of Persulfate Using Mesoporous FeNbO4

Neha Gupta
PhD, Department of Chemistry, Sikkim Manipal Institute of Technology, Sikkim Manipal University, Sikkim, 737136, India

Arpita Sarkar
Associate Professor, Department of Chemistry, School of Basic Sciences, Swami Vivekananda University, Kolkata, 70012, India

Soumya Kanti Biswas
Associate Professor, Department of Chemistry, Sikkim Manipal Institute of Technology, Sikkim Manipal University, Sikkim, 737136, India

Abstract:

Iron niobate (FeNbO4), a ceramic material, is well known for its diverse applications in energy storage, electronics, catalysis etc. In this study, mesoporous FeNbO4 was synthesized using an aqueous solution-based, low-temperature synthesis method. This approach relies on the advantages of using an aqueous niobium tartrate complex as an alternative to the expensive and less stable niobium precursors. The resulting FeNbO4 material was characterized using several analytical techniques, including Attenuated Total Reflectance-Fourier Transform Infrared Spectroscopy (ATR-FTIR), X-ray Diffraction (XRD), Ultraviolet-Visible Diffuse Reflectance Spectroscopy (UV DRS) and Thermogravimetric analysis (TGA). The monoclinic phase of the prepared material was confirmed by XRD analysis. The catalyst has been known to exhibit a narrow optical bandgap, and its optical bandgap was confirmed to be close to 1.5 eV by the UV DRS study, enabling efficient absorption and utilization of solar light for photocatalytic applications. FeNbO4 has previously been employed as a catalyst in photocatalysis and advanced oxidation processes (AOPs) to remediate various pollutants through the generation of reactive oxygen species (ROS). However, its application in persulfate radical activation remains largely unexplored. In this work, the photocatalytic performance of the prepared mesoporous FeNbO4 was evaluated for the activation of persulfate radicals

 ISBN: 978-93-92104-23-7

during the degradation of Rhodamine B (RhB) dye under natural solar light. The results demonstrated efficient performance, achieving complete (100%) dye removal within 60 minutes of natural solar irradiation. To further validate its efficacy, the catalyst was tested on a simulated textile wastewater created by mixing various cationic and anionic organic dyes, including RhB, methylene blue (MB), methyl orange (MO), and crystal violet (CV), under the optimized reaction conditions. Scavenging experiments revealed that the photocatalytic degradation followed a predominantly radical-mediated pathway with SO4-• anion radicals and O2-• radicals identified as the primary active species in the reaction. However, the detection of 1O2 also points to the presence of a minor non-radical reaction pathway. The structural stability of the catalyst was analyzed before and after the photocatalytic reactions to assess its durability. Characterization results revealed no significant structural changes in the catalyst after use, underscoring its stability and suitability for catalytic applications.

Automated Malware Analysis using Sandbox Environment

Nallabotu UdayGopi
Sathyabama Institute of Science and Technology, Chennai, India

Shaik Abdul Mujeeb
Sathyabama Institute of Science and Technology, Chennai, India

Dr. Veena K
Adssistant Professor, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

Malware analysis has become a critical aspect of cybersecurity as the frequency and sophistication of malware attacks continue to rise. This paper presents a comprehensive study on automated malware analysis using sandbox environments, emphasizing dynamic behavior analysis techniques. By leveraging sandbox environments, malware can be executed in an isolated, controlled setup to observe its runtime behavior without risking real-world systems. This research explores existing tools, methodologies, and challenges, such as sandbox evasion techniques employed by advanced persistent threats (APTs). Furthermore, the study highlights the role of machine learning and artificial intelligence in enhancing the accuracy and efficiency of automated malware analysis. Experimental results validate the efficacy of sandbox-based systems in detecting environment-sensitive malware and mitigating evasion tactics. The findings contribute to advancing automated malware detection strategies, ensuring robust cybersecurity defenses against evolving threats.

Keywords:

Automated malware analysis, sandbox environments, dynamic behavior analysis, sandbox evasion, malware detection, cybersecurity, advanced persistent threats (APTs), machine learning, malware mitigation strategies.

ISBN: 978-93-92104-23-7

Evaluating Cloud Computing Challenges and Threats to Mitigate Data Breaches

Rayudu Nikhil Johnson
Student

Ks Thanoj
Student

Abstract:

Cloud computing is considered as one of the most prominent paradigms in the information technology industry, since it can significantly reduce the costs of hardware and software resources in computing infrastructure. At the first sight, by merely storing the shared data as plaintext in the cloud storage and protect them using an appropriate access control would be a nice solution. This is assuming that the cloud is fully trusted for not leaking any information, which is impractical as the cloud is owned by a third party. Therefore, encryption is mandatory, and the shared data will need to be stored as a ciphertext using an appropriate access control. The existing protection in the literature has been explored to allow only legitimate recipients to decrypt the contents stored in the cloud storage, but unfortunately, no existing work deals with issues raised due to the presence of malicious data publishers. Malicious data publishers construct data following the given policy, but the ciphertexts can actually be decrypted by unauthorized users without valid keys, or simply, anyone else who is unauthorized. The impact of the involvement of malicious data publishers is detrimental, as it may damage intellectual properties from the corporations. In this work, we present a new direction of research that can cope with the presence of malicious data publishers. We resolve the aforementioned problem by proposing the notion of Sanitizable Access Control System (SACS), which is designed for a secure cloud storage that can also resist against malicious data publishers. We define the threat model and its formal security model, as well as its design and scheme which is based on q-Parallel Bilinear Diffie-Hellman Exponent Assumption. We provide the security proof of our construction as well as its performance analysis. We believe that this work has opened a new area of research which has never been explored before, even though it is very practical. Therefore, this work will enhance the adoption of secure cloud storage in practice.We define the threat model and its formal security model, as well as its design and scheme which is based on q-Parallel Bilinear DiffieHellman Exponent Assumption. The impact of the involvement of malicious data publishers is detrimental, as it may damage intellectual properties from the corporations. In this work, we present a new direction of research that can cope with the presence of malicious data publishers.

Secure Online Fund Transfer using Advanced Encryption Standard and Multi Factor Authentication

Sagrika Sharma
Department of Computer Science and Engineering with specialization in Cyber Security (School of Computing), Sathyabama Institute of Science and Technology, Chennai, Tamil Nadu, India

Sandipa Saha
Department of Computer Science and Engineering with specialization in Cyber Security (School of Computing), Sathyabama Institute of Science and Technology, Chennai, Tamil Nadu, India

Dr. N. Nanthini
Department of Computer Science and Engineering (School of Computing), Sathyabama Institute of Science and Technology, Chennai, Tamil Nadu, Chennai

Abstract:

This paper gives an account on how the safe fund transfer process can be implemented basically on local fund transfers which can be encoded using Advanced Encryption Standard and then improved with the help of Multi factor Authentication. On the back end, the architecture of the system employs Node.js while the database side is integrated with MongoDB and on the front end, the structure is integrated with React.js. The system is designed to grow with more capacity, be protected, and easy to use as well as apply. This mainly includes real-time fund transfer, safe transmission through APIs, good information management, which are further optimised by MFA to minimize the frauds in the user identification process. This has nothing to do with the system and some of the focus on security includes Bcrypt password hash manager and HTTPS. The OTP based MFA does not compromise with security from the frauds at the same time it is not very complex from the user-end. This overall solution also ensures that all the Computerised Money Transactions are done in a very secure manner and consumers' privacy and data accuracy is highly regarded and the user's credit is highly regarded throughout the electronic payment Chain. The next idea would then be to have an actualization of the blockchain in such a way that every transaction that happens within it and the role based access control is documented.

Keywords:

Fund Transfer, Multi-Factor Authentication, Otp, Advanced Encryption Standard, Encryption.

ISBN: 978-93-92104-23-7

An Ultra Wideband Microstrip Bandpass Filter Designed for RF Applications

Rashmita Kumari Panigrahy
Department of Electronic Science, Berhampur University, Berhampur

Abstract:

A novel wideband bandpass filter (WBPF) utilizing planar technology is proposed, featuring a compact design and sharp frequency cutoff characteristics. The filter employs a microstrip configuration consist of parallel coupled lines (TPCL) integrated with a radial open stub. To validate its performance in terms of compact size, insertion loss, return loss, and transmission zeros, high-density meshing was applied using electromagnetic simulation tools .The filter is fabricated on an RT/Duroid substrate with a relative dielectric constant of 2.2 and a thickness of 1.58 mm. It is fed by two 50Ω microstrip lines for input and output connections. Experimental measurements reveal that the filter achieves a return loss of 11dB, an insertion loss of 0.49 dB, and operates at a center frequency of approximately 6.8 GHz. Its effective bandwidth extends from 3.1 GHz to 10.60 GHz, resulting in a fractional bandwidth of about 85%. The simulated and measured results show excellent agreement, confirming the reliability of the proposed design. The overall circuit dimensions is reduced, highlighting the filter's compact footprint.

Keywords:

Wideband band pass Filter, Parallel coupled line, insertionloss, transmission zeros.

AI Image Caption Generator

M A Anson
Division of Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore, Tamil Nadu

Dr. Ebenezer Jangam
Associate Professor, Division of Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore, Tamil Nadu

Abstract:

This paper presents an AI-driven image captioning system that generates both textual and audio descriptions from images using a deep learning-based multimodal approach. The suggested model utilizes ConvNeXt as a characteristic extractor to obtain rich image representations, which are subsequently processed by a GRU with Attention mechanism to produce mean- ingful and contextually relevant captions. The generated text is further converted into natural-sounding speech using Glow-TTS, enabling an end-to-end image-to-audio pipeline. Unlike traditional CNN-LSTM-based captioning models, our method makes use of the efficiency of ConvNeXt for improved feature extraction and the lightweight nature of GRU for sequential text generation, making the system computationally effective. The incorporation of Glow-TTS enhances accessibility by providing spoken descriptions, which may be beneficial in assistive technolo- gies, automated content creation, and interactive AI applications. Experimental evaluations demonstrate the effectiveness of the model in producing coherent captions and high-quality speech output, making it a promising solution for AI-powered image understanding and narration tasks.

Keywords:

Image Captioning, Deep Learning, ConvNeXt, Gated Recurrent Unit (GRU), Glow-TTS, Feature Extraction, Speech Synthesis, NLP, Computer Vision, Assistive Technology, Deep Neural Networks, CNN, Hidden State, Image Caption Generator, Long Short-Term Memory.

ISBN: 978-93-92104-23-7

Evaluation of Inception and Xception for Brain MRI-Based Neurological Disorder Diagnosis

Shreekrishna Santoshkumar Yadav
Department of Computer Engineering, Shree L.R. Tiwari College of Engineering, Mumbai

Ravindra Sugdeo Sonavane
Associate Professor, Department of Computer Engineering, Shree L.R. Tiwari College of Engineering, Mumbai

Sonia Sobhan Kolay
Department of Computer Engineering, Shree L.R. Tiwari College of Engineering, Mumbai

Ankur Shailesh Upadhyay
Department of Computer Engineering, Shree L.R. Tiwari College of Engineering, Mumbai

Siddhi Vijay Sankhe
Department of Computer Engineering, Shree L.R. Tiwari College of Engineering, Mumbai

Abstract:

Brain MRI categorization is crucial to diagnose neurological illnesses. The efficacy of using Inception and Xception, two deep learning algorithms, for automatic categorization of magnetic resonance imaging (MRI) scans of the brain, is investigated in this work. The study uses transfer learning by training the models on annotated brain MRI images and refining them using pre-trained weights from ImageNet. Improving model generalizability is achieved by the use of data pre-processing techniques such as scaling, normalization, and augmentation. Confusion matrices are also examined to comprehend how the models behave when applied to various classes. Concerning patient privacy and healthcare laws in particular, the study stresses the significance of ethical concerns and regulatory compliance in medical image analysis. With such encouraging results for classification accuracy, deep learning algorithms may one day help doctors make more accurate diagnoses of neurological disorders using magnetic resonance imaging (MRI) of the brain. Continuous improvement and refinement are necessary to ensure accurate diagnostic support in real-world healthcare settings and increase the models' clinical applicability.

Keywords:

Brain MRI, Xception, Inception, Benign, Malignant.

Plant Disease Detection

Vivek Vijayakumar*
Department of CSE, Jyothi Engineering College (APJKTU), Kerala, India

Martin Antony Francis
Department of CSE, Jyothi Engineering College (APJKTU), Kerala, India

Sajin Simon
Department of CSE, Jyothi Engineering College (APJKTU), Kerala, India

Steephan T J
Department of CSE, Jyothi Engineering College (APJKTU), Kerala, India

Sobha Xavier
Department of CSE, Jyothi Engineering College (APJKTU), Kerala, India

Abstract:

Plant diseases are a major issue to modern agriculture, impacting crop yield and global food security. In this paper, we present an intelligent plant disease detec- tion system utilizing the capabilities of the Inception V3 Convolutional neural network architecture. The key components of the proposed system are image- based disease identification and treatment recommendation. Initially, our system utilizes Inception V3 to analyze images of plants uploaded by the user. It accu- rately identifies multiple diseases affecting the same plant, enabling targeted intervention and efficient management of crop health. Secondly, an integrated database that provides effective chemical treatment recommendations and nat- ural remedies which empowers farmers to take informed actions and practical solutions. Finally, our system design ensures compatibility with handheld devices, facilitating on-site, real-time analysis, even in remote or resource-limited envi- ronments. The system's user friendly interface simplifies disease identifi- cation even for non-expert users to efficiently manage crop health and reduce potential losses. By promoting early detection and timely intervention, our system helps to reduce crop losses, lowers the use of harmful chemicals, and thus encourages sus- tainable farming practices. This method not only boosts food security but also supports environmentally responsible agriculture through efficient techniques to manage disease threats.

Keywords:

Plant disease detection, Convolutional Neural Networks, Inception V3, Image processing.

ISBN: 978-93-92104-23-7

Smart Attendance System with Using Location and Face Recognition Technology Using Ai and Ml

Kotte Sai Sankeerthana
Student, Department of Computer science and engineering, Sathyabama Institute of Science and Technology, Chennai, India

Maramreddy Suziith Reddy
Student, Department of Computer science and engineering, Sathyabama Institute of Science and Technology, Chennai, India

Ms Lekshmi S Raveendran
M. Tech, Department of Computer science and engineering, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

With the Smart Attendance System applying location and face recognition technologies with built in artificial intelligence (AI) and machine learning (ML) technologies the attendance process has been streamlined in educational institutions and work places.Normally, traditional attendance methods are so time consuming and prone to error, that it leads to inaccuracies in record keeping.Machine learning (ML) to streamline the attendance process in educational institutions and workplaces. Traditional attendance methods are often timeconsuming and prone to errors, which can lead to inaccuracies in record-keeping. A unique approach, this system leverages geolocation services to determine the persons in the areas automatically and advanced facial recognition algorithms to assure accurate identification. In the case of when you have a user entering in a location the AI powered system takes in a face as it enters and then through ML methods compares it to a set database of authorized people. Not only does the technology serve for stamping attendance, it logs timestamps for the purposes of tracking punctuality and patterns of attendance. The system, moreover, is privacy oriented out of the box, through the use of robust encryption and consent mechanisms to safeguard users' data. This Smart Attendance system implementation lessens the administrative burdens, & reduce human errors, and consequently make accountabilities to provide a smooth operation to both the administrators and the users. Real time analytics and reporting features provide insight into attendance trends to allow Educational Institutions and organizations to make data driven decisions. Additionally, the system integrates seamlessly with standard learning management systems and human resource management hubs, creating a complete function view of attendance. This solution utilizes location and facial recognition, combined with AI and ML to provide a progressive upgrade to modern attendance monitoring, making it more efficient, less reliable, and user friendly. Given the past growth of educational environments and workplaces, this system has been designated as an indispensable instrument to satisfy the needs of current attendance management and eliminate the hurdles for efficiency operations.

ISBN: 978-93-92104-23-7

Eco-Friendly Tourism Tracker

Ananya Singh
Student

Er Narinder Yadav
Student

Abstract:

As more travellers seek for sustainable and environmentally friendly vacation options, the eco-tourism sector of the travel industry is becoming more and more significant. It is still challenging to find and book verified eco-friendly hotels, carbon-neutral transportation, and sustainable travel experiences, though, due to the fragmented nature of information and the lack of accessibility. To address this issue, we propose an eco-tourism platform based on the MERN stack that combines real-time tracking, AI-powered recommendations, and a sustainability grading system. The platform uses React.js for an interactive user interface, Express.js and Node.js for seamless backend operations, and MongoDB for efficient data management. AI-driven analytics analyse user preferences and travel trends to provide personalized recommendations for environmentally friendly vacation spots. Customers may also monitor their environmental effect and make informed travel selections with the aid of a real-time carbon footprint tracker. To ensure a smooth and secure booking experience, the website has Web Sockets for real-time trip changes, a JWT-based authentication system, and connection with third-party payment gateways. Extensive testing and user feedback analysis show how effective the platform is in increasing user engagement, increasing access to vetted eco-tourism providers, and promoting responsible travel. This study highlights the potential of technology-driven solutions in promoting sustainable tourism and provides helpful insights for travellers, travel agencies, and environmental organizations.

Keywords:

Real-Time Tracking, Carbon Footprint Monitoring, Eco-Tourism, Mern Stack, Web Sockets, Mongodb Analytics, Jwt Authentication, And Ai-Powered Recommendations.

ISBN: 978-93-92104-23-7

Comment Toxicity Analysis using NIP

B. Sujani
Assistant Professor, Department of AI&ML, CMR College of Engineering &Technology, Hyderabad, Telangana, India

Tanuja Maurya
UG Students, Department of AI&ML, CMR College of Engineering &Technology, Hyderabad, Telangana, India

G.Meenu
UG Students, Department of AI&ML, CMR College of Engineering &Technology, Hyderabad, Telangana, India

P. Shanmuk reddy
UG Students, Department of AI&ML, CMR College of Engineering &Technology, Hyderabad, Telangana, India

Abstract:

The Comment Toxicity Analysis Using NLP project targets the increasing problem of cyberbullying on social media sites, which is common among teenagers and adults, resulting in severe repercussions like depression and suicide. In response to the growing demand for content moderation, this research focuses on creating an automated system that identifies toxic comments based on Natural Language Processing (NLP) and Machine Learning (ML) algorithms. The project employs datasets with hate speech tweets from Twitter and personal attack comments from Wikipedia to construct a strong detection model. Three feature extraction techniques and various classifiers, such as AdaBoost, Multinomial Naïve Bayes, and Stochastic Gradient Descent (SGD), are investigated to identify the best method for toxicity identification. The model has more than 90% accuracy for Twitter data and more than 80% for Wikipedia data, showing its competence in identifying toxic content. Through the usage of sophisticated text processing methods, sentiment analysis, and visualization techniques like word clouds and part-of-speech (POS) tagging, the system offers useful insights into what comprises toxic language. The last model is implemented as a Stream-lit interactive web app, making users able to efficiently analyze and visualize comment toxicity. This project aligns with ongoing efforts toward shaping a healthier online community through supporting real-time harm detection and online interaction moderation.

Keywords:

Comment Toxicity Analysis, Natural Language Processing(NLP), toxic content, hate speech, cyberbullying, harassment, misinformation, community guidelines, deep learning, transformer models(BERT).

Development Of Sustainable Pervious Concrete Using Adhesive Cement and Foam Agent

Shahabaz Khan Hanif Khan Pathan
Student, Yeshwantrao Chavan College of Engineering YCCE, Nagpur

Sanket Gajanan Kalamkar
Student, Yeshwantrao Chavan College of Engineering YCCE, Nagpur

Abstract:

The sustainable development of pervious concrete using industrial and agro-industrial waste materials has the potential to address several environmental challenges. This research investigates the impact of incorporating materials such as adhesive cement, rice husk activated carbon, iron slag, and dolomite powder on the properties of pervious concrete. The study includes tests on compressive strength, porosity and permeability along with an evaluation of water quality optimization. The findings indicate that the incorporation of these waste materials enhances the sustainability of pervious concrete by improving its mechanical properties, reducing the carbon footprint of concrete production, and promoting groundwater recharge. This research aims to contribute to the development of more eco-friendly construction materials and provide guidelines for their implementation in urban infrastructure. The experimental results revealed that the addition of 5% adhesive cement and a foaming agent not only achieved the highest 28-day compressive strength of 22.13 N/mm², surpassing the control mix and demonstrating superior structural viability, but also attained the highest porosity of 24.42%, enhancing permeability and drainage efficiency. This combination makes it ideal for sustainable applications, such as stormwater management systems, where both strength and effective water drainage are critical. The pH test showed that Mix 2 effectively reduced pH levels to within the WHO permissible limits, while Mix 3 achieved balanced neutralization. Mix 4 provided the highest reduction but required further tuning to prevent overcompensation, demonstrating the potential of these mixes for pH regulation in water treatment. The hardness test findings showed that Mix 4 was the most effective in reducing the washing facility's water hardness, bringing it down by roughly 38.9%. Enhanced ion adsorption and precipitation, mostly due to the addition of activated carbon and dolomite powder, are responsible for this significant drop. Mix 2 also showed significant reductions, leveraging iron slag and adhesive cement to improve filtration capacity.

Keywords:

Pervious Concrete, Sustainability, Adhesive Cement, Iron Slag, Rice Husk Activated Carbon, Dolomite Powder, Compressive Strength, Water Quality Optimization, Eco-friendly Materials Pervious Concrete, iron slag, activated carbon, dolomite powder, groundwater recharge.

AI Powered Culinary Dish Recognition and Recipe Platform Enhanced Dish Identification

VG Tharun Kumar Reddy
Department of CSE, Specializing in AI & ML, Sathyabama University, Tamil Nadu, India

Taha Faizan
Department of CSE, Specializing in AI & ML, Sathyabama University, Tamil Nadu, India

Ms. Shiela David M.E.,
Assistant Professor, Department of CSE, Specializing in AI & ML, Sathyabama University, Tamil Nadu, India

Abstract:

Background This research focuses on the development of an AI-powered platform for culinary dish recognition and recipe retrieval, enhancing the process of dish identification and exploration. Using advanced computer vision algorithms, the system identifies dishes from images with high precision and matches them to corresponding recipes, complete with ingredients, preparation methods, and nutritional details. The platform integrates machine learning techniques trained on a diverse dataset of global cuisines, enabling accurate recognition of a wide range of dishes, including those with subtle visual differences. It also offers personalized recipe recommendations based on user preferences, dietary needs, and available ingredients, making it a versatile tool for food enthusiasts, chefs, and dieticians. The study addresses key challenges such as dealing with ambiguous dish appearances and integrating cultural variations in recipes. By merging culinary expertise with AI, the project aims to simplify cooking, promote dietary awareness, and foster cross-cultural culinary appreciation. This research highlights the transformative role of AI in reimagining traditional culinary practices and enhancing the overall gastronomic experience.

Conclusion: This project showcases how AI can bridge the gap between technology and gastronomy, offering a seamless and enriching culinary experience.

Keywords:

Artificial Intelligence (AI), Culinary dish recognition, Computer vision, Food identification, Food technology innovation, Gastronomy and AI.

Design optimization for a blast-resistant railway bridge in India

Vishwanatham Marella
Research Scholar, Jawaharlal Nehru Technological University Hyderabad

Dr. Dean Kumar B
Professor, Jawaharlal Nehru Technological University Hyderabad

Abstract:

Railway bridges are crucial infrastructure components, yet they are susceptible to blast loads from accidental and intentional explosions. Ensuring their resilience is vital for public safety and uninterrupted rail operations. This study aims to optimize the design of a blast-resistant steel railway bridge in India by incorporating high-strength materials, advanced computational modeling, and innovative structural configurations. Finite Element Analysis (FEA) simulates blast effects and assesses structural responses to extreme dynamic loads. The study accounts for nonlinear material behavior, strain rate sensitivity, and soil-structure interaction (SSI) to improve blast resistance and structural stability.

AI-driven predictive maintenance and real-time Structural Health Monitoring (SHM) using sensor networks are proposed to enhance resilience further. These technologies enable early damage detection and efficient post-blast assessments, ensuring quick response and structural recovery. Additionally, the study adheres to Indian Railways' design standards, examining energy-absorbing materials, reinforced barriers, and Optimized steel girder configurations as possible mitigation strategies.

The research also analyzes case studies of existing blast-resistant steel railway bridges to develop practical recommendations suited to Indian conditions. The findings enhance railway bridge safety by providing insights for engineers, policymakers, and infrastructure planners working in high-risk areas. By integrating computational modeling, material innovation, and AI-based monitoring, this study establishes a framework for designing steel railway bridges that can withstand extreme blast loads while ensuring long-term durability and cost-effectiveness.

ISBN: 978-93-92104-23-7

A Review on Nanorobots: Revolutionizing Medicine from the Inside Out

Harish Kunder
Department of AIML, Alvas's Institute of Engineering and Technology, Mijar, Moodubidire - 574 225, Mangalore, DK

D Chandan Lagubigi
Department of AIML, Alvas's Institute of Engineering and Technology, Mijar, Moodubidire - 574 225, Mangalore, DK

Ganeshraj S
Department of AIML, Alvas's Institute of Engineering and Technology, Mijar, Moodubidire - 574 225, Mangalore, DK

Gururagavendra Paluri
Department of AIML, Alvas's Institute of Engineering and Technology, Mijar, Moodubidire - 574 225, Mangalore, DK

Sathvik S
Department of AIML, Alvas's Institute of Engineering and Technology, Mijar, Moodubidire - 574 225, Mangalore, DK

Abstract:

In the book, an acoustic vibration-based nanorobot communication system intended for medicinal uses such as cancer treatment is presented. These nanorobots carry out three essential functions while functioning in biological settings such as the human brain, identifying and eliminating cancer cells and communicating with other nanorobots via sound signals. In sensitive areas, acoustic waves are preferred over chemical or electromagnetic waves because they are safer and more effective. The method is evaluated based on the speed of identification and destruction as well as its capacity to eradicate malignant cells.The difficulties in designing nanorobots, such as propulsion, power production, sensing, control, and system integration, are emphasized from a bioinspired standpoint. The idea, which draws inspiration from microorganisms, investigates the creation of bioengineered nanorobots with sensing, decisionmaking, and actuation capabilities. With groundbreaking developments in engineering and medicine, these inventions seek to transform tissue healing, cancer treatment, sitespecific medication delivery, and diagnostics.

Keywords:

Nanorobotics, Medical Nanotechnology, Bioengi- neering, Cancer Nanotherapy, Nanorobot Blood Clot, Nanorobot Drug Delivery.

Self Levelling Platform

Adithyan KK
Student

Albin K
Student

Varkey Navaneeth
Student

Vinay Reeba C Manoj
Student

Sadiq A
Student

Abstract:

This project presents an innovative Self-Levelling Platform designed to automatically maintain a stable and horizontal surface on uneven terrains. The system integrates a MEMS-based MPU-6050 sensor (combining a 3-axis accelerometer and gyroscope) to detect tilt and sudden jerks, an Arduino UNO microcontroller for real-time data processing, and servomotors for precise control of the platform's legs. The platform features two fixed-height legs and one height-adjustable leg, which utilizes a screw-thread linear actuator to fine-tune the platform's position, ensuring accurate levelling within ±0.5°.

The system is capable of detecting jerks exceeding a threshold of 20 m/s^3, triggering an automatic folding and unfolding mechanism for the legs via servo motors. This feature enhances portability and adaptability, making the platform suitable for dynamic environments. The MPU-6050 continuously monitors pitch and roll angles, providing real-time feedback to the Arduino, which then adjusts the height of the adjustable leg to counteract any tilts.

The project demonstrates the effectiveness of combining fixed and adjustable legs, offering a lightweight, modular, and cost-effective solution for maintaining stability on uneven surfaces. The system's ability to quickly re-establish a level surface after disturbances has been validated through testing, confirming its potential for applications in workplaces, dining areas, laboratories, and mobile workstations. By leveraging advanced sensor technology, precise control algorithms, and robust mechanical design, this self-levelling platform addresses the need for stability, safety, and adaptability in various real-world scenarios.

Keywords:

MPU-6050, Accelerometer, Gyroscope, Arduino UNO, Servomotors, Linear Actuator, Tilt Detection, Jerk Detection, Real-Time Feedback, Uneven Surfaces, Portable Platform.

ISBN: 978-93-92104-23-7

Investigation on Anticipation of Health Care Premiums Using Machine Learning Models

V.Saihareesh
Department of Computer Science and Engineering, Sri Eshwar College of Engineering, Coimbatore

Dr. S.K.Harikarthik
Department of Computer Science and Engineering, Sri Eshwar College of Engineering, Coimbatore

M. Johnson
Department of Computer Science and Engineering, Sri Eshwar College of Engineering, Coimbatore

Abstract:

Predicting the transition to substance abuse treatment has become one of the most interesting questions in health informatics today. In the branch of healthcare, data mining standards are used to improve the lives of people and people by anticipating diseases and attempting to identify them more quickly than most doctors. By eliminating the mediator, as with computer health indemnification, there is uninterrupted communication between the insurance company and the policyholder. Anticipating health insurance premiums is a big concern. A health insurance company can only turn a financial gain if it collects more premiums than it reimburses for claims. Therefore, this paper presents a predictive model for switching to medical care based on health insurance data. First, a treatment curve is drawn based on health insurance information. A medical chart is a heterogeneous chart that contains entities such as patients, diseases, hospitals, drugs, hospitalization events, and the relationships between these entities.

Keywords:

Anticipation, Healthcare, Indemnification, Linear regression, lasso regression, Machine Learning.

Cognitive Farming : AI - Powered Smart Farm Management System

Ms. Kalaivani R
Assistant Professor, Bachelor of Technology AIDS Sri Krishna College of Technology, Coimbatore, India

Jayandra Mugilan R A
Bachelor of Technology AIDS Sri Krishna College of Technology, Coimbatore, India

Sundar S
Bachelor of Technology AIDS Sri Krishna College of Technology, Coimbatore, India

Akash G
Bachelor of Technology AIDS Sri Krishna College of Technology Coimbatore, India

Abstract:

This project presents a Flask-built web application that uses image analysis to identify diseases in tomato, bell pepper, and potato plants using a pre-trained Convolutional Neural Network (CNN) model. The trained model file, which has been generated on an extensive dataset containing photos of various disease types and stages for each plant species, allows users to submit images of these plants and use them to determine the health state of the plants. The preprocessing of the dataset involves standardizing image sizes, normalizing pixel values, and augmenting data to improve the model's generalization performance. Convolutional, pooling, and fully linked layers—all implemented using well-known deep learning frameworks—make up the CNN architecture. With the help of this Flask application, users may easily identify plant diseases, making educated decisions about plant care and supporting worldwide efforts to ensure food security.

Keywords:

Plant Disease, Machine Learning, Deep Learning, Bell Peppers.

ISBN: 978-93-92104-23-7

A Comprehensive Analysis of Advancing Weather Forecasting through Machine Learning

V. Saihareesh
PG Scholar, Department of Computer Science and Engineering, Sri Eshwar College of Engineering, Coimbatore

Dr. S.K.Harikarthik
Associate Professor, Department of Computer Science and Engineering, Sri Eshwar College of Engineering, Coimbatore

M. Johnson
PG Scholar, Department of Computer Science and Engineering, Sri Eshwar College of Engineering, Coimbatore

Abstract:

In several fundamental productive areas, like farming, business, imports and exports, etc. the weather plays a very important role. The conventional weather forecasts were becoming less accurate and less potent, which is why they are still bothersome despite the current high levels of changes in climate. For addressing this scenario, modern methods contribute an indispensable part in customizing and adjusting the weather anticipation model. Both the nation's financial system and livelihood of people are impacted by those forecasts. One of the strongest natural barriers we face in life is the weather; we must consider factors such as humidity, temperature, and other forms of protection astounding. Our artwork aims to format weather predictions in an efficient manner. The long-term changes in Earth's climate and their potential effects on the lives of coming generations are both to be anticipated. The capability to foresee changes in climates provides an ideal space to deliver essentials that will allow various commune to fabricate an illuminated state for the enhanced future of the globe. Our technique significantly improves the model's capability to adapt the condition of main discrepancies and disparities while still performing its duty of reliability in anticipating weather.

Keywords:

Artificial Intelligence, Artificial Neural Network, Regression, Recurrent neural network, Machine Learning, Support vector machine.

Emotion Detection Using EEG, GSR, and Facial Recognition Systems

Soundarya S
Assistant Professor (AIML), Sri Krishna College of Technology, Coimbatore, India

Naveen Kumar E
Bachelor of Technology (AIDS) Sri Krishna College of Technology, Coimbatore, India

Nandhini B
Bachelor of Technology (AIDS) Sri Krishna College of Technology, Coimbatore, India

Dharma Prakash G
Bachelor of Technology (AIDS) Sri Krishna College of Technology, Coimbatore, India

Abstract:

The detection of emotions has become a significant feature in various domains, including human-computer interac- tion, healthcare, and interactive applications. In this work, a new multimodal emotion detection system based on EEG, GSR, and facial expression recognition is presented. EEG is used to capture neural patterns associated with emotional states; GSR measures changes in skin conductivity that reflect emotional arousal; and facial recognition is used to interpret visual facial cues that indicate different emotions. Combining these three complemen- tary modalities, this system enhances the overall accuracy and robustness of emotion detection to 94%. The experimental results confirm the approach's validity in real-time, reliable emotion classification, opening potential applications in areas such as mental health monitoring, adaptive learning environments, and interactive entertainment technologies.

Keywords:

Emotion Detection, EEG, Facial Recognition, GSR, Human-Computer Interaction, Multimodal Fusion.

ISBN: 978-93-92104-23-7

Fractional-N Ring PLL with Harmonic-Mixer-Based Dual and Split Feedback for Phase-Domain Filtering

Nandana Anand M
UG Student, Department of Electronics and Communication Engineering, St. Joseph's Institute of Technology, OMR, Chennai, India

Keerthana R N
UG Student, Department of Electronics and Communication Engineering, St. Joseph's Institute of Technology, OMR, Chennai, India

P G V Ramesh
Professor, Department of Electronics and Communication Engineering, St. Joseph's Institute of Technology, OMR, Chennai, India

Abstract:

Power line harmonic distortion causes energy loss and reduced power quality, decreasing electrical system efficiency. This paper develops a monitoring system based on ESP8266 coupled with a Phase-Locked Loop (PLL) for precise detection of harmonics. The system is powered using solar power and has a DC-DC converter for effective management of energy and a battery for storage. The ESP8266 continuously monitors the levels of harmonics, while PLL provides synchronization and frequency analysis. Real-time transmission of data to a cloud platform provides optimization and control. The system as proposed is innovative in the integration of wireless monitoring, renewable energy, and real-time harmonic detection. Benefits include enhanced power quality, reduced harmonic losses, and increased energy efficiency. It also aids in smart grid applications, lowering environmental footprints through optimized energy consumption and enabling greater integration of renewable sources such as solar power.

Keywords:

Harmonic distortion, ESP8266, Phase-Locked Loop, Power Quality, Renewable Energy, Smart Grid, Energy Efficiency.

Fashionfusion AR: Where Tech Meets Trend

Mrs. S.Suma
Department of Computer, Science and Engineering

Suvathi P
Department of Computer, Science and Engineering

Tamizh Selvan S
Department of Computer, Science and Engineering

Yuvanjali S
Department of Computer, Science and Engineering

Abstract:

Virtual try-on apps are transforming the fashion industry by allowing users to "try before they buy," enhancing decision-making and reducing return rates. This technology provides customers with a digital fitting room experience, ensuring a better fit and increased confidence in their purchases. By minimizing returns, businesses save time and money while improving customer satisfaction. Beyond convenience, these apps offer retailers valuable data on customer preferences and body sizes, enabling personalized recommendations and better product development. Additionally, virtual try-on technology extends beyond fashion, helping furniture retailers assess product performance and tailor offerings to customer needs. From an environmental perspective, these apps contribute to sustainability by reducing the production and shipping of unnecessary garments, lowering the fashion industry's carbon footprint. According to Frith, fewer returns mean less waste and energy consumption. Moreover, virtual try-on technology strengthens brand-customer relationships by creating an engaging shopping experience that fosters brand loyalty and repeat purchases. By leveraging immersive experiences, businesses can boost sales, market share, and customer engagement, ensuring long-term growth and success in the digital shopping era.

ISBN: 978-93-92104-23-7

Review on Impact of Promaxon-D on Brake Pad Performance

Mrs. Priya Bramhwanshi
S.V.N.I.T., Surat, Gujarat
KCCEMSR, Thane, Mumbai.

Dr. Sandeep Soni
S.V.N.I.T., Surat, Gujarat

Dr. Jyoti Menghani
S.V.N.I.T., Surat, Gujarat

Abstract:

Brake pads are essential components in modern automotive braking systems, and their performance is highly dependent on the resin binder used in their composition. Promaxon-D, an advanced filler composite, has gained attention for its potential to enhance friction stability, thermal resistance, mechanical strength, and noise suppression in brake pad formulations. This review critically examines the chemical composition, mechanical behavior, thermal stability, and tribological performance of Promexon-D-based brake pads, comparing them to conventional resins such as phenolic, epoxy, and polybenzoxazine (PBZ) resins. The review explores friction and wear characteristics, highlighting the influence of Promaxon-D on the coefficient of friction (μ), fade resistance, and recovery behavior under extreme braking conditions. The environmental and economic feasibility of Promaxon-D-based resins is analyzed, including their carbon footprint, sustainability challenges, and cost-performance trade-offs. The potential of bio-based hybrid resin formulations and strategies to improve recyclability and compliance with global environmental regulations (EU REACH, EPA guidelines, ECE R90, and SAE J2522 standards) are also considered. Future research directions emphasize the development of hybrid and high-performance resin formulations, the integration of nanotechnology for enhanced durability. This comprehensive review focuses on performance effect brake applications.

Keyword:

Brake Pads Composite, Brake Noise, Friction Pad Performance, Promaxon-D.

Resin-Based Materials in Brake Friction Pads: An Analysis of Their Influence on Key Properties

Mr. Sagar Dhotare
S.V.N.I.T., Surat, Gujarat
Universal College of Engineering, Kaman Road, Vasai, Mumbai

Dr. Sandeep Soni
S.V.N.I.T., Surat, Gujarat

Dr. Jyoti Menghani
S.V.N.I.T., Surat, Gujarat

Abstract:

The demand for high-performance and environmentally sustainable materials in automotive brake pads has driven extensive research into resin-based composites. Resins, particularly phenolic resins, have been widely studied for their critical role in determining the mechanical, thermal, and tribological properties of brake friction materials. This review provides a comprehensive analysis of resin-based materials used in brake pads, focusing on their influence on key properties such as wear resistance, thermal stability, and noise reduction. The introduction emphasizes the significance of resin matrices in enhancing performance and durability under extreme braking conditions. A detailed effect study explores the impact of resin composition, curing behavior, and modifications with fillers and reinforcements on friction and wear characteristics. Special attention is given to the advancements in benzoxazine resins, which offer superior thermal stability, excellent mechanical properties, and lower environmental impact compared to conventional phenolic resins. These resins show promise in addressing challenges such as resin degradation at high temperatures and the need for sustainable alternatives. Future research should focus on optimizing benzoxazine resin formulations, exploring their compatibility with fillers and additives, and leveraging their unique properties to achieve next-generation brake friction materials. This comprehensive review shows the effect on different proprietaries of automotive brake pads.

Keyword:

Brake friction Pads, Resin-Based Materials, Thermal Stability, Tribological Properties.

ISBN: 978-93-92104-23-7

Cyber Physical System Based Smart Cities Device

Anubhav Kumar Pandey
Department of Computer Science & Engineering, Chandigarh University, Mohali, India

Prince Kumar
Department of Computer Science & Engineering, Chandigarh University, Mohali, India

Narender Yadav
Department of Computer Science & Engineering, Chandigarh University, Mohali, India

Shantanu Raj
Department of Computer Science & Engineering, Chandigarh University, Mohali, India

Ashutosh
Department of Computer Science & Engineering, Chandigarh University, Mohali, India

Manoranjan Kumar
Department of Computer Science & Engineering, Chandigarh University, Mohali, India

Abstract:

This paper presents a cyber-physical framework for proactive urban infrastructure maintenance in smart cities, integrating sensor networks, advanced analytics, and citizen engagement to address infrastructure deterioration in growing urban areas. We employ machine learning techniques, including LSTM networks and Isolation Forests, for predictive maintenance and anomaly detection, while a multi-criteria algorithm prioritizes tasks. An augmented reality app facilitates community reporting, enhancing public participation. Our results demonstrate improved maintenance efficiency and infrastructure longevity, contributing to the development of more resilient and sustainable urban environments. This innovative approach tackles the critical challenge of infrastructure management in rapidly expanding cities, offering a comprehensive solution that leverages both technological advancements and community involvement.

Keyword:

Cyber Physical Systems, Smart Cities, Machine learning, IoT.

Artificial Intelligence in Healthcare: Review of Opportunities and Challenges

Ramesh G
Artificial Intelligence and Machine Learning Department, Alva's Institute of Engineering and Technology, Mangalore, 574225, India

Bhavish
Artificial Intelligence and Machine Learning Department, Alva's Institute of Engineering and Technology, Mangalore, 574225, India

Shashidhar G H
Artificial Intelligence and Machine Learning Department, Alva's Institute of Engineering and Technology, Mangalore, 574225, India

Jayaprakash Yadav
Artificial Intelligence and Machine Learning Department, Alva's Institute of Engineering and Technology, Mangalore, 574225, India

Pramod S L
Artificial Intelligence and Machine Learning Department, Alva's Institute of Engineering and Technology, Mangalore, 574225, India

Abstract:

Artificial Intelligence (AI) is now widely used in healthcare, having an impact on 1several parts within the industry. Healthcare organizations of all sizes are becoming more interested as artificial intelligence (AI) and its applications grow potential to enhance patient outcomes, reduce costs, boost productivity, and satisfy patient demand. This study thoroughly examines multiple research articles in various healthcare disciplines, such as radiology, dermatology, medication design, and more, that use AI models. AI has shown great promise in dermatology, radiology, and drug design, indicating that it can completely transform therapeutic and diagnostic methods. The investigation goes beyond particular uses to consider AI's wider effects on healthcare administration. Deploying these cutting-edge technologies presents obstacles when organizations are looking to use AI to improve patient outcomes. Examining AI's many effects in healthcare, this article clarifies how it improves diagnostic precision, streamlines procedures, and boosts overall delivery efficiency. The look acknowledges the problems in imposing AI in healthcare structures within the context of those advancements. To ensure that fully utilize AI in healthcare, a deliberate strategy and a deep knowledge are essential. These issues encompass technical, ethical, and regulatory aspects.

Keyword:

Artificial intelligence, Machine learning, Deep learning, health, pharmacy and nursing.

ISBN: 978-93-92104-23-7

Credit Coin: A Network using Blockchain to Provide Privacy and Incentives for Communication in Smart Vehicles

Sanjana Shamantha
Department of CSE (AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

Latha Vangala
Department of CSE (AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

Sreevallika Savalapu
Department of CSE (AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

Sana Afreen
Assistant Professor, Department of CSE (AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

Abstract:

The vehicle's announcement network is among the most useful tools within the correspondence of smart vehicles and in the smart transportation systems. Smart transportation systems play an important role. Overall, establishing a reliable vehicular announcement network is essential. First, attempting to broadcast trustworthy announcements without revealing identities poses major challenges. Second, users tend to be less motivated to transmit the announcements. In this paper, we look for solutions to these two cases by proposing a good announcement system called Credit Coin, which is a new maintaining privacy incentive announcement network deprived from blockchain and an effective protocol for anonymously aggregating vehicle announcements. On one side, Credit. Coin enables nondeterministic users are required to create the signatures transmit the declarations without attribution in breach of the partially trusted environment. On the other hand, Credit Coin uses blockchain to motivate users to give out traffic information by providing them with incentives. Furthermore, the transactions and the account information in Credit Coin are non-forgeable. Credit Coin also provides a certain degree of pseudonymity because the Trace Manager of Credit Coin can follow the identity of those malicious users through anonymous announcements and other linked transactions. Credit Coin thus has the ability to prompt users to reliably and anonymously broadcast and forward the announcements.

Keyword:

Smart Transportation System, Incentive Mechanism, Traffic Information Sharing, Pseudonymity, Cryptographic Signatures.

Synergistic Interactions in the Mixed Micelles of β-Blocker Drug Propranolol with Biomimetic Micellar Media of a Surface-active Ionic Liquid and a Conventional Cationic Amphiphile

Nurendra Chhetri
Department of Chemistry, Sikkim Manipal Institute of Technology, Sikkim Manipal University, Sikkim, India

Abishek Sharma
Department of Chemistry, Sikkim Manipal Institute of Technology, Sikkim Manipal University, Sikkim, India

Moazzam Ali*
Department of Chemistry, Sikkim Manipal Institute of Technology, Sikkim Manipal University, Sikkim, India

Abstract:

Colloidal systems like micelles and mixed micelles have been widely utilized as models to investigate the influence of heterogeneous environments on reaction dynamics and mechanisms, offering simplified frameworks for understanding the complex behavior observed in biological systems. This study provides a comprehensive investigation into the interactions of the β-blocker drug Propranolol (PPL) with surfactants that share identical hydrophobic chains and head group charge but differ in head group geometry. Specifically, the cationic Cetyltrimethylammonium bromide (CTAB) and a surface-active cationic ionic liquid, 1-hexadecyl-3-methylimidazolium chloride (HDMIC) were examined using a combination of surface tension and UV-vis analyses. Propranolol is a beta-blocker used to treat high blood pressure, angina, and heart rhythm disorders by blocking adrenaline's effects, reducing heart workload and blood pressure. It also treats migraines, anxiety, and essential tremors. Structurally, it is a propanolamine with a naphthalen-1-yloxy and propan-2-ylamino group. The synergistic interactions in binary mixtures of PPL and CTAB/HDMIC have been examined through surface tension measurements, focusing on micellar, interfacial, and thermodynamic parameters. Mixed micelle formation of the drug and surfactants at various mole fractions ranging from 0.2 to 0.8 were studied using surface tension measurements. Key parameters, like micellar mole fraction (X_1^m) Interaction parameter (β^m), and activity coefficients (f_1^m),(f_2^m) were calculated to characterize the bulk as well as the interfacial behavior of the mixtures using different theoretical approaches. The experimental cmc values for mixed micelles are lower than the ideal values, suggesting synergistic interactions that improve micelle stability. Stronger interactions in PPL/HDMIC than in PPL/CTAB mixed mixture owing to the enhanced surface activity and presence of strong hydrophobic in

ISBN: 978-93-92104-23-7

combination with π-π stacking interactions as the key stabilizing factor in mixed micelles. In addition, the interaction between PPL-CTAB/HDMIC was also verified using UV-visible spectroscopy. The ratios of their component, binding constants (Kb) and the free energy change (ΔG) of PPL and surfactant mixtures were also computed using Benesi Hildebrand theory. This study improves our understanding of non-covalent interactions in drug-surfactant systems, with potential implications for drug solubility and delivery.

Keyword:

Propranolol, Surfactants, micellization, synergism, binding.

Multi-Modal Audio Steganography: A Novel Framework for Context Aware and Secure Audio Communication

Narayanan Ganesh*
School of Computer Science and Engineering, Vellore Institute of Technology, Chennai, India

Namra Noman
School of Computer Science and Engineering, Vellore Institute of Technology, Chennai, India

Shivanya Singh
School of Computer Science and Engineering, Vellore Institute of Technology, Chennai, India

Abstract:

In the dynamic realm of digital communication, the need for secure data concealment has surged. Due to their large size compared to other multimedia files, high data transfer rate, and high level of redundancy, audio files make excellent host files for hiding data. Steganography, which is essentially the practice of hiding data within data, where the carrier data can be text, image, audio, etc. provides the highest level of confidentiality. Traditional methods grapple with security vulnerabilities and compatibility issues. This research proposes an adaptive audio steganography system that dynamically selects embedding techniques based on the cover audio classification using a deep learning-based classification model. Speech files use Least Significant Bit (LSB) embedding for its stability and low frequency variation to get minimal distortion, while Spread Spectrum embedding makes use of music file's spectral redundancy for better imperceptibility and robustness. Additionally, modules for encoding and encryption provide extra layers of robustness and security. The stego-audio quality is evaluated using Signal-to-Noise Ratio, Pearson Correlation, Spectrogram comparison and error metrics to assess imperceptibility and robustness. Experimental results indicate that the adaptive approach provides improved performance by balancing security, imperceptibility, and resistance to attacks, for an intelligent and context-aware steganographic system.

Keyword:

Audio Steganography, Deep Learning-based Classification, Least Significant Bit (LSB) Embedding, Spread Spectrum Embedding, Imperceptibility, Robustness, Signal-to-Noise Ratio (SNR).

ISBN: 978-93-92104-23-7

Advanced Human Behavior Analysis Using Deep Learning for Intelligent Insights

Nukala Sujata Gupta
Assistant Professor, Department of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology Hyderabad, Telangana

Gundu Vignesh
Department of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology Hyderabad, Telangana

Palle Siddeshwar Goud
Department of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology Hyderabad, Telangana

Abstract:

Human behaviour analysis is essential in uses like

surveillance, health, sports, and entertainment [9]. The conventional techniques fail to detect the complexity and variability of human behaviour, especially in movements with varying poses and changing illumination, which degrades the performance of facial expression analysis [3]. To overcome such limitations, this paper suggests a deep learning-based approach for behaviour analysis with highly popular facial expression datasets [1]. Viola-Jones is used for face detection [11], a light attention-based network for expression classification [7], and histogram of oriented gradients (HOG) for feature extraction [12].

Our framework combines convolutional neural networks (CNNs) for compact feature extraction [14] with temporal sequence learning through recurrent neural networks (RNNs) to improve behavioural pattern detection accuracy [8]. Data augmentation methods are also used to enhance model generalization, with metaheuristic optimization and hyperparameter tuning used to improve performance further [5]. In order to make behavior prediction possible, an occurrence matrix is employed for monitoring transitions and frequency of expressions so that the system can sense minute variations in human emotions with time [2].

Experimental findings prove that our suggested approach is more precise and computationally effective than baseline models, thus validating the strength of deep learning for tracking human behavior in real-time [4][6].

Keyword:
Human behavior analysis, deep learning, facial expression recognition(FER), Viola-Jones algorithm, histogram of oriented gradients (HOG), gray level occurrence matrix(GLCM), Recurrent Neural Network(RNN).

Credit Coin: A Network using Blockchain to Provide Privacy and Incentives for Communication in Smart Vehicles

Sanjana Shamantha
Department of CSE (AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

Latha Vangala
Department of CSE (AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

Sreevallika Savalapu
Department of CSE (AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

Sana Afreen
Assistant Professor, Department of CSE (AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

Abstract:

The vehicle's announcement network is among the most useful tools within the correspondence of smart vehicles and in the smart transportation systems. Smart transportation systems play an important role. Overall, establishing a reliable vehicular announcement network is essential. First, attempting to broadcast trustworthy announcements without revealing identities poses major challenges. Second, users tend to be less motivated to transmit the announcements. In this paper, we look for solutions to these two cases by proposing a good announcement system called Credit Coin, which is a new maintaining privacy incentive announcement network deprived from blockchain and an effective protocol for anonymously aggregating vehicle announcements. On one side, Credit. Coin enables nondeterministic users are required to create the signatures transmit the declarations without attribution in breach of the partially trusted environment. On the other hand, Credit Coin uses blockchain to motivate users to give out traffic information by providing them with incentives. Furthermore, the transactions and the account information in Credit Coin are non-forgeable. Credit Coin also provides a certain degree of pseudonymity because the Trace Manager of Credit Coin can follow the identity of those malicious users through anonymous announcements and other linked transactions. Credit Coin thus has the ability to prompt users to reliably and anonymously broadcast and forward the announcements.

Keyword:

Smart Transportation System, Incentive Mechanism, Traffic Information Sharing, Pseudonymity, Cryptographic Signatures.

Design of Operating Distributors for a Cable Operator with the Defined life Cycle

Meenakshi Diwakar
Assistant professor, Department of Information Technology Panimalar Engineering College, Chennai 600 123

M. Suriyapriya
Student, Department of Information Technology Panimalar Engineering College, Chennai 600 123

Abstract:

Automation software for cable operators is integrated into the Cable Operator Management System. Customers will receive TV channels from cable companies in exchange for a monthly fee. This program offers automation to retain their user base and clientele. They can manage their employees' and customers' information in this COM system. They can separate their areas into macro and micro components by employing this COM system. They can fulfill their company needs by utilizing this method. They can designate staff people to look after their micro- part regions after they have divided their areas into smaller ones. Cable operators are able to retain their employees, including technicians, helpers, and collecting boys. Every collection boy will have a password and user ID. They will check in to the COM System at the end of each day and enter their collection information and comments. They may determine which locations their equipment is placed in by using this COM system. How many consumers are active and how many are not? They can use the reports to view all of these details. MIS reports were produced for each month's collections, expenses, outstanding balance, and complaints, both by date and by area. By enabling employees to monitor the progress of equipment installations and maintenance, the COM system serves a vital role in enabling them to quickly ascertain the location of their equipment within each assigned region. Additionally, by providing real-time reports on whether customers are active or inactive, the system gives operators the ability to keep an eye on customer behaviour. Regularly created MIS (Management Information System) reports include information on complaints, outstanding amounts, expenses, and collections. These reports, which are arranged chronologically and geographically, give operators a thorough picture of their operations and empower them to make data-driven choices for enhancing service and quickly resolving any problems.

Keyword:

User authentication, Access control, Technicians' workflow, System integration, Network coverage, Data-driven analysis.

ISBN: 978-93-92104-23-7

Data Security and Optimal Search

P. Devendar
Associate Professor, Department of CSE (AI&ML), CMR College, Hyderabad, Telangana, India

Ganeusla Lakshmi Lahari
Department of CSE (AI&ML), CMRCET, Hyderabad, Telangana, India

Mohammad Ayesha
Department of CSE (AI&ML), CMRCET, Hyderabad, Telangana, India

Sowmya Ikkurti
Department of CSE (AI&ML), CMRCET, Hyderabad, Telangana, India

Abstract:

In order to secure pragmatics documentation and make the documentation available in a fast and efficient manner using searchable encryption algorithms with inherent block-chain properties, a searchable and encrypted Pragmatics documentation block chain facts querying method is presented. The Pragmatics data is split into many data files, each of which is encrypted using asymmetric encrypted and kept in on a cloud server. An index in the form of keyword values is then uploaded to the block-chain. This solution allows the logging and querying of data at any time. It provided the design of the project with commenting, completeness, and safety. It allows the feasibility of the scheme.

Keyword:

AES Encryption, IPFS (Inter Planetary File System), Blockchain, Trapdoor Generation, Data Integrity, Tamper-Proof Security, Hash Verification, Immutable Storage.

Lane Detection as an Intelligent Driver Assistant using Image Processing

Nandeesh K V
Student, Department of CSE Manipal Institute of Technology Manipal, Karnataka, India

Jimcymol James
Assistant Professor, Department of CSE Manipal Institute of Technology Manipal, Karnataka, India

Abstract:

Lane detection is a critical component of intelligent driver assistance systems, improving road safety and driving experience. This study aims to develop a robust lane detection algorithm using image processing techniques. The primary ob- jective is to design an algorithm capable of accurately detecting lane markings in real time from camera input. Additionally, the aim is to enhance the algorithm's performance in various environmental conditions such as different lighting, weather, and road surface types. Through the use of advanced image processing techniques like edge detection and Hough transforms, accurate lane boundaries can be detected. These systems enhance driver safety by preventing unintentional lane departures and enabling semi-autonomous driving functionalities. Continuous research and development in this field aim to improve the precision and reliability of lane detection algorithms, paving the way for more advanced driver assistance systems.

Keyword:

Lane Detection, Image Processing, Canny Edge Method, Perspective Transformation, Visualization.

ISBN: 978-93-92104-23-7

Stock Market Prediction Using Sentimental Analysis

Anjali Mathew
Department of Computer Science and Engineering Manipal Institute of Technology, Manipal Academy of Higher Education Manipal Karnataka, India, PIN 576104

Dr. U Dinesh Acharya
Department of Computer Science and Engineering Manipal Institute of Technology, Manipal Academy of Higher Education Manipal Karnataka, India, PIN 576104

Abstract:

Abstract—On the Stock Market Prediction plat- form, there is a vast amount of data that is constantly being examined. Conventional models for predicting the stock market rely on the examination of past market data. Research on stock market prediction based on social media attitudes is an exciting area of study. Positive information and tweets from social media platforms entice readers to purchase the company's stock, raising its stock price. Large data sets make it challenging to analyze them with conventional data processing software. Using machine learning techniques and sentiment analysis as the methodologies, we can extract the useful information into a comprehensible structure.

Keyword:

Sentimental analysis, Web scrapping, Machine Learning Algorithms, Natural language Processing.

Optimized Crop Yield Forecasting Using ML Regression Models

Karanam Neetha Reddy
Division of Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore, Tamil Nadu

P. Joyce Beryl Princess
Division of Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences Coimbatore, Tamil Nadu

Abstract:

Crop production is a critical issue in agriculture that directly affects food security and resource management. Due to their incapacity to take historical yield data, crop types, and envi- ronmental variables into consideration, conventional forecasting techniques might occasionally generate projections that are not correct. This study examines several machine learning models, including Lasso, Ridge, Decision Tree, Linear Regression, and Extreme Learning Machine, to determine the optimal approach for yield prediction. Hyperparameter tuning techniques including Grid Search, Random Search, and Gradient-based Optimization are employed to enhance model performance. The proposed approach uses a straightforward yet effective mechanism to maximize accuracy while minimizing unnecessary complexity. The study evaluates a number of models in an effort to deter- mine the best accurate forecasting method and provide farmers with relevant information. The findings show how data-driven decision-making to increase agricultural output may be facilitated by machine learning.

Keyword:

Regression Models, Machine Learning, Crop Yield Prediction, Decision Tree Algorithm, Lasso, Ridge, Gradient-based Optimization, Predictive Modeling.

 ISBN: 978-93-92104-23-7

Leveraging Quantum Superposition for Multi-Modal Sarcasm and Humor Detection in Code-Mixed Conversations

Mrs D. Monica Seles
Assistant Professor, Department of Artificial Intelligence, Mepco Schlenk Engineering College Sivakasi, India

Abirami M
Student, Department of Artificial Intelligence, Mepco Schlenk Engineering College Sivakasi, India

Anusudha M S
Student, Department of Artificial Intelligence, Mepco Schlenk Engineering College Sivakasi, India

Abstract:

The growing prevalence of code-mixed languages, especially Hindi-English, in internet and conversational speech poses a major challenge to sarcasm and humor detection. Conventional models are not equipped to handle this linguistic complexity because they are based on monolingual representations and have limited contextual knowledge. Current methods tend to fail to capture the subtle interaction between languages, resulting in poor performance in real-world applications. To overcome these shortcomings, we introduce QS-MSH (Quantum Superposition–Multimodal Sarcasm and Humor), a new architecture that incorporates a quantum-inspired superposition layer into the word encoder. By encoding words as superposed states with real and imaginary parts, our model allows for more detailed, context-dependent representation of meaning through amplitude and phase encoding. Additionally, we refine hierarchical and dialog-level attention mechanisms using quantum-inspired embeddings, allowing for fine-grained interactions between text and acoustic modalities. Large-scale experiments on the MaSaC dataset show that our method outperforms state-of-the-art methods considerably in sarcasm and humor classification, with significant improvements in F1-score and accuracy. These findings make QS-MSH a strong and efficient solution for code-mixed conversational analysis.

Keyword:

Sarcasm detection, humor classification, code-mixed, Hindi-English, conversational dialog, contextual attention, hierarchical attention, multi-modality, quantum, superposition.

Understanding Pedestrian Behaviour Through Demographic Influences: Insights from Structural Equation Modeling

Deepak Kumar Mohanty
Ph.D. Scholar, Department of Civil Engineering, Veer Surendra Sai University of Technology, Sambalpur, Odisha, India

Hitesh Kumar Sahoo
M.Tech., Department of Civil Engineering, Veer Surendra Sai University of Technology, Sambalpur, Odisha, India

Sudhanshu Sekhar Das
Professor, Department of Civil Engineering, Veer Surendra Sai University of Technology, Sambalpur, Odisha, India

Abstract:

Pedestrian-related traffic crashes occur frequently in low-middle-income countries. This study aimed to investigate the influence of demographics on pedestrian attitudes and behavior using a structural equation model. A survey was conducted in Odisha, India with 303 participants (167 males and 136 females) using a pedestrian behavior questionnaire (PBQ). Seven headquarter districts of Odisha has surveyed and study areas has been shown using ArcGIS. PBQ contains attitude and behavioural factors and demographic questions. The study reveals that female pedestrians with higher education levels have more cautious attitudes and behavior towards traffic safety. Education is positively related to safer behaviors, suggesting that individuals with higher education levels may engage in safer behaviors. Income is positively associated with pedestrian behavior, suggesting socioeconomic factors may shape pedestrian behavior and safety outcomes. The study emphasizes the importance of understanding and addressing these attitudes of pedestrians to develop effective strategies to enhance safety and reduce traffic crashes involving pedestrians.

Keyword:

Pedestrian behaviour, traffic crashes, structural equation model, ArcGIS.

ISBN: 978-93-92104-23-7

LegalEase: AI-Powered Summarization and Visualization of Legal Documents

Siddhi Bhogale
Department of Information Technology, Vivekanand Education Society's, Institute of Technology, Mumbai, India

Nidhi Nayak
Department of Information Technology, Vivekanand Education Society's, Institute of Technology, Mumbai, India

Shivani Nikam
Department of Information Technology, Vivekanand Education Society's, Institute of Technology, Mumbai, India

Pranathi Narsupalli
Department of Information Technology, Vivekanand Education Society's, Institute of Technology, Mumbai, India

Vidya Pujari
Department of Information Technology, Vivekanand Education Society's, Institute of Technology, Mumbai, India

Abstract:

Legal documents are often complex and filled with specialized jargon, making them difficult to comprehend. LegalEase is an AI-driven tool designed for effective summarization and visualization of legal texts using mind maps. It finetunes the T5 model on datasets like IN-ABS and MILDSum to generate concise, contextually aware summaries. Additionally, it utilizes the LlaMA model for structured formatting, D3.js for flowchart-based visualizations, and Google Cloud API for multilingual translation, including Hindi. The system also features jargon simplification using a JSON-based dictionary to enhance readability. Experimental results show significant improvements in summarization quality, with enhanced ROUGE, Meteor, and BERTScore metrics compared to pre-trained models. By integrating visual and multilingual tools, LegalEase improves accessibility and usability across various legal domains and audiences.

Keyword:

Legal document summarization, Legal-BERT, T5, machine learning, natural language processing, sentence scoring, abstractive summarization.

"ThreatForesight: Advancing Web Threat Detection and Forecasting through AI-Driven Insights"

Krutika Dwarka Naidu
Artificial Intelligence and Data Science Department, Anjuman College of Engineering & Technology, Rashtrasant Tukadoji Maharaj Nagpur University

Dr. Syed Irfan Ali
Artificial Intelligence and Data Science Department, Anjuman College of Engineering & Technology, Rashtrasant Tukadoji Maharaj Nagpur University

Sujal Shyam Hasoriya
Artificial Intelligence and Data Science Department, Anjuman College of Engineering & Technology, Rashtrasant Tukadoji Maharaj Nagpur University

Sujal Ganvir
Artificial Intelligence and Data Science Department, Anjuman College of Engineering & Technology, Rashtrasant Tukadoji Maharaj Nagpur University

Abstract:

The rapid evolution of web threats, including brute force login attempts, phishing URLs, and cross-site scripting (XSS), poses significant challenges to cybersecurity. Traditional security measures struggle to keep pace with emerging attack patterns, necessitating advanced predictive models for proactive threat mitigation. This research introduces ThreatForesight, a GenAI-driven framework for web threat detection and forecasting. By leveraging time series analysis, machine learning classification, and real-time threat intelligence integration, ThreatForesight enhances cybersecurity resilience through early threat prediction and risk assessment. The proposed system analyzes both historical and live data, classifies phishing URLs with improved ML models, and visualizes insights via an interactive dashboard. This paper explores the efficiency of GenAI-based forecasting techniques in identifying threat trends and mitigating potential cyber risks. Experimental results demonstrate the effectiveness of AI-driven analytics in enhancing web security, providing actionable intelligence for organizations to strengthen their defense against evolving threats.

Keyword:

Web Threat Detection, Cybersecurity, GenAI, Threat Intelligence, Phishing Detection, Machine Learning, Time Series Forecasting.

IOT Based Smart Home Automation

Mr.S Sheikameer Batcha
Department of Electrical and Electronics Engineering, Sri Eshwar College of Engineering, Coimbatore, Tamilnadu, India

Sibiraajan N
Department of Electrical and Electronics Engineering, Sri Eshwar College of Engineering, Coimbatore, Tamilnadu, India

Abinaya M
Department of Electrical and Electronics Engineering, Sri Eshwar College of Engineering, Coimbatore, Tamilnadu, India

Bathribala B
Department of Electrical and Electronics Engineering, Sri Eshwar College of Engineering, Coimbatore, Tamilnadu, India

Rishievardhan B
Department of Electrical and Electronics Engineering, Sri Eshwar College of Engineering, Coimbatore, Tamilnadu, India

Abstract:

The Internet of Things' (IoT) development has revolutionized home automation, offering unprecedented control and convenience. This project explores the development of a smart home automation system leveraging IoT technology, integrating Raspberry Pi and NodeMCU. The primary objective is to create an efficient, scalable, and user-friendly system that allows users to users to remotely monitor and manage a variety of home systems.

The proposed system utilizes a Raspberry Pi as the central hub, connected to a local network, and a NodeMCU microcontroller to interface with various sensors and actuators. The Raspberry Pi serves as the primary processing unit, handling data aggregation, user interface, and communication with cloud services. The NodeMCU, equipped with Wi-Fi capabilities, acts as a peripheral device that collects info from sensors in real time such as temperature, humidity, and motion detectors, and controls devices like lights, fans, and security systems.

Keyword:

Internet of Things, Smart Home, Needs, Security Challenges, Advantages and Disadvantages.

Adaptive Mental Health Chatbot with Personalized Follow-Up for Continuous Emotional Well-Being Support

Srinath S A
Electronics and Communication, Chennai Institute of Technology, Chennai, Tamil Nadu, India

Vishva Sen B
Electronics and Communication, Chennai Institute of Technology, Chennai, Tamil Nadu, India

Mr. Munish Kumar. P,M.E
Electronics and Communication, Chennai Institute of Technology, Chennai, Tamil Nadu, India

Abstract:

Mental Health Chatbot is an accessible digital assistant supporting emotional well-being, using the most advanced language models to produce empathetic responses and real-time voice and text communication along with follow-up messages. It features new approaches in its analysis of previous chats and then follow up after a few minutes with questions, allowing it to maintain continuous care and support. This has been developed with the combination of HTML, CSS, and JavaScript that gives a smooth experience for its users to safely express their concerns and find help.

Keyword:

Mental Health Chatbot, Personalized Follow-Up, Emotional Well-being Support, Natural Language Processing (NLP), Speech Recognition, Text-to-Speech, Adaptive User Interaction, Continuous Care System, AI-Powered Digital Support, User Engagement Analysis, Interactive Mental Health Assistance.

 ISBN: 978-93-92104-23-7

Multi Document Question and Answer System Using Gen AI RAG

Melba Suyambu
Information Technology, SRM University, Chennai, India

Vishnumaya T V
Information Technology, SRM University, Chennai, India

Saloni Sinha
Information Technology, SRM University, Chennai, India

Abstract:

In an era where information is abundant yet often scattered across various platforms, the ability to effectively gather and synthesize knowledge is crucial. This paper presents a system based on Retrieval-Augmented Generation (RAG) that leverages Generative AI to analyze multiple documents, extract relevant insights, and provide context-aware answers to user questions. Our system integrates several advanced technologies, including Streamlit for an interactive user interface, LangChain for processing and chunking documents, and DeepSeek-R1 (1.5B) for embedding and language modeling. The architecture we propose utilizes an in-memory vector store for quick retrieval, ensuring that responses are both low-latency and highly accurate. By using PDFPlumber for document parsing, our model can effectively handle research papers, reports, and other structured documents, enabling users to efficiently extract valuable information. Key features of our system include multi-document processing, chunk-based retrieval to enhance accuracy, caching mechanisms for better performance, and explainable AI that clarifies the reasoning behind final responses. The interactive UI ensures accessibility and user-friendliness, making it a powerful tool for research, corporate knowledge management, and automated report analysis. Through this project, we explore advanced techniques in LLM fine-tuning, embedding optimization, and the efficiency of the RAG pipeline. Our findings underscore the potential of AI-driven search and automation in knowledge-intensive fields, paving the way for more robust and scalable Q&A systems.

Keyword:

Retrieval-Augmented Generation, Generative AI, Multi-Document Processing, LangChain, Vector Search, LLM Fine-Tuning, Knowledge Retrieval.

Fraud Detection in Banking Data by Machine Learning Techniques

Mrs. A. Deepika
Assistant professor, Department of CSM, CMRCET, Hyderabad, Telangana, India

E. Sravan Kumar
Assistant professor, Department of CSM, CMRCET, Hyderabad, Telangana, India

G. Bhanutej Reddy
Assistant professor, Department of CSM, CMRCET, Hyderabad, Telangana, India

V. Nikhil Kumar
Assistant professor, Department of CSM, CMRCET, Hyderabad, Telangana, India

Abstract:

Credit cards have become one of the most widely used installment plans as technology and e-commerce services have developed, which leads to increase in volume of account management transactions. Furthermore, the significant increase in extortion has resulted in increased expenses associated with monitoring these transactions. As a result, the distinctive evidence of fraudulent workouts has become a fascinating area of study. In this study, we examine how to modify the weights of false and true blue exchanges by using weight-tuning hyperparameters. To adjust these hyperparameters while addressing commonsense issues like unbalanced information, we specifically use Bayesian optimization. We propose weight-tuning as a preprocessing step for imbalanced datasets, nearby utilizing CatBoost and XGBoost to upgrade the execution of the LightGBM calculation by considering the voting instrument. To assist move forward execution, we utilize profound learning methods to fine-tune the hyperparameters, especially our proposed weight-tuning strategy. We conduct a few tests on real-world information to assess the proposed techniques. To way better evaluate imbalanced datasets, we utilize both recall-precision measurements in expansion to the standard ROC-AUC. CatBoost, LightGBM, and XGBoost are assessed independently utilizing a 5-fold cross-validation strategy. Moreover, the larger part voting outfit learning approach is connected to survey the execution of the combined algorithms. The comes about appear that LightGBM and XGBoost accomplish ideal execution measurements with a ROC-AUC of 0.95, precision of 0.79, review of 0.80, F1 score of 0.79, and MCC of 0.79. By utilizing profound learning and the Bayesian optimization strategy to fine-tune the hyperparameters, we moreover accomplish a ROC-AUC of 0.94, precision of 0.80, review of 0.82, F1 score of 0.81, and MCC of 0.81. This speaks to a noteworthy advancement over the state-of-the-art strategies we compared it to.

Keyword:

Financial Fraud Detection, Hyperparameter tuning, Bayesian Optimization, Imbalanced data, CaatBoost, LightGBM, AdaoBost, XGBoost.

ISBN: 978-93-92104-23-7

A New Population Mean Estimator in Case of Incomplete Sampling Frames

Jyoti*
Research Scholar, Department of Mathematics and Statistics, Banasthali Vidyapith, Tonk, India

Sarla Pareek
Professor, Department of Mathematics and Statistics, Banasthali Vidyapith, Tonk, India

Abstract:

When conducting a sample survey, it is important to have a complete list of all units to be sampled, known as a sampling frame. The completeness of sampling in selecting samples and conducting surveys is always desirable. The details of the sampling frame help decide the best sampling design. However, in practice, it's rare to have a perfectly complete sampling frame. The most common issue with sampling frames is that they are often incomplete. In such cases, the foremost questions about the decision of sample size and selection of sample arise. This paper presents a new weighted PPS Product estimator for the population mean, which works for both complete and incomplete frame using Probability Proportional to Size with replacement (PPSWR) method. The paper calculates the bias and mean square error (MSE) of the estimator and discusses how to determine the best sample size and retainment factor with a cost-effective method. Using simulated data, and calculating the PRE (Percent Relative Efficiency) value, this paper shows that this new estimator is more accurate and efficient as compared to the existing ones.

Keyword:

Incomplete frames, MSE, PRE, predecessor-successor method, linear cost function, Monte Carlo simulation.

Optimizing Chunking Strategies for Question Answering Systems on COVID-19 Literature

Mayurkumar H. Marolia*
Research Scholar, Department of Computer Science, Gujarat University, Ahmedabad, India

Dr. Hardik J. Joshi
Associate Professor, Department of Computer Science, Gujarat University, Ahmedabad, India

Abstract:
Strong question answering systems become imperative to retrieve accurate information because COVID-19 literature continues expanding exponentially. The field of Biomedical Science needs more investigation into text chunking as an important preprocessing step even though RAG pipelines have received recent development. The research thoroughly analyzes seven text chunking methods for COVID-19 QA systems including fixed-size, recursive, document-based, semantic, token-based, sentence-based and agentic approaches. We created a RAG system using OpenAI embeddings combined with GPT-4o-mini to produce answers from the selected five peer-reviewed COVID-19 literature question-answer pairs. The system measurement consists of two parts: retrieval metrics which include context precision/recall and faithfulness scores and answer quality metrics that use BLEU, ROUGE-L and Exact Match along with F1 scores. Our experimental findings demonstrate that semantic approaches surpass rule-based systems while semantic chunking achieved a ROUGE-L score of 0.78 alongside Exact Match of 65% and agentic chunking delivered F1 of 72% with faithfulness rating of 0.80, all these results being statistically significant ($p < 0.05$). The methods apply embedding segmentation and topic clustering from LLMs to maintain contextual coherence while solving fixed-size or document-level fragmentation problems. The traditional recursive chunking system demonstrated lower precision levels because of its inflexible separators and the document-based strategies ended up with diluted information. The research demonstrates the necessity of adaptable domain-specific chunking methods in scientific QA software that manages the relationship between small segments and semantic relationships. The study fills an essential knowledge gap in COVID-19 information retrieval to offer practical solutions that enhance biomedical text optimization. Future research should develop hybrid systems which unite semantic and agentic techniques for processing extensive diversified data sets in order to improve general performance and computational processing.

Keyword:
Question Answering Systems, Text Chunking Strategies, COVID-19 Literature, Semantic Segmentation, Retrieval-Augmented Generation.

ISBN: 978-93-92104-23-7

Data Privacy Compliance Through Consent Management Using Spring Tool Suite And SQL

Trupti Lotlikar
Fr. C. Rodrigues Institute of Technology, Mumbai, India

Noreen Alex
Fr. C. Rodrigues Institute of Technology, Mumbai, India

Om Ghadge
Fr. C. Rodrigues Institute of Technology, Mumbai, India

Rhea Gomez
Fr. C. Rodrigues Institute of Technology, Mumbai, India

Lesley Miranda
Fr. C. Rodrigues Institute of Technology, Mumbai, India

Abstract:

Most of the E-Commerce websites request the users to provide consent for using certain sensitive data such as customer's full name, contact details and email address. This consent can be falsely used by the different companies without the knowledge of the customer even after the revocation of the consent. This paper addresses the critical need for secure and compliant handling of customer data in the digital age. As organizations increasingly interact with customers through various digital platforms, managing consent has become a complex yet essential task. This project aims to establish a robust framework for obtaining, storing, and managing customer consents across the digital touchpoint, that is, Web applications, in adherence to India's Data Protection and Digital Privacy (DPDP) law. By integrating strong security measures and advanced technologies, the project ensures that personal data is protected from unauthorized access and cyber threats, while also empowering customers with transparent and easy-to-use options for managing their privacy preferences. The goal is to create a secure, compliant, and efficient system that enhances data privacy and builds customer trust in a rapidly evolving digital landscape.

Keyword:

Consent, Cybersecurity, Data Privacy, Digital Touchpoint, Data protection.

Gesture Path Real-Time Sign Language Detection with Action Recognition

DG. Enoch Raja
Assistant Professor, Department of AI&ML, CMR College, Hyderabad, Telangana, India

G. Manoj
Student, Department of AIML, CMRCET, Hyderabad, Telangana, India

M. Devavrath
Student, Department of AIML, CMRCET, Hyderabad, Telangana, India

R. Siri
Student, Department of AIML, CMRCET, Hyderabad, Telangana, India

Abstract:

This paper presents a novel working solution for a real-time sign language recognition desktop program to translate American Sign Language (ASL) meaning-based hand gestures into text and speech. An essential issue here is smooth interaction between the hearing and speech-impaired communities and the public at large, for which technology should provide effective means of communication. Conventional sign language translation relies on the presence of human interpreters, which cannot always be expected. In this light, we propose Gesture Path, an ASL desktop tool that recognizes and classifies gestures using Convolutional Neural Networks (CNNs) through the input of hand motion received via a webcam. The system detects real-time finger-spelling gestures and translates them to textual and audio outputs for better accessibility. Emphasis is given to facial expression detection in detecting emotions, wherein communication is enhanced by linking detected expressions to detected gestures. The software consists of two modules: Person Registration, which stores the user identity and face data, and Facial Expression Detection, which predicts facial expression and identifies enrolled users. Our experimental results prove the efficiency of our CNN model in detecting ASL gestures with high accuracy, hence producing a simple, user-friendly, and easily accessible sign interpreting tool. The research provides a great input into assistive technology in promoting inclusivity through AI-based sign language recognition and facial expression analysis.

Keyword:

Sign language recognition, ASL translation, Convolutional neural networks, Gesture detection, Facial expression analysis, Real-time communication.

ISBN: 978-93-92104-23-7

FraudDetect - A Neural Network-Based Approach for Credit Card Fraud Prevention

Dr. Maheswaran CP
Artificial Intelligence and Data Science Sri Krishna College of Technology Coimbatore, India

Mathudeepan M
Artificial Intelligence and Data Science Sri Krishna College of Technology Coimbatore, India

Baladurga G
Artificial Intelligence and Data Science Sri Krishna College of Technology Coimbatore, India

Hariharan S
Artificial Intelligence and Data Science Sri Krishna College of Technology Coimbatore, India

Abstract:

Hybrid Artificial Neural Network ANN Model which combines Dimensionality Reduction of Principal Component Analysis PCA and Multi- Layer Perceptron Network MLP for effective credit-card fraud detection. PCA applies to reduce high dimensional characteristic space. As a consequence of employing PCA, this makes a further processing very faster from the computational view point thus significantly upgrading its performance. A further model built with multiple interconnected layers with neurons is designed to trace complex patterns present in any transactional data so it can accurately categorize fraudu- lent and nonfraudulent transactions. Combining PCA and MLP The hybrid model ensures both robust performance and model This is because it focuses only on the most important features, and the intricate patterns involved in the data. This also enhances detection accuracy and processing speed, therefore providing a scalable solution to real-time credit card fraud detection. The model is validated using a large dataset of diversified transactional features which proves its efficiency in reducing false positives and enhancing reliability in fraud detection. This system has great scope to be deployed in the banking and financial sectors. Such a system will offer the best protection against fraud, ensuring secure financial transactions.

Keyword:

Credit Card Fraud Detection, Hybrid Ar- tificial Neural Network (ANN), Principal Component Anal- ysis (PCA), Multi-Layer Perceptron (MLP), Dimensionality Reduction, Pattern Recognition.

AI – Powered Recommendation System for Entertainment

Ch. Priyanka
Assistant Professor, Department of AI&ML, CMR College of Engineering & Technology, Medchal, Telangana, India

M. Sai Krishna
UG Student, Department of AI&ML, CMR College of Engineering & Technology, Medchal, Telangana, India

S. Rashmitha
UG Student, Department of AI&ML, CMR College of Engineering & Technology, Medchal, Telangana, India

B. Devika
UG Student, Department of AI&ML, CMR College of Engineering & Technology, Medchal, Telangana, India

M. Poojitha
UG Student, Department of AI&ML, CMR College of Engineering & Technology, Medchal, Telangana, India

Abstract:

AI-Based Entertainment Recommendation System leverages quite advanced machine learning techniques such that it can combine user comments and ratings which gives it an edge over conventional recommendation systems in terms of accuracy; most of them highly suffer from the Cold Start problem resulting in low prediction accuracy as they are reliant on user ratings alone. In our case, we have employed a system that analyzes sentiments of YouTube comments using a convolutional neural network model (CNN). Comments are rated and segmented under five sentiments: very negative, negative, neutral, positive, very positive, and these can give insight into what type of users love or hate. A divided dynamically split dataset trained with a CNN formed goes through testing via Root Mean Square Error (RMSE) to ensure superlative performances on data with different distributions. Combining all of them makes our combined sentiment analysis and traditional rating-based methods offer highly customized and accurate entertainment recommendations that boost satisfaction and engagement of the user.

Keyword:

Sentiment Analysis, Convolutional Neural Networks (CNN), Collaborative Filtering, Natural Language Processing (NLP), Real-time Recommendation.

ISBN: 978-93-92104-23-7

Adaptive Vehicle Monitoring System with Integrated Speed Detection Number Plate Recognition and Instant Fine Generation

Ranjeeth A
Assistant Professor

Anusha S
Assistant Professor

Mathangi C
Assistant Professor

Priscilla G
Assistant Professor

Abstract:

Deep Learning is a subset of machine learning that utilizes neural networks with multiple layers to automatically extract features and learn complex patterns from data which is widely used in applications such as image recognition, natural language processing, and autonomous systems.

This project focuses on real-time vehicle speed detection and automatic number plate recognition using advanced deep learning techniques, ensuring accurate enforcement of traffic rules through automated fine generation and instant WhatsApp notifications. This project introduces an Intelligent Real-Time Vehicle Speed Detection and Number Plate Recognition System designed to improve the accuracy and efficiency of traffic law enforcement. The system utilizes YOLO (You Only Look Once) for detecting vehicles and estimating their speeds in real time. Over speeding vehicles are identified, and their license plates are extracted for further processing. To enhance image clarity in low-light and blurry conditions, a Generative Adversarial Network (GAN) is employed for preprocessing. For optical character recognition (OCR), a hybrid CNN-LSTM model ensures precise recognition of license plate characters. Once processed, the extracted vehicle details are used to automatically generate fine notifications, which are delivered via WhatsApp for instant and effective enforcement. This system leverages deep learning techniques to optimize real-time traffic monitoring, enhance recognition accuracy, and streamline violation reporting, making it a reliable and automated solution for smart traffic management.

Color Image Encryption: A Comprehensive Overview on Techniques Deceiving Hyperchaos

Dr. R. Saravanan
Information Technology, Sri Manakula Vinayagar Engineering, College (SMVEC), Puducherry, India

P. Prithivraj
Information Technology, Sri Manakula Vinayagar Engineering, College (SMVEC), Puducherry, India

A. Saranraj
Information Technology, Sri Manakula Vinayagar Engineering, College (SMVEC), Puducherry, India

M. Charan
Information Technology, Sri Manakula Vinayagar Engineering, College (SMVEC), Puducherry, India

Abstract:

A color image encryption technique that focuses on improving image quality and reducing noise. The proposed method uses hyperchaotic algorithms to generate encryption keys with high uncertainty and applies them to the red, green, and blue lines of the diagram. Filtering techniques such as Gaussian and median filters are used before and after the encryption process to ensure that the resulting images are of good quality and noise is reduced. The combination of hyperchaotic systems and effective filtering increases the security of images while preserving the visual integrity of the images, allowing the use of a stronger encryption method compared to traditional methods.

Keywords:

Hyperchaotic System, Chen System, DNA Mapping, Image Encryption, Security, Noise Reduction.

ISBN: 978-93-92104-23-7

Real-Time Traffic Prediction and Optimization Using Machine Learning

Chris Zionna A
Division of Artificial Intelligence and Machine Learning, Karunya Institute of Technology and Sciences, Coimbatore, Tamil Nadu

P. Joyce Beryl Princess
Assistant Professor, Division of Artificial Intelligence and Machine Learning, Karunya Institute of Technology and Sciences, Coimbatore, Tamil Nadu

Abstract:

Traffic congestion poses a major challenge in urban areas, affecting travel efficiency and sustainability. This study presents a real-time traffic prediction and route optimization system using machine learning and real-time API integration. Traffic patterns are analyzed using historical data, weather conditions, and temporal features, with LightGBM achieving the highest prediction accuracy (90.1%) among tested models. Time-series decomposition, anomaly detection, and SHAP analysis reveal key traffic influences, including hour of the day, weather, and holidays. The system integrates GraphHopper API for route optimization and WeatherAPI for real-time weather updates, enabling dynamic congestion-aware navigation through a Streamlit web application. This approach enhances traffic management and smart city planning, offering data-driven insights for urban mobility solutions.

Keywords:

Traffic prediction, machine learning, real-time optimization, LightGBM, GraphHopper API, WeatherAPI, time-series analysis, anomaly detection, SHAP interpretability, smart city transportation.

Global Waste Management using AIML and IoT

Lakshmi Narayana M
Information Technology Sagi Ramakrishnam Raju, Engineering college Bhimavaram, India

Divakar Sasumana
Information Technology Sagi Ramakrishnam Raju, Engineering college Bhimavaram, India

Lokesh Randhi
Information Technology Sagi Ramakrishnam Raju, Engineering college Bhimavaram, India

Dinesh Varma Sagi
Information Technology Sagi Ramakrishnam Raju, Engineering college Bhimavaram, India

Kalyan Reddy Vesangi
Information Technology Sagi Ramakrishnam Raju, Engineering college Bhimavaram, India

Abstract:

Efficient waste management is pressing global challenge as urbanization accelerates and waste generation rises. This project proposes an AI-driven global waste management system that integrates IoT sensors, Machine Learning (ML), and robotic automation to revolutionize traditional waste handling processes. IoT sensors installed in waste bins monitor fill levels, enabling real-time data collection routes, reducing operational costs and carbon emissions. Robotic systems equipped with advanced image recognition use deep learning models like Convolutional Neural Network (CNN) to automate waste segregation, ensuring effective recycling and reducing landfill dependency by leveraging cutting edge technologies, this system promotes sustainability and environmental conservation. The project provides a userfriendly analytics dashboard to visualize data and monitor performance metrics ,while a notification module ensures timely alerts for waste collection items. This innovative solution not only optimizes waste management processes but also aligns with global efforts to minimize ecological impact and achieve longterm sustainability goals.

Keywords:

Convolutional Neural Networks, Robotic Automation, Iot Sensors.

ISBN: 978-93-92104-23-7

Wireless Power Transfer with Antennas: Fundamental Principles, Applications, and Future Trends – A Comprehensive Review

Amit Kumar
Department of ECE, Jaypee University of Information Technology, Solan, India

Naveen Jaglan

Department of ECE, Jaypee University of Information Technology, Solan, India

Abstract:

This paper dive into the basic standards, operating mechanisms, and engineering aspects of antennas in wireless power transfer (WPT) systems. It looks at antenna design, operating frequencies, radiation patterns, and field characteristics, highlighting their impact on energy transmission effectiveness. Key components such as power transfer distance, alignment angle, and frequency optimization are thoroughly analyzed, alongside critical challenges, counting security concerns, interference, and efficiency losses.

Keywords:

Wireless Power Transfer, Near Field & Far Field.

Leveraging Anticipation on Traffic Congestion using Techniques of Machine Learning and Data Fusion

Priyanka. N
PG Scholar, Department of CSE Sri Eshwar College of Engineering, Coimbatore

V. Saihareesh
PG Scholar, Department of CSE Sri Eshwar College of Engineering, Coimbatore

M. Johnson
PG Scholar, Department of CSE Sri Eshwar College of Engineering, Coimbatore

Dr. A. Anandaraj.
PG Scholar, Department of CSE Sri Eshwar College of Engineering, Coimbatore

Abstract:

In recent decades, the amount of traffic has increased which leads to increase in death rate. The parameters such as traffic lights, accidents, protests, and possibly causes heavy traffic. The prior information about various factors, including traffic conditions and other common occurrences, allows a driver or cyclist to make well-informed decisions. Some of the prediction techniques such as LSTM, conv.LSTM, etc. these models flow rely on predicting the traffic flow which are not adequate for handling todays real time scenario. Large volume of information is acquired from the transportation network which is used in predicting the traffic flow. Hence it is one of the major challenges to predict the traffic flow in large volume of data with the existing predication models. Therefore, big data analysis plays a vital role in transportation in processing the enormous data. In this work, proposed Gated neural network and Cnn to select the optimal features to predict the traffic flow with the higher precisions. Thus, the timely and accurate traffic flow information is predicted and it shows the better performance with an accuracy of more than 90 percent respectively.

Keywords:

Route Optimization, Machine Learning, Congestion Detection, Urban Mobility, Predictive Analysis, Vehicle Detection.

ISBN: 978-93-92104-23-7

Forecasting Hourly Boarding Request of Transport Travellers Utilizing Imbalanced from Keen Cards: A Dl Approach

Dr. S. Kirubakaran
Professor, Department of CSE(AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

Kadira Rishitha
UG Students, Department of CSE(AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

Surparaju Vedanjali
UG Students, Department of CSE(AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

Maka Venkata Sai Gnana Sree
UG Students, Department of CSE(AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

Abstract:

Tap-on smart card data serves as a valuable tool for analysing passenger boarding habits and predicting future travel needs. When examining the records of smart card usage by bus stop and time, positive occurrences (i.e., boarding at a particular stop at a specific time) are relatively rare, while negative occurrences (not boarding at that stop at that time) are more frequent. Research indicates that the use of machine learning models to estimate hourly boarding figures from a specific stop suffers significantly due to data imbalance. This study addresses the issue of imbalanced data within smart card records before applying it to predict bus boarding demand. We propose generating simulated travel scenarios using deep generative adversarial networks (Deep-GAN) to enhance the dataset.

Keywords:

Deep-GAN, Deep Neural Network, Smart Card, Machine learning, Data Augmentation.

Image Processing and Statistical Learning for the recognition and Categorizing of Lung Cancer

Dhanalakshmi K*
Department of Computer Science and Engineering Sathyabama Institute of Science and Technology, Chennai, Tamilnadu, India

Chinthamneedi Sai Varun
Department of Computer Science and Engineering Sathyabama Institute of Science and Technology, Chennai, Tamilnadu, India

Sadireddy Upendra
Department of Computer Science and Engineering Sathyabama Institute of Science and Technology, Chennai, Tamilnadu, India

Abstract:

The integration of image processing and statistical learning techniques to enhance the recognition and classification of lung cancer. We employ a comprehensive approach that leverages various image processing techniques to preprocess and enhance medical images obtained from computed tomography (CT) scans. These techniques include noise reduction, contrast enhancement, segmentation, and feature extraction, which collectively improve the quality and informativeness of the input data. Subsequently, we apply statistical learning algorithms, deep learning models, to classify lung cancer images into different categories such as benign, malignant, and subtypes of malignancy. The models are trained and validated using a dataset comprising labeled CT images from diverse patient demographics. Our experimental results demonstrate that the combined use of image processing and statistical learning significantly improves the accuracy of lung cancer recognition and categorization compared to traditional methods. The proposed framework achieves high precision, recall, and overall classification performance, thereby offering a robust tool for assisting radiologists in making accurate and timely diagnoses.

Keywords:

Hospital, Transfer Learning, CT Image, Upload, Image Complexity, Post Processing, Lung Nodules.

ISBN: 978-93-92104-23-7

22 - 23 March 2025 | Chennai, India

Malicious Node Detection Using Machine Learning and Distributed Data Storage Using Blockchain in WSNs

Dr. Jayantkumar A Rathod
Department of Computer Science and Design, Alva's Institute of Engineering and Technology, Moodabidiri, India - 574225 (Affiliated to Visvesvaraya Technological University, Belagavi-590018

Chandan Kumar M
Department of Computer Science and Design, Alva's Institute of Engineering and Technology, Moodabidiri, India - 574225 (Affiliated to Visvesvaraya Technological University, Belagavi-590018

Sujaykumar B Adoor
Department of Computer Science and Design, Alva's Institute of Engineering and Technology, Moodabidiri, India - 574225 (Affiliated to Visvesvaraya Technological University, Belagavi-590018

Vinith Kalikar
Department of Computer Science and Design, Alva's Institute of Engineering and Technology, Moodabidiri, India - 574225 (Affiliated to Visvesvaraya Technological University, Belagavi-590018

Suraj
Department of Computer Science and Design, Alva's Institute of Engineering and Technology, Moodabidiri, India - 574225 (Affiliated to Visvesvaraya Technological University, Belagavi-590018

Shwetha G K
Department of Computer Science and Engineering, NMAM Institute of Technology (Deemed to be University) NITTE, India - 574110

Abstract:

Applications such as smart cities, healthcare, and environmental monitoring make extensive use of Remote Sensing Networks, or RSNs. However, they are susceptible to security risks, particularly Unauthorized Node assaults and data integrity problems, because to their distributed design, limited energy, and processing capacity. In order to improve security and efficiency in RSNs, this research suggests a Low Energy Data Centric Algorithm (LEDCA) that combines blockchain technology with Predictive Analytics. By examining network traffic patterns, Predictive Analytics is utilized to identify malicious activity in real time. Blockchain technology removes the need for a central authority by ensuring safe, decentralized, and impenetrable data storage. By using data- centric communication and energy-aware clustering, LEDCA maximizes energy consumption and prolongs the life of the network. Outperforming conventional techniques, simulation findings demonstrate increased energy efficiency, data security, and Unauthorized Node identification accuracy. This framework provides a scalable and robust solution for securing RSNs while maintaining efficient resource usage.[11].

Keywords:

Remote Sensing Networks (RSNs), Unauthorized Node Detection, Machine Learning for Cybersecurity, Blockchain for Secure Data Storage, Low Energy Data Centric Algorithm (LEDCA).

GenZ EVM: Revolutionizing Electronic Voting System with Blockchain

Ram Praveen M
Electrical and Electronics Engineering, St. Joseph's College of Engineering

Saran P
Electrical and Electronics Engineering, St. Joseph's College of Engineering

Mr. A Sadeesh Kumar
Electrical and Electronics Engineering, St. Joseph's College of Engineering

Abstract:

When elections are near then voting is always an issue in any country. No one wants to wait for hours in a queue. Many traditional voting methods led to irregular results as the machines were tampered during the process and thus the accuracy and fairness of the voting process got deprived of. People were impersonated to falsify the voting count. Therefore, the counting of the votes was not transparent. Although this process is not foolproof, still it is better in some aspects than the other solutions. The following is some of the aspects of e-voting mentioned as one of the reasons so the e-voting device can be hacked and its lack of transparency means that it can be tampered by the people. Besides, the insecurity of the voting station may result from the dismissible number of parties as they may fail to secure the results of the vote at the polling stations.

Keywords:

Electronic Voting Machine, Blockchain, Cybersecurity, Fingerprint Authentication, Tamper-Proof, Offline Verification.

Data Driven Energy Economy Prediction for Electric Buses Using Ml

J. Gangadhar
Assistant Professor, Department of CSE(AI&ML), CMR College, Hyderabad, Telangana, India

A. Sai Praneeth
Department of CSE(AI&ML), CMRCET, Hyderabad, Telangana, India

Vinith Arya
Department of CSE(AI&ML), CMRCET, Hyderabad, Telangana, India

K. Jashuva
Department of CSE(AI&ML), CMRCET, Hyderabad, Telangana, India

Abstract:

The shift toward electrified transportation is gaining momentum, especially in urban public transit, where electric city buses hold immense potential. However, optimizing their performance requires a profound understanding of real-world driving information.Various technological factors must also be considered to function elective powertrains productively, yet uncertainties in energy demand often led to overly conservative designs, resulting in higher costs and reduced efficiency. In spite of developing intrigued from both industry and the scholarly community, finding analytical solutions remains challenging because of the complexity and interdependency of affecting parameters.Precise vitality request expectation can essentially lower costs by improving operational efficiency. This study aims to enhance the straightforwardness of electric buses vitality utilization by introducing innovative and informative factors. Leveraging progressed ML procedures, we create and assess five distinctive models basing upon their forecast exactness, robustness, and practicality. Our models achieved over 94% accuracy, demonstrating exceptional performance when merged with selected features. The proposed methodology offers substantial benefits for producers, armada operators, and city planners, helping to drive the transition toward sustainable and efficient public transportation.

Keywords:

Electrification, Energy Demand Prediction, Machine Learning, Speed Profiles, Fleet Operation.

 ISBN: 978-93-92104-23-7

Efficient Resource Allocation in Cloud Computing using Adaptive Harris Hawks Approach

Y. Ambica
Assistant Professor, Department of CSE(AI&ML), CMR College, Hyderabad, Telangana, India

A. Amulya
Department of CSM, CMRCET, Hyderabad, Telangana, India

B. Sankeerth Reddy
Department of CSM, CMRCET, Hyderabad, Telangana, India

J. Saicharan
Department of CSM, CMRCET, Hyderabad, Telangana, India

Abstract:

This resource allocation optimization problem in wireless networks is classified as a mixed-integer non-linear programming (MINLP) problem, which is both NP-hard and nonconvex. Conventional approaches face significant limitations, as heuristic algorithms cannot guarantee optimal performance, and global optimization methods suffer from exponential computational complexity and lengthy training durations. Overcoming these challenges requires specialized optimization techniques tailored to the problem's complexity. To address this, the paper introduces an improved version of the Prairie Dog Optimization (PDO) algorithm, enhanced using the Harris Hawks Optimization (HHO) algorithm, called HPDO. This hybrid approach leverages the HHO operators to boost PDO's exploitation capabilities during the search process. The HPDO algorithm was evaluated using 23 mathematical benchmark functions and CEC-2019 benchmarks of various dimension sizes, proving its ability to handle diverse numerical problems. Additionally, HPDO was tested on three engineering challenges: the spring design, pressure vessel design, and welded beam design problems, further showcasing its adaptability.

Keywords:

SC-MAIRL, CTSCE, Multi-Agent Reinforcement Learning, Imitation Learning, Reward Shaping, Cloud Computing, Dynamic Resource Allocation, Energy Efficiency, Cloud Data Centers, Intrusion Detection, Task Scheduling, Hybrid Machine Learning.

Sensors Enhanced Smart Waste Management Systems

Afsar B
Department of Computer Science and Engineering, Dr.N.G.P.Institute Of Technology, Coimbatore, India

Dhanushree D
Department of Computer Science and Engineering, Dr.N.G.P.Institute Of Technology, Coimbatore, India

Karthik A
Department of Computer Science and Engineering, Dr.N.G.P.Institute Of Technology, Coimbatore, India

Kishore G
Department of Computer Science and Engineering, Dr.N.G.P.Institute Of Technology, Coimbatore, India

Ms.S.Gomathi
Assistant Professor, Department of Computer Science and Engineering, Dr.N.G.P.Institute Of Technology, Coimbatore, India

Abstract:

India is currently the world's highest waste generating country, with over 1.3 billion people generating over a billion tons of waste annually. The rapid growth of the population and lack of knowledge about waste management systems have increased the risk of environmental pollution. The large amount of waste products, including wet, dry, biodegradable, and nonbiodegradable, presents a serious risk to the environment. To address this issue, a Sensor Enhanced Smart Waste Management idea has been proposed. This involves monitoring waste levels in cities and villages, programming them to inform municipalities and converting them into recyclable products.This creative strategy seeks to lessen garbage generation and advance environmentally friendly waste management in India.The project aims to develop a system that automatically categorizes and classifies waste into disposable categories, making it faster and more efficient than manual sorting. The waste collection reduces the littering around the area .The future enhancement will includes with features of to detect odour and toxic materials, Gas sensors were used to detect foul odour and trigger alerts when the smell exceeds a certain threshold. waste generated daily is transported from bins to dump yards, where it is segregated and treated. The proposed system uses a smart bin with a conveyor belt to segregate biodegradable and non-biodegradable waste using sensors. Plastics are thrown into the bin, which is then torn with a blade and shredded using the conveyor belt. Biodegradable waste is treated at the household level using composting methods or decomposed naturally, while non-biodegradable waste is classified into glass, paper, aluminium can, and plastic products. The non-biodegradable waste is then converted into useful products.A garbage bin is designed

 ISBN: 978-93-92104-23-7

using a conveyor belt, weight sensors, an Arduino controller, an LCD display, and gas sensors. A weight sensor is placed under the bin to detect waste overflow, when the weight reaches a certain threshold an alert message will be sent to municipal authorities. Arduino IDE software with embedded C allows for cost-efficient retrieval of information. proposed system offer a benefits to improve waste management process and provide sustainable environment and allowing for the production of useful products .The benefits includes significant cost savings which reduces unnecessary trips of municipality.Regular clean and optimized An automatic lock facility is set up to prevent overflow. An LCD display detects bin storage levels,and a Raspberry pi is used for remote operation. A gas sensor detects toxic materials in the Real-time sensors measure waste weight and volume, aiding municipal authorities in waste management systems . This paper proposes a future-proof solution for waste management systems, incorporating advancements like an ultrasonic sensor, Arduino micro controller.The future product will be mechanized with unique features and updated technology, making it more environmentally friendly and pollution free. Overall this project plays a vital role in waste management process and aims in the development of sustainable cities with more efficient and environment friendly.

Phishing Detection and Classification Using Deep Learning

Vimala K
Assistant Professor, Artificial Intelligence and Data Science Sri Krishna College of Technology Coimbatore, Tamil Nadu

Santhoshbabu S
Student, Bachelor of Technology Artificial Intelligence and Data Science Sri Krishna College of Technology Coimbatore, Tamil Nadu

Kalaicharan M
Student, Bachelor of Technology Artificial Intelligence and Data Science Sri Krishna College of Technology Coimbatore, Tamil Nadu

Srishankar L
Student, Bachelor of Technology Artificial Intelligence and Data Science Sri Krishna College of Technology Coimbatore, Tamil Nadu

Abstract:

Phishing attacks have become a significant cyber threat as more individuals rely on the internet for daily activities. The increasing sophistication of these attacks makes it challeng- ing for users and security experts to differentiate between genuine and fraudulent emails. This research aims to develop a reliable phishing detection system using CNN-LSTM architectures and convolutional neural networks (CNN). By examining a dataset with various webpage characteristics, we preprocess the data for model training. The models are evaluated using accuracy, confusion matrices, and classification reports to assess their ability to classify URLs as authentic or phishing. This study seeks to enhance cybersecurity measures against phishing, offering practical insights that could improve safety in online browsers and email clients.

Keywords:

Deep Learning, Malicious URL Detection, Ad- versarial Attacks, Malicious Web Services.

ISBN: 978-93-92104-23-7

Robo Farmer: Rocker-Bogie Mechanism with Integrated Soil Moisture Detection and Leaf Disease Prediction

Karnika Jain
Student at Christ (Deemed to be University), Kengeri Campus, Kanmanike, Kumbalgodu, Bengaluru – 560074, Karnataka, India

Alen Thomas John
Christ (Deemed to be University), Kengeri Campus, Kanmanike, Kumbalgodu, Bengaluru – 560074, Karnataka, India

Jacob Shaji
Christ (Deemed to be University), Kengeri Campus, Kanmanike, Kumbalgodu, Bengaluru – 560074, Karnataka, India

Jis George Mathew
Christ (Deemed to be University), Kengeri Campus, Kanmanike, Kumbalgodu, Bengaluru – 560074, Karnataka, India

Abstract:

This project introduces Robo Farmer, an autonomous farming robot that aims to increase agricultural productivity and sustainability. It is equipped with a rocker-bogie mechanism, which provides stable movement on uneven ground, making it ideal for precision farming. With sophisticated sensors and image processing algorithms, the robot is capable of detecting leaf diseases with more than 90% accuracy, enabling early treatment and minimizing crop loss. A real-time soil moisture sensing system provides optimal irrigation, reducing water usage by as much as 40%, while an automatic pesticide spraying system reduces chemical application by 30%, encouraging green pest control.

By combining these technologies, Robo Farmer decreases human intervention, enhances resource utilization, and optimizes overall crop health monitoring. The integration of machine learning-based disease detection, smart irrigation management, and precise pesticide application facilitates contemporary precision agriculture. This solution not only solves key agricultural issues like wasteful resource use and ineffective disease identification but also helps in sustainable agriculture. With automation and data-driven decision-making, Robo Farmer increases productivity, saves precious resources, and reduces environmental footprint, providing a scalable and innovative solution to contemporary agriculture.

Keywords:

Autonomous Farming Robot, Rocker-Bogie Mechanism, Precision Agriculture, Image Processing, Leaf Disease Detection, Soil Moisture Monitoring, Optimized Irrigation, Automated Pesticide Spraying.

A DFT Studies of Anthraimidazole Based Organic Molecules as a n-type Semiconductor

Bimal Chettri

Department of Chemistry, Sikkim Manipal Institute of Technology, Sikkim Manipal University, Majitar, Sikkim 737136, India

Satadru Jha*

Department of Chemistry, Sikkim Manipal Institute of Technology, Sikkim Manipal University, Majitar, Sikkim 737136, India

Nilanjan Dey*

Department of Chemistry, Birla Institute of Technology and Sciences-Pilani Hyderabad Campus, Shameerpet, Hyderabad 500078, Telangana, India

Abstract:

This paper presents a theoretical investigation of anthraimidazole-based amphiphilic push-pull dyes, which demonstrate significant potential as candidates for n-type semiconductors. Using Density Functional Theory (DFT) with B3LYP (d, p) as the basis set, the study explored various optoelectronic properties, including orbital energy, molecular electrostatic potential, chemical hardness, chemical potential, dipole moment, and dihedral angle, to gain a comprehensive understanding of six molecules (1–6). The analysis revealed that the LUMO energy levels for these molecules range from -2.32 to -2.91 eV, while the HOMO energy levels fall between -5.21 and -6.47 eV. These findings strongly suggest that, upon synthesis, the molecules are likely to exhibit high charge mobility. This work offers valuable insights for the design and preparation of n-type organic semiconductors (OSC) for future applications.

Keywords:

Anthraimidazole, Density functional theory, Frontier molecular orbitals, Organic semiconductors.

ISBN: 978-93-92104-23-7

Survey on Filter Design using Frequency Selective Surfaces for Wireless Communication Application

Padmapriya V
Puducherry

Dhivya V
Puducherry

Prabanjani M
Puducherry

Akshaya S
Puducherry

Abstract:

Frequency Selective Surfaces (FSS) have emerged as critical components in the design of advanced filtering solutions across various applications, including telecommunications, radar systems, and wireless communications. This survey provides a comprehensive overview of FSS technology, focusing on their role in filter design. We explore the fundamental principles governing FSS, including their periodic structure and resonance behaviour, which enable selective transmission and reflection of electromagnetic waves. Recent advancements in materials, particularly the integration of metamaterials, are examined for their impact on enhancing filter performance metrics such as insertion loss and selectivity. The survey also addresses the challenges faced in the fabrication and scalability of FSS-based filters, emphasizing the need for innovative design methodologies. By analyzing various configurations and their effects on electromagnetic responses, this work highlights the current state of FSS in filter design and outlines future research directions aimed at improving filtering solutions in the evolving landscape of wireless communication technologies.

Keywords:

Frequency Selective Surfaces(FSS), Filter Design, Electromagnetic Waves, Wireless Communication Systems.

Interactive Simulation and Comparative Analysis of Scheduling Algorithms in Wireless Sensor Networks using Streamlit

M Uday kiran
Department of Computer Science and Engineering, Sathyabama Institute of Science, and Technology, Chennai, India

M Mahesh
Department of Computer Science and Engineering, Sathyabama Institute of Science, and Technology, Chennai, India

B.Gracelin Sheena, M.E.,(Ph.D.).,
Assistant Professor, Department of Computer Science and Engineering, Sathyabama Institute of Science, and Technology, Chennai, India

Abstract:
This plethora of application for Wireless Sensor Networks (WSNs) includes environmental monitoring, healthcare and industrial automation. The scheduling algorithms had great impact on the scheduling efficiency; including energy consumption, latency minimization and prolonging network lifetime, which are critical factors in WSNs performance. In this work, we presented an interactive simulation platform based on Streamlit which computes and compare performance of the schedule algorithms in WSNs. The proposed system enabled simulation of node deployment, cluster head selection and energy consumption dynamics at real time, and offered real time visualization of the network lifetime, energy distribution and node activity metrics. Experimentation environment is very flexible, which parameters such as node density, initial energy and cluster head percentage are adjustable. Throughput and energy efficiency of different algorithms are compared using cluster based scheduling and external dynamic clusters. The interactional interface and visualisation feature of the platform make WSN scheduling strategies an effective tool for researchers and educators. In future, we will introduce other advanced algorithm such as FDMA, TDMA for better performance of the network.

Keywords:
Wireless Sensor Networks, scheduling algorithms, energy efficiency, Streamlit, simulation, cluster head selection, interactive visualization.

ISBN: 978-93-92104-23-7

Student Attention Analysis System Using CNN

Kurevella Haswanth Kumar
Students VIII semester, Department of Information Technology, S R K R Engineering College, Bhimavaram

Pannuri Narasimha
Students VIII semester, Department of Information Technology, S R K R Engineering College, Bhimavaram

M. Bhanu Pratap Varma
Students VIII semester, Department of Information Technology, S R K R Engineering College, Bhimavaram

K. Sri Rama Harshith
Students VIII semester, Department of Information Technology, S R K R Engineering College, Bhimavaram

Dr. P.R.S.S.V. Raju
Assistant Professor, Department of Information Technology, S R K R Engineering College, Bhimavaram

Abstract:

Student engagement is key to effective learning, especially in today's technology-driven education landscape. Traditional methods like teacher observation and student surveys often lack accuracy and consistency, making it difficult to gauge real attentiveness. However, advancements in artificial intelligence (AI) and computer vision now offer a more reliable, real-time approach to monitoring student focus.This research presents a Student Attention Analysis System that integrates gaze tracking and emotion recognition to assess engagement levels. Using OpenCV [1], dlib [2], and DeepFace [3], the system analyzes facial landmarks [4], tracks gaze direction [6], and interprets emotional expressions [5] to determine whether a student is attentive or distracted.Our experiments in smart classrooms and online learning environments demonstrate the system's ability to accurately detect disengagement [7] and provide instant feedback to educators [8]. This is particularly beneficial for remote learning, where direct supervision is often limited [9].By combining deep learning [10] and computer vision [11], this system contributes to AI-driven educational analytics [12], offering valuable, data-driven insights to enhance student engagement and optimize learning experiences.

Keywords:

Gaze Detection, Emotion Recognition, Multimodal Learning Analytics,Attention Tracking, Educational Technology, Artificial Intelligence in Education, Automated Engagement Detection.

Personalized Autoimmune Disease Assistant Using DenseNet121 Algorithm for Prediction and Management

Ms. Danicka Sharon J M
Division of Artificial Intelligence and Machine Learning, Karunya Institute of Technology and Sciences, Coimbatore, Tamil Nadu

Mrs. P. Joyce Beryl Princess
Division of Artificial Intelligence and Machine Learning, Karunya Institute of Technology and Sciences, Coimbatore, Tamil Nadu

Abstract:

Autoimmune diseases are complex and often challenging to diagnose and manage due to their varied symptoms and individual-specific responses to treatment. This project introduces a Personalized Autoimmune Disease Assistant, a full-stack MERN (MongoDB, Express, ReactJS, NodeJS) web application integrated with DenseNet121 for autoimmune disease prediction and management. The system provides a comprehensive platform for users to access detailed information about autoimmune diseases, including personalized dietary and exercise plans tailored to specific conditions. Key features include a user-friendly interface with login/signup functionality, a resource page offering extensive disease insights, and a disease prediction module that uses deep learning algorithms to analyze uploaded medical images and deliver accurate predictions. The platform ensures informed decision-making by presenting users with actionable insights and recommendations. By leveraging advanced AI models and an intuitive design, the Personalized Autoimmune Disease Assistant aims to improve early detection, enhance patient care, and empower individuals with tailored tools for managing autoimmune conditions effectively.

Keywords:

Autoimmune diseases, personalized assistant, DenseNet121, disease prediction, MERN stack, healthcare technology.

 ISBN: 978-93-92104-23-7

22 - 23 March 2025 | Chennai, India

Enhancing LAMA Model Mask Design Through Automation

Rahamate hasrath
Department of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Yalamarthi Akshaya
Department of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Mrs. Ch. Sri Lakshmi
Assistant Professor, Department of CET, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Abstract:

To enhance the capabilities of the Latent Mask (LaMa) model, a state-of-the-art tool for high-resolution image inpainting, we initiated the project titled *"Enhancing LaMa Model Mask Design Through Automation."* Despite the LaMa model's proven efficacy in various image-editing applications, the persistent challenges of time and accuracy in manual mask construction remain a significant barrier. Our approach addresses this issue by introducing an automated method for mask generation that leverages perceptual cues such as segmentation masks, geometric information, and other visual indicators to inform the mask design process [10].

This automation not only significantly reduces the manual labor involved in creating masks but also enhances the overall efficiency of the model. Furthermore, the use of automated masks ensures a higher degree of consistency across different image datasets, leading to more reliable inpainting results. The automated approach produces outcomes that are more realistic and accurate, as it aligns better with the natural textures and structures present in the images [11].

By integrating advanced machine learning methodologies and employing meticulously curated datasets, our research expands the functional range of the LaMa model. This opens up new possibilities for applications in fields such as augmented reality, interior design, real estate, and other domains where precise image alteration is crucial [12]. Ultimately, our project not only improves the usability and accessibility of the LaMa model but also facilitates a broader application of high-quality image processing across various industries, thereby setting a new standard for inpainting quality while saving time and effort.

Keywords:

Automated Mask Generation, LaMa Model, Image Inpainting, Segmentation Masks, Geometric Information, Machine Learning in Image Processing, High-Resolution Image Editing, Virtual Staging, Interior Design Applications, Augmented Reality, Contextual Mask Creation, Inpainting Accuracy, Perceptual Cues, Efficient Image Processing, Advanced Dataset Integration.

A Messaging Application for Intranet

Nafila P M
Saju Jose Chitilapilly, Department of Computer Science and Engineering, Jyothi Engineering College, Cheruthuruthy, Thrissur, 679531

Neama MT
Saju Jose Chitilapilly, Department of Computer Science and Engineering, Jyothi Engineering College, Cheruthuruthy, Thrissur, 679531

Niyatha Shanavas S S
Saju Jose Chitilapilly, Department of Computer Science and Engineering, Jyothi Engineering College, Cheruthuruthy, Thrissur, 679531

V S Anna
Saju Jose Chitilapilly, Department of Computer Science and Engineering, Jyothi Engineering College, Cheruthuruthy, Thrissur, 679531

Abstract:

Our Intranet Messaging Application is a robust and stable communication application meant for organizations that work within closed networks. It offers an integrated experience for instant messaging, voice calls, and media sharing to ensure internal communication is smooth, quick, and efficient. By taking advantage of the intranet's security and velocity, the application precludes external network dependency risks and is the best option for those organizations that focus on data protection. Whether in a corporate office building, school system, or governmental agency, the application extends the internal network but keeps strict security measures intact. In contrast to typical messaging apps that use third-party servers, the intranet-based solution allows all communication to be contained within the organization's network, free from unauthorized access and data leakages.

Having a user-friendly design, the app has an easy-to-navigate and clear interface that minimizes complexity in navigation and communication. Users are able to authenticate their accounts promptly and begin messaging colleagues with minimal clicks. The application facilitates one-to-one and group messaging, where staff members can organize tasks, exchange crucial information, and work together in real-time. In addition to voice calling and sharing media features, the platform offers users the ability to share documents, pictures, and videos without concerns regarding network speed or outside interference. In addition to this, the application also accommodates message synchronization over several devices on the network, allowing users to shift between workstations freely without missing out on critical discussions. With this emphasis on user-friendliness and accessibility, the platform is ideal for use among both

ISBN: 978-93-92104-23-7

technology-expert professionals and those with little technical know-how.

Security and scalability are two principal cornerstones of this intranet messaging platform. The application is constructed with a strong security framework that encrypts all communications, avoiding unauthorized interception and ensuring that sensitive organizational information is safeguarded. It has sophisticated authentication mechanisms to avoid unauthorized use. Furthermore, the system is scalable with the changing needs of the organization, and it can be enhanced with new features and integrated with other in-house tools like project management systems, employee directories, and workflow automation platforms. Whether it is a small business or a large corporation, this messaging app offers a stable, secure, and highly flexible communication platform that promotes efficiency and productivity in the workplace.

Abnormal Behavior Detection Using Frame-Level Visual Data Analysis

Abhishek Gorenka
Chaitanya Bharathi Institute of Technology (A), Hyderabad, Telangana India

Mohammed Faraz Uddin
Chaitanya Bharathi Institute of Technology (A), Hyderabad, Telangana India

Mrs. Nukala Sujata Gupta
Chaitanya Bharathi Institute of Technology (A), Hyderabad, Telangana India

Abstract:

Video anomaly detection is critical for modern surveillance systems as the need for automated security solutions grows. This approach involves converting input videos into frames and selecting key frames using absolute consecutive histogram differences to ensure efficient processing. By focusing on significant content changes, the system reduces redundant data, enhancing anomaly detection accuracy. To extract spatial and temporal features, a DenseNet enclosed VGG-16 (DVN) model is employed, along with 2D CNNs. DenseNet's structure facilitates feature reuse, while VGG-16's convolutional layers capture detailed visual information. This combination strengthens the model's ability to detect abnormal events in complex video footage.

Convolutional Autoencoders (CAEs) are used to model normal video behaviour by learning compressed data representations. The system detects anomalies when the reconstruction error—the difference between original and reconstructed frames—exceeds a threshold, indicating deviations from normal patterns. The proposed framework will be evaluated on the UCF-Crime dataset, a benchmark for anomaly detection in surveillance videos. Through detailed frame-by-frame analysis, this model aims to provide both fast and accurate detection of anomalies, making it suitable for real-time applications. The combination of advanced deep learning techniques ensures that the system can capture both subtle and significant anomalies, contributing to more reliable surveillance and monitoring systems.

Keywords:

Vulnerability2D CNN, Convolutional Autoencoder (CAE), DenseNet enclosed VGG-16 (DVN), UCF-Crime Dataset.

 ISBN: 978-93-92104-23-7

Hybrid Technology for Real Time Driving Monitoring using Machine Learning

Mayur Kadu
CSE Department, Tulsiramji Gaikwad-Patil College of Engineering and Technology, Nagpur, India

Abhimanyu Dutonde
CSE Department, Tulsiramji Gaikwad-Patil College of Engineering and Technology, Nagpur, India

Bramhadev Wadibhasme
CSE Department, Tulsiramji Gaikwad-Patil College of Engineering and Technology, Nagpur, India

Abstract:

The rapid advancements in the Internet of Things (IoT) have led to significant innovations in the automotive industry, particularly in the area of driving safety and vehicle management. The IoT-based driving monitoring system integrates a network of sensors, connectivity devices, and cloud computing to continuously monitor and analyze key driving parameters, vehicle health, and environmental conditions in real time. This system captures data from various in-vehicle sensors (such as accelerometers, GPS, cameras, and biometric devices) to assess driver behavior, vehicle performance, and external factors such as road conditions and traffic. By transmitting this data to a centralized cloud platform, advanced data analytics and machine learning algorithms process and interpret the information, providing actionable insights to both drivers and fleet operators. These insights help improve driving safety by detecting risky behaviors (e.g., speeding, distracted driving, fatigue), enabling proactive maintenance through early detection of vehicle issues, and optimizing fuel efficiency and route planning. This technology offers a range of benefits, including enhanced driver safety, reduced operational costs, improved vehicle performance, and personalized feedback for drivers. Furthermore, it plays a crucial role in fleet management, enabling businesses to monitor multiple vehicles simultaneously and optimize their fleet operations. Despite its advantages, challenges such as privacy concerns and data security remain, which require careful consideration in the implementation of these systems. Road accident has turned out to be one of the severe nuisances in Bangladesh. The main reason behind these accidents is the carelessness and reckless driving of the drivers. In this paper, an IoT based system is proposed to ensure the continuous monitoring of the parameters of a running vehicle like vehicle speed, number of hard brakes, and rolling of the vehicle, which can be a measure of the 'quality of driving'. The parameters will be uploaded to a server

every instant so that the year, and it has been the main cause of car accidents for the past decades. bus authority can directly observe the driver's performance, which will increase the responsibility of the driver to avoid reckless driving. Whenever the vehicle speed exceeds the safe calculated threshold speed, the system will alert the driver by playing sound on the buzzer. Besides, the system has also a button. In case of an accident, if this button is pressed, the system will send SMS instantly to proper authority with the location information. In this way, this system can speed up the rescue operation, minimize the casualties after the accident, and numerous important human lives can be spared.

Keywords:

Video Processing, Machine Learning, Internet Of Things, Z Score, Anomaly Detection, Realtime Processing.

ISBN: 978-93-92104-23-7

Effective Data Hiding Scheme using Machine Learning

B. Mokshagna
UG Student, Department of AI&ML, CMR College of Engineering &Technology, Hyderabad, Telangana, India

B. Krutin Rajshekar

UG Student, Department of AI&ML, CMR College of Engineering &Technology, Hyderabad, Telangana, India

D. Snehal
UG Student, Department of AI&ML, CMR College of Engineering &Technology, Hyderabad, Telangana, India

T. Bhaskar
Assistant Professor, Department of AI&ML, CMR College of Engineering &Technology, Hyderabad, Telangana, India

Abstract:

This paper introduces a novel data hiding scheme leveraging advanced machine learning (ML) techniques to significantly enhance secure data transmission in the digital age. The proposed method combines several cutting- edge techniques, including image feature extraction, classification, and watermarking, to effectively hide secret data within digital images while ensuring robust security and maintaining high image quality. Central to the method is a multilayer neural network, which is trained to predict pixel locations which are favourable for encrypting the hidden data, carefully selecting pixels to minimize distortion in the stego images. This intelligent pixel selection ensures that the embedded data cannot be captured with our natural vision while maintaining the visual integrity within the real data. The method also integrates multiple stages of image processing, beginning with feature extraction to identify key attributes of the image, followed by a classification step that identifies the most secure and suitable embedding points for the secret data. The final stage involves the watermarking process, which effectively hides the secret data in a way that minimizes its detectability and resistance to attacks. Experimental evaluations demonstrate that the method successfully reduces distortion in the stego images, making the embedded data almost indistinguishable from the original image. Furthermore, the model significantly enhances the resilience of the hidden data against common image manipulations such as noise addition, compression, and cropping, which are typical threats in image steganography. The proposed model's ability to withstand such attacks makes it highly applicable for real-world scenarios, where both image integrity and data security are critical. By combining ML-based techniques with traditional image steganography methods, this approach offers a promising solution to the challenge of secure data transmission, achieving a balance between image quality and data security, which is crucial for modern digital communication.

Keywords:

Image Feature Extraction, Pixel Embedding, Secret Data Embedding, Image Quality, Digitalcommunication, Data Hiding.

Fake News Detection Using Machine Learning: A Survey

Harish Kunder
Department of Artificial Intelligence and Machine Learning, Alva's Institute of Engineering and Technology, Moodbidri 574 225

Abhishek Madan Gunagi
Department of Artificial Intelligence and Machine Learning, Alva's Institute of Engineering and Technology, Moodbidri 574 225

Saneesha Prashant Kadam
Department of Artificial Intelligence and Machine Learning, Alva's Institute of Engineering and Technology, Moodbidri 574 225

Vanditha T C
Department of Artificial Intelligence and Machine Learning, Alva's Institute of Engineering and Technology, Moodbidri 574 225

Yashwanth R
Department of Artificial Intelligence and Machine Learning, Alva's Institute of Engineering and Technology, Moodbidri 574 225

Abstract:

Social media and online platforms have allowed fake news to flourish, affecting public opinion and harming populations around the world. The limited datasets, the absence of established procedures, and the dynamic nature of misinformation all contribute to the challenges in identifying fake news. Support Vector Machines (SVM), K-Nearest Neighbors (KNN), Long Short-Term Memory (LSTM), Random Forests, and ensemble models are some of the ML and DL techniques that academics have suggested. Different sets of datasets from LIAR, BuzzFeed, and FakeNewsNet have also benefited from the contributions of several feature extraction algorithms, such as TF-IDF, Count Vectorizer, and Genetic Feature Selection. For better performance, novel concepts like Quantum KNN and Passive-Aggressive Classifiers have been tried. It's possible that the accuracy rates could reach 91%, however, dataset quality, language diversity, and adaptability remain key challenges. This review integrates approaches that are the most advanced so far, emphasizing the requirement for robust, scalable, and multi-lingual systems that will guarantee the integrity of information in the digital age.

Keywords:

Fake News Detection, Machine Learning, Social Media.

ISBN: 978-93-92104-23-7

Integrative Approach to Stock Price Prediction Combining Investor Sentiment with Deep Learning Techniques

Janet Joseph
Student

Abisha Peter
Student

Abstract:

Stock market prediction is a significant field of financial study, and combining quantitative data with qualitative insights improves forecasting ability. This research investigates the use of sentiment analysis on financial news in conjunction with stock price prediction algorithms to increase prediction accuracy. To perform Aspect-Based Sentiment Analysis (ABSA), the approach makes use of FinBERT, a pre-trained language model created exclusively for financial content. ABSA allows for the extraction of sentiment related to specific financial variables, such as firm performance, market conditions, or economic developments, resulting in a more precise and targeted understanding of market sentiment. The sentiment data is used to train predictive models which includes methods like ARIMA, XGBoost and LSTM. The approach improves stock price prediction accuracy by combining structured stock data with unstructured news sentiment. Metrics like MSE, RMSE, MAPE, and R-squared are used to evaluate the models. The results show that using FinBERT-driven ABSA enhances predictive performance, with XGBoost achieving the best accuracy and LSTM effectively modeling temporal dependencies. This study demonstrates how combining advanced natural language processing techniques with financial sentiment analysis can create a reliable stock market forecast framework for informed trading and investment strategies.

Keywords:

Aspect-Based Sentiment Analysis (ABSA), Fin BERT, Exploratory Data Analysis (EDA), Sentiment Analysis, Deep Learning.

An Implementation of Block Chain Technology in Forensic Evidence Management

Mrs. P.R. Prathyusha
Assistant Professor, Department of CSE(AI&ML), CMR College, Hyderabad, Telangana, India

Chindham Parimala
Department of CSE(AI&ML), CMRCET, Hyderabad, Telangana, India

Gummadi Shravani
Department of CSE(AI&ML), CMRCET, Hyderabad, Telangana, India

Madana Shivani
Department of CSE(AI&ML), CMRCET, Hyderabad, Telangana, India

Abstract:

Prove administration is pivotal within the field of scientific science. Confirmations gotten from a wrongdoing scene are vital in tackling the case and conveying equity to the parties included. Subsequently, ensuring these confirmations from any shape of modification is of most extreme imperative. Chain of Care is the method which keeps up the judgment of prove. Failure to preserve the chain of guardianship will make the prove unacceptable in court, eventually leading to the case expulsion. Digitalization of measurable prove administration framework may be a require of time because it is an environment neighbourly demonstrate. Blockchains are carefully disseminated records of transactions signed cryptographically in chronological arrange that are sorted into pieces and is totally open to anybody within the blockchain arrange. Hyperledger Texture could be a consortium blockchain system made by the Linux establishment and is basically utilized for undertaking utilize. Based on the concept of Hyperledger Texture, display consider pointed to form a system and assist propose an calculation to execute Blockchain Innovation to digitalize legal prove administration framework and keep up Chain of Guardianship.

Keywords:

Forensic Evidence Management, Chain of Custody, Block chain Technology, Hyperledger Fabric.

ISBN: 978-93-92104-23-7

Transformative Role of Artificial Intelligence in Revolutionizing the Education Sector: Innovations, Challenges, and Future Prospects

Siddharth
UIE, CSE Department, Chandigarh University, Punjab, India

Dr. Raman Chadha
Professor, UIE, CSE Department, Chandigarh University, Punjab, India

Ishu
UIE, CSE Department, Chandigarh University, Punjab, India

Diksha
UIE, CSE Department, Chandigarh University, Punjab, India

Jaya
UIE, CSE Department, Chandigarh University, Punjab, India

Nitakshi Azad
UIE, CSE Department, Chandigarh University, Punjab, India

Abstract:

AI or Artificial Intelligence is reshaping every single field in the world and so is the education sector. With the rise, it is common to see that AI is going to be integrated soon with the traditional teaching and learning standards. This integration represents how offering innovative solutions to long-standing brings different opportunity along with different challenges in teaching and learning. This study delves into the transformative and impactful role of AI in education sector, focusing on the ability to personalize the user's learning experiences with different features like delivering real-time feedback and addressing the needs. AI's capacity to create personalized learning paths, analyzing student's performance and providing adaptive support has significantly enhanced engagement and outcomes. Different AI-powered tools also deliver immediate feedback, enabling students to fill the knowledge gap with in few seconds and stay motivated. The analysis given by AI also empower educators to identify and support at-risk students so that challenges and be solved before escalating.

Moreover, AI is also breaking down the barriers to accessibility by offering different features like real-time language translation, cost-effective learning and user-friendly interfaceAI tools range from free tools or

premium, based on the level of feature set and premium support customers want. Because we already know, it's not limited to one side but also assists educators in the automating of their daily activities, lesson planning, and gaining different insights from analysing the observed data.

However, the integration of AI in this sector in not without challenges. There are different issues such as equitable access, data privacy, and ethical concerns which must be addressed like algorithmic bias which may be due to AI's potential. With proper strategic planning, inclusive practices, and robust infrastructure, AI can change the whole image of education sector, creating more equitable, effective and engaging learning environment.

Keywords:

Education, AI, scheduling, AI-tools..

Next-Gen Operative Desktop Voice Assistant for Visually Impaired Persons

Darsani K
Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, Tamil Nadu

Kiran Kumar R
Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, Tamil Nadu

Pavin B
Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, Tamil Nadu

Mr.ArunKumar R, Assistant Professor
Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, Tamil Nadu

Abstract:

In the rapidly evolving digital landscape, voice assistants have emerged as pivotal tools for enhancing user interaction with technology. NOVA, a comprehensive voice assis- tant, integrates seamlessly with desktop environments, offering full desktop access via natural language processing (NLP). Security is enhanced with voice authentication using Support Vector Machine (SVM) classifier algorithm, alongside traditional password verification. Compared to other voice assistants, NOVA offers extensive desktop integration, unlike traditional assistants focused on mobile or smart home environments. It provides a broader range of functionalities, including communication tool automation and system settings management, beyond basic tasks like setting reminders or playing music. The proposed work uses voice input, outputs speech, and converts the voice command to words on the screen. In NOVA, artificial intelligence technology is used to provide an efficient solution. This desktop voice assistant can also be useful for normal people and helpful for visually impaired and the people with disabilities.

Keywords:

Python, speech recognition, voice assistant, TTS (Text-to-Speech), Artificial Intelligence, Speech-to-Text, Virtual Assistant.

Automated Lung Cancer Detection using CNN and SVM Based Classification

Vimala K*
Assistant Professor, Artificial Intelligence and Data Science Sri Krishna College of Technology Coimbatore, India

Kishore S
Student, Bachelor of Technology, Artificial Intelligence and Data Science Sri Krishna College of Technology Coimbatore, India

Nikitha Shri S
Student, Bachelor of Technology, Artificial Intelligence and Data Science Sri Krishna College of Technology Coimbatore, India

Poojasree S
Student, Bachelor of Technology, Artificial Intelligence and Data Science Sri Krishna College of Technology Coimbatore, India

Abstract:

Early detection of lung cancer is significantly re- sponsible for better survival rates. Convolutional Neural Net- works (CNNs) combined with Support Vector Machines (SVMs) have been widely introduced and have demonstrated effectiveness in medical imaging applications. The proposed work aims at developing an advanced model that would be based on CNN-SVM in the detection and classification of lung cancer. Our architecture utilized multiple well-established convolutional layers, followed by subsampling (pooling) layers and fully connected layers . The model achieved the accuracy of 96% during the validation phase on the training dataset. The extracted features are then applied to an SVM to classify images as either normal or malignant. Although it keeps in mind some of the problems that could arise due to large datasets, it recommends fine-tuning the models to adjust to any size of data. In light of the process involved by image processing in lung cancer detection, considerable computational complexity has been reported by the study, suggesting saving the trained models in memory for a quicker application in the future. Such enhanced diagnostic precision would perhaps lead to earlier interventions and more effective approaches to treatment, hopefully culminating in better patient outcomes in the long run, even saving lives.

Keywords:

Convolutional Neural Networks (CNNs), Deep Learning, Feature Extraction, Lung Cancer Detection, Malignant classification, Support Vector Machines (SVMs).

ISBN: 978-93-92104-23-7

Face Recognition Based Attendance System

Ms.Kalaivani R
AssistantProfessor, Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology

Sithik Ahamed S
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology

Shyam Santhosh M
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology

Madhu Mohan S
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology

Abstract:

Face identification has been considered an interesting research domain in the past few years as it plays a major biometricAuthentication role in various applications such as attendance management and access control systems. Attendance Management systems are very important to all organizations though complex and time-consuming in managing daily. Attendance log. Many of the automatic human identification techniques include biometrics, RFID, eye tracking, voice Recognition. Face is one of the widely used biometrics for human identity authentication.

Deepfake Video and Image Detection using Neural Networks

Mrs. Mohini Avatade
Department of Computer Engineering, Faculty of Computer Science, DYPIEMR, Akurdi, Pune, India

Rohit Kulkarni
Department of Computer Engineering, Dr. D.Y Patil Institute of Engineering, Management and Research, Pune, India

Subrat Setha
Department of Computer Engineering, Dr. D.Y Patil Institute of Engineering, Management and Research, Pune, India

Ganesh Patil
Department of Computer Engineering, Dr. D.Y Patil Institute of Engineering, Management and Research, Pune, India

Vaishnavi Kulkarni
Department of Computer Engineering, Faculty of Computer Science, DYPIEMR, Akurdi, Pune, India

Abstract:

The rapid advancement of deep learning has made it easier to create highly realistic "DeepFake" (DF) videos with minimal effort. While video manipulation techniques have existed for years, recent AI-based tools have significantly enhanced the realism and accessibility of synthetic media. Identifying these altered videos remains a challenge due to the complexity of training detection algorithms. This study presents a detection approach utilizing Convolutional Neural Networks (CNN) and Recurrent Neural Networks (RNN). The CNN is responsible for extracting key features from individual frames, while the RNN analyzes temporal inconsistencies across frames to classify videos as authentic or manipulated. Our proposed system undergoes evaluation using an extensive dataset of synthetic videos, demonstrating competitive accuracy in detecting DeepFakes with a simplified yet effective model architecture.

Keywords:

Deepfake Video Detection, convolutional Neural network (CNN), recurrent neural network (RNN).

ISBN: 978-93-92104-23-7

Quantum Computing and Cryptography: Transformative Impacts on Security, Scalability and Future Applications

Sheetal Singh*
Department of CSE, SEST, Jamia Hamdard, New Delhi, India

Jawed Ahmed
Department of CSE, SEST, Jamia Hamdard, New Delhi, India

Kamlesh Kumar Raghuvanshi
Department of Computer Science, Ramanujan College, University of Delhi, New Delhi, India

Parul Agarwal1
Department of CSE, SEST, Jamia Hamdard, New Delhi, India

Abstract:

Quantum computing, employing quantum bits (qubits) that exist in superposition states, holds immense potential to revolutionize industries, particularly cryptography. Quantum cryptography utilizes quantum principles for enhanced security, with Quantum Key Distribution (QKD) at its forefront. While quantum computing threatens traditional encryption, it also drives Post-Quantum Cryptography (PQC) research for quantum-safe methods. Scalability challenges due to quantum decoherence are addressed through error correction techniques. Real-world applications include quantum-secured networks, cryptography integration, and NIST's Post-Quantum Cryptography Standardization. The dynamic interplay of quantum computing and cryptography presents transformative opportunities and challenges, reshaping data security paradigms across domains.

Keywords:

Quantum Computing, Post Quantum cryptography, Quantum Key Distribution.

Loan Eligibility Prediction using Machine Learning

Mr. P Ramprakash
Assistant Professor, Department Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, India

Hariharan P
Department Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, India

Selvadurai AC
Department Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, India

Vikram Saai R
Department Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, India

Danush Alwin V
Department Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, India

Abstract:

An inventive strategy to improve the effectiveness and precision of financial decision-making in the lending sector is the automation of loan eligibility prediction. This system assesses important consumer characteristics obtained from online application forms, such as gender, marital status, education level, number of dependents, income, desired loan amount, and credit history, by utilizing machine learning techniques. These characteristics are important markers of a borrower's ability to repay loans and their level of financial stability. Data loading, pre-processing, feature extraction, model training, and testing are some of the data processing procedures used by the suggested framework. Applicants are categorized as either eligible or ineligible for loans using the logistic regression algorithm. This predictive algorithm may learn from past trends and results because it is trained on historical loan data. By offering quicker and more precise evaluations of loan eligibility, the deployment of this automated system expedites the loan approval procedure, permits focused marketing tactics, and eventually raises customer satisfaction.

ISBN: 978-93-92104-23-7

Advancing Early Autism Detection: Leveraging Machine Learning for Objective and Comprehensive Assessment from Behavioral and Physiological Data

Malloju Krupa Sagar
Sathyabama University, Chennai, India

Mallikarjuna Reddy VemiReddy
Sathyabama University, Chennai, India

Abstract:

Early diagnosis of autism spectrum disorder ASD remains essential to create intervention opportunities that lead to positive developmental results. The proposed framework uses YOLOv8 for machine learning-based ASD assessment of behavioral and physiological data which provides objective results. öncelikuluk images enter as input to go through preprocessing methods followed by training and testing on a prepared dataset before validation. The model proves its reliability with 97% accuracy while maintaining a loss value of 0.03 to identify ASD characteristics. A Streamlit application enables real-world deployment of this system because it provides both accessibility and ease of use. The system proposes to help clinicians and researchers with a dependable model that provides both scalable and ef ective detection of autism.

An IoMT Framework to Classify Maternal Health Risk

Sreenubabu dasari
Assistant Professor, CSE department, AITAM, Tekkali

Juttada Niharika
B. Tech UG students, CSE department, AITAM, Tekkali

Battula Mahitha
B. Tech UG students, CSE department, AITAM, Tekkali

Vattikulla Harshith
B. Tech UG students, CSE department, AITAM, Tekkali

Vajragottu Usharani
B. Tech UG students, CSE department, AITAM, Tekkali

Labhala Meghana
B. Tech UG students, CSE department, AITAM, Tekkali

Abstract:

The classification of maternal health risks is necessary to ensure mother and child health safety. This paper presents a new approach to upgrade. The precision and efficacy of maternal health risk assessment by utilizing deep learning and meta-heuristic optimization algorithms within an Internet of Medical Things (IoMT) framework. IoMT enables the system to capture real-time health measurements from sensors and wearable devices to continuously monitor and acquire large amounts of data. After such data is received, a deep learning algorithm analyses it to ensure highly accurate identification of possible health hazards. FFO, as a meta-heuristic method, is used in order to optimize the model parameters and improve the feature selection with the aim of maximizing the performance of the deep learning model. To facilitate early interventions and personalized maternity care plans for pregnant mothers, the proposed framework aims to present timely and reliable risk predictions. Apart from providing improved maternal healthcare results, such an integrated solution demonstrates he capability of integrating modern computational techniques with IoMT toward more extensive utilization in healthcare sectors. Preliminary experimental results illustrating the feasibility of the proposed strategy open up promising avenues for adaptation into real-life healthcare systems. The refined CNN, optimized with the Firefly Optimization Algorithm, achieves the highest accuracy of 96.67%. An Android- based application is also designed for the implementation of the prediction model to estimate risk levels for maternal health considering a large number of parameters.

Keywords:

IoMT, Maternal Health Risk, Meta Heuristic Optimization, Classification, CNN.

ISBN: 978-93-92104-23-7

An Effective Resource Optimization and Scheduling in Cloud using Artificial Rabbit Optimization and Spider Monkey

Suma Sira Jacob*
Department of Artificial Intelligence and Machine Learning, Sri Krishna College of Technology, Coimbatore, Tamilnadu, India - 641042

Sneha R S
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, Tamilnadu, India - 641042

Arunkumar M
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, Tamilnadu, India - 641042

Sriram S
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, Tamilnadu, India - 641042

Abstract:

Web service composition allows developers to create and run applications by leveraging the capabilities of service-oriented computing. These applications provide developers opportunities for reusability and simple access to a wide range of services that fulfil both simple and complex needs in line with service-level agreement (SLA) criteria. Emerging as a major work area with an emphasis on choosing suitable online services that satisfy consumers SLA and provide the expected quality of service (QoS) is web service composition problems. The proposed hybrid approach reduces energy consumption, minimizes makespan, and fairly distributes task. Real-time applications are suitable for the algorithm as its versatility helps it to change to changing cloud environments. The cloud cost of ARO-SMA is 6.3 at 250 jobs. The proposed ARO-SMA approach lowers the virtual machine count required to run jobs when compared to IARO-PS and DH-Js. With 250 tasks, ARO-SMA uses around 257 VMs compared to IARO-PS (484 VMs) and DH-JS (867 VMs).For IARO-PS it is 187; for DH-JS it is 147; ARO-SMA uses 52 at 250 jobs. With its low power consumption, the ARO-SMA algorithm is ideal for green cloud systems because of its energy economy. This work presents a reasonable method for cloud computing systems' resource management.

Keywords:

Artificial Rabbit Optimization, Cloud Computing, CloudSim Simulation, Energy Efficiency, Makespan Minimization, Resource Optimization, Spider Monkey Algorithm, Task Scheduling.

A Federated Deep Learning Approach For Intrusion Monitoring In Agriculture Supply Chains

Sugitha A
Department of Computer Science and Engineering (AIML), Sri Krishna College of Technology, Coimbatore, 641042, India

Akshaiya Sakthivel
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, 641042, India

Sneha J
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, 641042, India

YakshiniS
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, 641042, India

Abstract:

The Interruption Discovery System (IDS) helps improve security in agriculture supply chains by identifying unusual patterns and potential risks in logistics and production data. As modern supply chains rely more on digital systems and IoT devices, detecting issues like fraud, contamination, or delivery delays becomes increasingly difficult. Traditional security methods often fail to catch new and advanced risks, so machine learning (ML) techniques are used for more effective anomaly detection. The system processes important supply chain data such as shipment volumes, supplier details, temperature records, and transaction logs using different ML models, including Decision Tree, SVM, KNN, Logistic Regression, and Random Forest. The model achieves 85% accuracy, meaning it correctly identifies risks and normal activities in most cases. The classification report shows that for normal operations (class 0), the system has 83% precision, 87% recall, and an F1-score of 0.85, while for identifying potential risks (class 1), it achieves 86% precision, 82% recall, and an F1-score of 0.84. These scores indicate a well-balanced model that can effectively detect irregularities while minimizing false alarms. The system is designed for easy integration with existing monitoring tools and uses Decision Tree and Convolutional Neural Networks (CNNs) with Federated Learning to improve its ability to recognize new threats over time. By providing real-time alerts and accurate risk detection, the IDS helps supply chain managers prevent disruptions, protect product quality, and ensure smooth agricultural operations.

Keywords:

Anomaly Detection, Convolutional Neural Networks, Decision Tree, Ensemble Learning, Logistic Regression, Machine Learning, Network Security, Random Forest.

 ISBN: 978-93-92104-23-7

Microbial Biodegradation of Organophosphate Chlorpyrifos by Soil Inhabiting Novel Bacterial Strain *Enterobacter Cloacae* Hkn11 and *Pseudomonas Aeruginosa*, to Design and Experiment Based on Optimization Study, Understanding the Metabolites and Phytotoxicity Study of the Metabolites in the *Raphanus Sativus Seedling*

Chandrawali Nath
Department of Life Science, CHRIST, Deemed To be University, Bengaluru 560029, India

Dr. Praveen N
Department of Life Science, CHRIST, Deemed To be University, Bengaluru 560029, India

Abstract:

Chlorpyrifos is one of the most widely used organophosphate pesticides. It is a highly toxic soil and water pollutant and has a very longer half-life of 120 days and due to which has found to incorporated inside the food chain of many organisms. It is considered to be a potent neurotoxin as it has the acetylcholinesterase activity. It has been seen degraded by many of the bacteria that are naturally occurring in the soil such as *Pseudomonas aeruginosa* and other *Enterobacter cloacae* HKN11 a novel strain characterized by 16Sr-RNA sequencing. Chlorpyrifos is seen to have hydrolysed into a product called as 3,5,6-Trichloropyridinol which is also a toxic metabolite. It was found that both the isolates form a consortium to degrade it into other non-toxic metabolites such as Tert-butyl alcohol and glycoholic acid. The bacterial consortium was studied for the efficient degradation by optimization of various parameters such as p H (5-8), temperature (25-37), different concentration of chlorpyrifos(100-1000mg/l) and different concentration of sucrose (0.25%-3%). It the most efficient degradation was found to be in the pH of 7, temperature of 30°C, concentration of sucrose to be 1% and the optimal concentration of chlorpyrifos to be 550ppm and it was novelty of the study. The degradation pathway was analysed using GC-MS. The further studies revealed that degraded products were not prominently phytotoxic by seed germination assay and biochemical assay such as Protein estimation using *Raphanus sativus* seeds for the experiment pertaining their sensitivity towards pesticides.

Cancer Diagnosis and Tumor Mapping Using Deep Learning

Nirmalrani V
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

K L Haresh Ragavender
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Hari Shankar S
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Viveha R
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

Medical imaging technology developments have raised the standard of both cancer detection and treatment preparation capabilities. The accurate identification of several cancer types within CT/MRI imaging data proves to be a complex medical diagnostic problem. The research adopts InceptionV3 and EfficientNet-B7 deep learning architectures to develop a new cancer classification system. Diagnosis performance and precision stand as the main targets for this research. Our research design includes acquiring a wide-ranging set of CT/MRI images which show different breast, kidney and brain cancer manifestations. The system utilizes modern convolutional neural networks (CNNs) to obtain relevant information from medical images. The medical field requires this research because the advanced cancer classification tool enables better decisions and tailored treatment planning for breast and kidney and brain cancer patients. The proposed method demonstrates potential to enhance both patient care and progress within medical imaging exploration for cancer identification.

Keywords:

Breast cancer, Kidney cancer, Brain cancer, Convolutional neural networks (CNNs), Medical imaging, Cancer classification, Deep learning

ISBN: 978-93-92104-23-7

Intelligent Music Recommendation System with AI-Powered Mood Detection

Ch. N. V. Surya Chander
Students, Department of Information Technology, S.R.K.R. Engineering College, Bhimavaram, Andhra Pradesh, India

B. V. S. Pramod Kumar
Students, Department of Information Technology, S.R.K.R. Engineering College, Bhimavaram, Andhra Pradesh, India

D. Sankar Narayana
Students, Department of Information Technology, S.R.K.R. Engineering College, Bhimavaram, Andhra Pradesh, India

G. R. S. Aditya,
Students, Department of Information Technology, S.R.K.R. Engineering College, Bhimavaram, Andhra Pradesh, India

Dr. D. Ratna Giri
Associate Professor, Department of Information Technology, S.R.K.R. Engineering College, Bhimavaram, Andhra Pradesh, India

Abstract:

Music can be a huge force in our lives. It can manipulate our moods or create ambience for certain experiences. Fast music motivates us through a tiring workout, and gentle notes bring down stress. Knowingly that there exists a correlation between music and moods, researchers have designed many music recommendation systems. Most of these systems relied on the listening history or genre while possibly not matching the emotional state of a user at that moment. This paper proposes a new music recommendation system that integrates modern techniques of facial emotion detection. The AI tool known as 'Gemini-pro-vision' - famed for its facial emotion recognition- is used in the system to recommend songs that suits the user's current mood. Say you are smiling; the system will analyze your facial expression and create an upbeat playlist for you - in order to further enhance your good mood. For those who are down, it will recommend peaceful and calming music. Further, the system also considers the user's language preference, and therefore the recommendations are not limited to emotional state but also cover cultural background and musical tastes. Details of the system will follow in this research paper. Future Work will then be discussed in light of trying to create a bridge between music and our emotional well-being.

Keywords:

AI-Powered Systems, Facial Emotion Recognition, Music Recommendation Systems, Personalized Playlists

Multi-Model Deep Learning for Retinal Image-Based Detection of Hypertension and Cardiac Risk

Shanmuga Raju S
Department of Computer Science and Engineering (IOT), Sri Krishna College of Technology, Coimbatore, 641042, India

Harini S
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, 641042, India

Vinothini R
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, 641042, India

Girish S
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, 641042, India

Abstract:

Hypertension and heart attacks are major chance variables for cardiovascular illness, altogether affecting the structure and work of the microvasculature. Retinal vasculature anomalies can serve as markers of microvascular harm caused by these conditions, and such changes can be identified through fundus photography. This project leverages profound learning and AI to distinguish unpretentious, subclinical highlights past the discovery limit of human eyewitnesses, analyzing the impacts of hypertension and heart attacks on retinal microvasculature morphology. Retinal pictures were sourced from a information science store, counting cases analyzed with hypertension and heart attacks. To improve the center on vascular structures, vessel division procedures were connected to evacuate non-relevant visual data, protecting as it were the morphological subtle elements of blood vessels. Utilizing these portioned pictures, a convolutional neural organize (CNN) demonstrate was prepared to classify conditions and produce profound learning-based warm maps for the categories “hypertension” and “heart attack.” The demonstrate recognized key prescient highlights, with ruddy sketchy locales fundamentally showing up around blood vessel and venous bifurcations for hypertension. A comparative design was watched for heart assault cases, recommending covering vascular characteristics. These discoveries highlight the potential of AI-driven examination in recognizing microvascular changes related with cardiovascular conditions.

Keywords:

Hypertension, Heart Attack, Retinal Image, Cardiovascular Disease, Deep Learning.

 ISBN: 978-93-92104-23-7

Deep Learning for Unmanned Aerial Vehicle-Based Object Detection and Tracking

Gundla Preethika
Student, CET Department, Chaitanya Bharathi Institute of Technology (A), Hyderabad, Telangana India

Thirandas Priyanka
Student, CET Department, Chaitanya Bharathi Institute of Technology (A), Hyderabad, Telangana India

Mrs. Ch. Sri Lakshmi
Assistant Professor, CET Department, Chaitanya Bharathi Institute of Technology (A), Hyderabad, Telangana India

Abstract:

Detecting and tracking objects in UAV-captured images is challenging due to factors such as small object size, blurry edges, and low visibility conditions. This paper proposes SF-SSD (Small Feature Single-Shot Detector), a novel object detection model that incorporates a feature fusion module to enhance the detection of small objects and a spatial cognition algorithm to refine detection accuracy. Additionally, we address the challenges of thermal image detection in low visibility conditions such as night-time and fog, where traditional methods struggle due to low resolution and unclear visual features. By integrating deep learning models like YOLO, utilizing data augmentation, and incorporating multi-modal sensor data, the proposed approach significantly improves detection accuracy and speed. The experimental results demonstrate superior performance over existing methods, making this approach highly effective for UAV-based surveillance, monitoring, and security applications.

SSLA-Based Lane and Traffic Sign Detection for Autonomous cars

Mr. Y. Mahendra Reddy
Assistant Professor, Department of CSE(AI&ML), CMR College, Hyderabad, Telangana, India

M. Chakradhar
Student, Department of AIML, CMRCET, Hyderabad, Telangana, India

A. Pratheek
Student, Department of AIML, CMRCET, Hyderabad, Telangana, India

B. Anil Kumar
Student, Department of AIML, CMRCET, Hyderabad, Telangana, India

Abstract:

Self-driving cars depend heavily on sophisticated perception systems to be able to drive safely and efficiently. Detection of traffic signs and lane markings is regarded as one of the important parts of autonomous driving.

Conventional techniques employ hand-crafted features and traditional ML frameworks, which tend to have poor real-time performance and dealing with intricate environmental conditions. Within this paper, We present the Shape Supervised Learning Algorithm (SSLA), a new method that improves Street sign and lane identification accuracy Using deep learning approaches. The Hough Line Transformation is employed for lane detection, and OpenCV and Supervised models are applied for traffic sign detection. The given approach is examined with real-world datasets, validating enhanced performance along the lines of detection accuracy, computational efficiency, and resilience with varying lighting conditions and weather situations. Through amalgamation of novel deep learning architecture, real-time image processing operations, and resolute feature extractions, proposed SSLA scheme provides a profoundly reliable, computationally efficient, and scalable methodology for traffic sign and lane detections, opening possibilities for safer, more autonomous motoring experiences.

Keywords:

Autonomous Vehicles, Traffic Sign Detection, Lane Finding, Machine Seeking, Deep Seeking, Hough Line Conversion, OpenCV, SSLA.

Medical Chatbot: An Enhanced Application for Users with Different Symptoms

Bhavna Sri M B.E. CSE
Sathyabama Institute of Science and Technology, Chennai, India

Boyana Venkata Pardha Saradhi B.E. CSE
Sathyabama Institute of Science and Technology, Chennai, India

Dr. M. Sreekrishna M.E., Ph.D.,
Sathyabama Institute of Science and Technology, Chennai, India

Dr. Gopika G.S. M.E., Ph.D.,
Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

The growing complexity of diseases and limited access to healthcare professionals necessitate innovative solutions in the medical field. A medical chatbot provides an accessible, cost-effective, and efficient way to assist users in understanding their health concerns. This proposed system leverages machine learning to predict potential diseases based on user symptoms, providing results in both text and voice formats for greater accessibility. The chatbot takes input symptoms from users, refines the information through interactive questioning, and uses TF-IDF to extract features relevant to disease prediction. The predicted results are presented in multiple languages, including English and Telugu, catering to a diverse user base. Integrating voice-based interactions ensures inclusivity for users who may face challenges with text-based systems. Advanced machine learning algorithms are employed to enhance predictive accuracy, outperforming traditional approaches in disease identification. The system is designed as a web application, making it universally accessible, with future plans to extend its functionality to Android platforms. This transition will ensure greater usability and portability while maintaining the same algorithm and data set. This medical chatbot offers a significant step toward improving healthcare accessibility, providing preliminary diagnoses in real-time, and reducing dependency on limited healthcare resources. By evolving with user needs and integrating advanced natural language processing techniques, the system promises to deliver enhanced interactivity and accuracy in healthcare support.

Keywords:

Medical chatbot, machine learning, disease prediction, TF-IDF, multilingual support, voice-based interaction.

Modelling and Simulation of Hydrogen Integration in Renewable Energy Systems using System Dynamics

Deepak D Adiga
Bachelor's degree in Mechanical Engineering from The National Institute of Engineering, Mysuru

Satish Shenoy B
Manipal Academy of Higher Education, Manipal - 576104, Karnataka, India

Pramod B Salunkhe
Manipal Academy of Higher Education, Manipal - 576104, Karnataka, India

Suresh Sampath
Cranfield University, Bedfordshire, United Kingdom

Abstract:

The global drive for decarbonization has accelerated the transition to renewable energy sources such as solar, wind, and hydropower. However, the intermittent nature of these renewables creates challenges in ensuring energy reliability and grid stability. To overcome these obstacles and meet decarbonization goals, hydrogen has emerged as a promising energy carrier. Hydrogen, a clean, storable, and versatile fuel, can be produced using surplus renewable energy through electrolysis and stored for later use, helping to balance energy supply and demand. Integrating hydrogen into renewable energy systems is a key pathway to achieving net-zero emissions, but understanding its feasibility and dynamics at scale requires advanced modelling techniques. System dynamics (SD) is a powerful tool for analyzing the complex relationships within hydrogen-renewable energy systems. SD provides a comprehensive view of the energy ecosystem, accounting for feedback loops, delays, and non-linear interactions that influence hydrogen integration. Research on system dynamics modelling of hydrogen integration focuses on optimizing renewable energy use, economic impacts, and strategies for infrastructure development. Early results suggest hydrogen production from surplus renewable energy helps reduce curtailment, though high production costs and significant investments in infrastructure remain challenges.

ISBN: 978-93-92104-23-7

Ensemble Based Boosting Family Phishing Detection using Flask Web Application

Suma Sira Jacob
Department of Artificial Intelligence and Machine Learning, Sri Krishna College of Technology, Coimbatore, Tamilnadu, India - 641042

Dinesh R
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, Tamilnadu, India - 641042

Saravanan N
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, Tamilnadu, India - 641042

Sudhan R
Department of Artificial Intelligence and Data Science, Sri Krishna College of Technology, Coimbatore, Tamilnadu, India - 641042

Abstract:

Phishing assaults pose an excessive danger to online protection, exploiting customers consider to steal sensitive facts. Existing methods, which include rule-primarily based systems and traditional algorithms, struggle to hit upon evolving phishing techniques, regularly resulting in high fake positives and false negatives. To address those barriers, this project proposes a sturdy system of getting to know models leveraging XGBoost, LightGBM, and CatBoost, blended with an ensemble studying approach. The gadget analyses diverse URL capabilities, including subdomain degrees, URL periods, and suspicious factors, to categorise websites as legitimate or phishing. Comprehensive modules for statistics preprocessing, feature extraction, and version schooling make certain a green and adaptable detection framework. Advanced evaluation metrics, together with accuracy, precision, recall, and F1-rating, display significant upgrades over conventional strategies. The ensemble model achieves a 98% accuracy price, emphasizing its effectiveness in lowering fake positives and improving detection abilities. This study provides a scalable and dependable way to mitigate phishing threats effectively.

Keywords:

Phishing Detection, Machine Learning, XGBoost, LightGBM, CatBoost, Ensemble Learning, Accuracy, Cybersecurity, Feature Extraction, Classification Model.

Pain Recognition with Physiological Signals using Multi-Level Context Information

Y Ambica
Assistant Professor, Department of CSE(AI&ML), CMR College, Hyderabad, Telangana, India

Rudravaram Shiva
Student, Department of AIML, CMRCET, Hyderabad, Telangana, India

Shaik Fareed
Student, Department of AIML, CMRCET, Hyderabad, Telangana, India

Gainaboina Madhu
Student, Department of AIML, CMRCET, Hyderabad, Telangana, India

Abstract:

Automatic pain detection it plays an essential part in healthcare. Traditional methods rely on data obtained from physiological signals using medical expertise, achieving good performance but requiring manual effort. This paper introduces a deep learning-based approach that handles both feature extraction and classification without needing expert input.We propose a multi-level feature extraction strategy to distinguish between pain and no-pain states. Our experiments, conducted on the initial segment of the BioVid Heat Pain dataset .and the Emopain 2021 dataset, demonstrate that multi-level context information improves accuracy compared to single-level features. In reference to the BioVid Heat Pain database, we evaluate different pain levels (Pain 0 vs. Pain 1, Pain 0 vs. Pain 2, etc.). In the Pain 0 vs. Pain 4 classification, our model achieves an average accuracy of 84.8% (±13.3%) for 87 subjects and 87.8% (±11.4%) for 67 subjects using a Leave- One-Subject-Out cross-validation method.Our proposed approach uses deep learning to enhance pain recognition beyond conventional techniques. The original model integrates CNN and BI-LSTM for feature selection. As an improvement, we introduce a three-level feature optimization method by adding BI-GRU. Here, CNN extracts features, BI-LSTM refines them, and BI- GRU further optimizes them, leading to increased accuracy.

Keywords:

Pain Recognition, Physiological Signals,Multi-Level Context Information, Convolutional Neural Networks (CNN), Bidirectional LSTM (BiLSTM), Bidirectional GRU (BiGRU).

ISBN: 978-93-92104-23-7

Some Properties of Ricci Solitons in Lp-Kenmotsu Manifolds

Bidyabati Thangjam
Department of Mathematics, Mizoram University, Tanhril, Aizawl-796004, India

M. S. Devi*
Department of Mathematics, Mizoram University, Tanhril, Aizawl-796004, India

Abstract:

Examining Ricci solitons in Lorentzian para-Kenmotsu manifolds is the goal of this paper. We have established that a symmetric parallel second-order covariant tensor in a Lorentzian para-Kenmotsu manifold is a constant multiple of the metric tensor. We have shown that if L_V g+2S is parallel to the Levi-Civita connection associated with g, where V is a given vector field, then (g,V,λ) is a Ricci soliton. We have observed that a Ricci solitons in a W_2-semi-symmetric Lorentzian para-Kenmotsu manifold is shrinking. Furthermore, certain curvature properties of Lorentzian para-Kenmotsu manifolds admitting Ricci solitons are studied. Finally, we have provided an example of a 3-dimensional Lorentzian para-Kenmotsu manifold.

Keywords:

Lorentzian Para-Kenmotsu manifolds, Ricci solitons, Symmetric second order tensors.

Real-Time Road Damage Detection and Geospatial Mapping using Yolov8

Asavari S Bhelawe
Student, Fr. C. Rodrigues Institute of Technology, Vashi, India

Aman Singh
Student, Fr. C. Rodrigues Institute of Technology, Vashi, India

Vedika Pagar
Student, Fr. C. Rodrigues Institute of Technology, Vashi, India

Archana Shirke
Professor, Fr. C. Rodrigues Institute of Technology, Vashi, India

Shashikant Dugad
Professor, Indian Institute of Science Education and Research (IISER), Mohali, India

Abstract:

Modern technology has revolutionized the monitoring of urban roads using various video sources such as smartphones, car cameras, and surveillance systems. Focusing on roads in India and Japan, this study presents a scalable deep learning-based system for the real-time identification, categorization, and mapping of road damage. The solution addresses challenges such as inconsistent image quality, diverse climatic conditions, and varying regional infrastructures by utilizing the YOLO object detection algorithm, trained on annotated datasets from the Japan Road Association and enhanced by data augmentation. A user interface is developed, featuring a main page with live real-time detection, a road damage map, and report generation capabilities. These reports are provided to authorities for efficient infrastructure management, optimizing resource allocation, and prioritizing road repairs. This system significantly contributes to improving road maintenance processes, benefiting both nations by streamlining road monitoring and decision-making. In summary, your system could make road condition improvement processes 70-80% more efficient and 50-95% faster in India compared to traditional road damage detection and recovery methods.

Keywords:

Deep Learning, Road Damage Detection, Object Detection, Geospatial Visualization, Urban Street Analysis, AI-Based Maintenance Planning, Convolutional Neural Networks (CNN), Smartphone Image Processing, Urban Street Analysis.

 ISBN: 978-93-92104-23-7

Intelligent Loan Approval: Enhancing Fairness and Reliability with Machine Learning

Ms. Bandari Gayathri
Department Computer Science and Engineering CMR College of Engineering and Technology, Hyderabad, Telangana

Patrayadi Ravi
Department Computer Science and Engineering CMR College of Engineering and Technology, Hyderabad, Telangana

Pathlavath Sunitha
Department Computer Science and Engineering CMR College of Engineering and Technology, Hyderabad, Telangana

Jyothi Balaji
Department Computer Science and Engineering CMR College of Engineering and Technology, Hyderabad, Telangana

Abstract:

As technology continues to evolve, financial institutions are experiencing a rise in loan applications, making it increasingly difficult to assess applicants fairly and minimize default risks. Traditional loan approval processes can be slow, inefficient, and prone to errors, often leading to financial losses for banks. To address these challenges, this research explores the use of machine learning (ML) models to improve the accuracy and efficiency of loan approval decisions. Various algorithms, including Logistic Regression, Random Forest, Support Vector Machine, Decision Tree, Naïve Bayes, and K-Nearest Neighbors, were analyzed to determine their effectiveness in predicting loan approvals. Additionally, using cross-validation methods improved the reliability of the models. By leveraging ML-driven prediction systems, banks can streamline their approval processes, reduce waiting times for applicants, and minimize financial risks. This study highlights the growing potential of data-driven decision-making in transforming the banking sector, making loan approvals faster, fairer, and more reliable for both financial institutions and borrowers.

Keywords:

Computational Modeling, Lending Risk Assessment, Financial Forecasting, Smart Decision Systems, Creditworthiness Evaluation, Predictive Algorithms, Banking Innovation, Loan Processing Optimization.

ALAAS AI powered Legal Assistance and Advisory System

Akhil C J
Btech UG

Abstract:

We put forward an autonomous system (namely, ALAAS) to integrate legal proceedings in more efficient manner. The system aims to provide the officials reduction of task by summarizing the contents of the legal complaints and matching with penal code of the country. The system uses different techniques of natural language processing (NLP) for summarizing and matching the contents. A virtual assistant is also provided in the system for addressing user queries and providing guidance. Image processing function is added for extending the system to a higher level of analysing and visualization. The system will help the authorities to make decisions quickly and improve the time duration taken for analysing the complaints. The efficiency and accuracy can be increased by integrating different modules into the system to streamline the legal procedure.

ISBN: 978-93-92104-23-7

Topic – A Comparative Analysis on Diabetes Prediction

Heeral Sahu
Student

Abstract:

Diabetes is a chronic illness that poses a major threat to world health. The International Diabetes Organization estimates that 382 million people worldwide have diabetes. Diabetes Federation, and it is anticipated that number would increase to 592 million by 2035. supplementary symptoms. Nowadays, diabetes is the primary cause of stroke, blindness, renal failure, amputations, and heart disease. When we eat, our bodies turn food into glucose, which causes the pancreas to release insulin. This makes it easier for cells to absorb glucose for energy.However, this procedure also affects those with diabetes.The two most common,The two primary types of diabetes are type 1 and type 2, but pregnancy also brings about additional alterations, including as diabetes throughout pregnancy.Learn how to develop a system that improves the accuracy of early diabetes prediction. Many methods are used, including decision trees, logistic regression, random forests, support vector machines, and k-nearest neighbors. The accuracy of each algorithm is evaluated, and the best-performing approach is selected to be the standard diabetes test.

Wildlife Tracking and Monitoring Using IOT

Sarthak Jaiswal
Department of Electronics and Telecommunication, Sardar Patel Institute of Technology, Mumbai, India

Nilesh Admane
Department of Electronics and Telecommunication, Sardar Patel Institute of Technology, Mumbai, India

Hamza Inamdar
Department of Electronics and Telecommunication, Sardar Patel Institute of Technology, Mumbai, India

Najib Ghatte
Professor, B.E. in Electronics, Mumbai University, M.Tech. in Electronics, University of Mumbai

Abstract:

This project presents an IoT-driven system designed for wildlife tracking and health monitoring to support biodiversity conservation. The system comprises two main components: a sensor-based module deployed in the field to capture critical environmental and physiological parameters, such as temperature, humidity, and animal movement, and a web-based platform offering real-time data visualization and analytics. By leveraging IoT technology, the system enables seamless data transmission from remote locations to a centralized cloud server, facilitating real-time access for conservationists, researchers, and veterinary professionals.

The proposed solution improves the efficiency of wildlife monitoring by automating data collection, minimizing human intervention, and reducing disturbances to animal habitats. Additionally, the integration of machine learning models allows for predictive insights into potential health risks, enabling timely interventions and proactive conservation measures. This system fosters collaboration among organizations by providing accessible, high-quality data and automated analysis tools.

Keywords:

IoT, Wildlife Tracking, Health Monitoring, Biodiversity Conservation, Real-time Data, Environmental Sensors, Predictive Analytics.

ISBN: 978-93-92104-23-7

Tech Tutor – Personalized AI Learning Assistance for Tech Enthusiasts

P. Sruthi
Professor, Department of AI&ML, CMR College of Engineering & Technology, Medchal, Telangana, India

K. Shashankh Vasudev
UG Student, Department of AI&ML, CMR College of Engineering & Technology, Medchal, Telangana, India

Priyal Nagda
UG Student, Department of AI&ML, CMR College of Engineering & Technology, Medchal, Telangana, India

P. Sree Lakshmi
UG Student, Department of AI&ML, CMR College of Engineering & Technology, Medchal, Telangana, India

Abstract:

Automated question-answer (QA) generation and evaluation play a critical role in modern educational technology, enabling efficient assessment and personalized learning. This paper presents an AI-driven QA Generation and Evaluation System that leverages advanced Natural Language Processing (NLP) and machine learning techniques to automate question creation and response assessment. The system utilizes Transformer-based models, such as BERT, GPT, and T5, for contextual understanding and question generation. Various question formats, including multiple-choice, fill-in-the-blanks, and open-ended questions, are generated using sequence-to-sequence models and syntactic dependency parsing. For answer evaluation, the system employs similarity metrics such as cosine similarity, BLEU, and ROUGE scores, along with deep learning models like RoBERTa and BiDAF for semantic comparison. A weighted scoring mechanism integrates statistical methods, including Term Frequency-Inverse Document Frequency (TF-IDF) and word embeddings, ensuring accurate and context-aware assessment. Furthermore, reinforcement learning techniques are incorporated to optimize the grading process, refining evaluation accuracy based on historical performance data.

Experimental results demonstrate the system's effectiveness in generating diverse and pedagogically relevant questions while providing precise and constructive feedback. The proposed system enhances scalability and adaptability in educational and corporate training environments, promoting more efficient, data-driven learning experiences.

Keywords:

Question Generation, Answer Evaluation, NLP, Transformer Models, Machine Learning, Automated Assessment, Educational Technology.

Design Optimization of Electric Motors for Harmonic Loss Reduction for Efficiency Enhancement Under Wide DC Voltage Range

Eti A T Roshini K Sree
Department of EEE, National institute of technology,Warangal, Warangal, India

Debasmita panda
Assistant professor, Department of EEE, National institute of technology,Warangal, Warangal, India

K. seenu
Sr. Advanced Electrical Engineer, Honeywell Technology Solutions, Banglore, India

Abstract:

Harmonic losses create a significant challenge to the performance and efficiency of electric motors especially when operating under a wide dc voltage range (250v to 900v). Various losses like copper losses, torque ripple and thermal stress are the result of those harmonics, which reduces the overall efficiency and reliability of the motor. This paper focuses on the modifications in critical design parameters of a motor which includes winding configurations, slot/pole ratios, core materials, rotor geometry, high quality magnetic materials etc., to reduce the effect of harmonics, improve torque smoothness, enhance thermal management, performance and reliability of motors mainly under high dc supply voltage. Simulation results validate the effectiveness of these design changes, a considerable reduction in harmonic losses and a corresponding improvement in motor efficiency across the specified voltage range is observed. By focusing mainly on design optimization, this paper provides a thorough approach of developing high-performance motors that operate efficiently and reliably under wide range of DC supply conditions. The study is particularly relevant for applications in drone motors, electric vehicles and industrial drives, where high efficiency and robust operation are crucial.

Keywords:

Harmonic losses, Electric motors, Motor efficiency, Slot/pole ratios, Design optimization.

ISBN: 978-93-92104-23-7

FactFuse: A YouTube Transcript Summarizer

Pushparani M K
Department of Computer Science and Design, Alva's Institute of Engineering and Technology, Affiliated to Visvesvaraya Technological University, Belagavi. Approved by AICTE, New Delhi and Recognised by Govt. of Karnataka, Moodabidiri, India - 574225

Adarsh Bhavimane
Department of Computer Science and Design, Alva's Institute of Engineering and Technology, Affiliated to Visvesvaraya Technological University, Belagavi. Approved by AICTE, New Delhi and Recognised by Govt. of Karnataka, Moodabidiri, India - 574225

Ghrutha Varsha K G
Department of Computer Science and Design, Alva's Institute of Engineering and Technology, Affiliated to Visvesvaraya Technological University, Belagavi. Approved by AICTE, New Delhi and Recognised by Govt. of Karnataka, Moodabidiri, India - 574225

Rachana
Department of Computer Science and Design, Alva's Institute of Engineering and Technology, Affiliated to Visvesvaraya Technological University, Belagavi. Approved by AICTE, New Delhi and Recognised by Govt. of Karnataka, Moodabidiri, India - 574225

Rakshitha
Department of Computer Science and Design, Alva's Institute of Engineering and Technology, Affiliated to Visvesvaraya Technological University, Belagavi. Approved by AICTE, New Delhi and Recognised by Govt. of Karnataka, Moodabidiri, India - 574225

Abstract:

The necessity for effective summary and fact- checking tools has increased due to the quick expansion of online content. It might be difficult to swiftly extract important information from lengthy video transcripts using traditional approaches because they are frequently laborious and time-consuming. This work describes the creation of an intelligent system that uses machine learning models and natural language processing (NLP) to automatically summarize and verify YouTube video transcripts. The technology creates abstractive and extractive summaries, converts non-English text into English, and extracts transcripts from YouTube videos. By providing a confidence score based on AI-driven fact-checking models like BERT, T5, and BART, it further confirms the accuracy of the condensed text. Custom text can also be uploaded by users for comparable processing. The summarized and fact-checked data is presented through a user-friendly interface, enabling researchers, students, and content creators to quickly analyse and verify video content. By automating these processes, the system enhances information accessibility, mitigates misinformation, and improves content reliability. Future advancements may include enhanced multilingual support and improved accuracy in summarization and fact verification.

Keywords:

YouTube transcript summarization, NLP, text summarization, extractive summary, abstractive summary, fact- checking, AI, content verification.

22 - 23 March 2025 | Chennai, India

Hybrid Learning-Enabled Intelligent Multivector Malware Detection Mechanism for Improved Android Application Security

Harshitha Mayya
Department of Computer Networking and Engineering, Manipal Institute of Technology, MAHE, Manipal, India

Shravya Kotian
Department of Computer Networking and Engineering, Manipal Institute of Technology, MAHE, Manipal, India

Akshay KC
Department of Computer Networking and Engineering, Manipal Institute of Technology, MAHE, Manipal, India

Abstract:

The widespread adoption of Android devices has introduced significant security challenges due to the increasing prevalence of sophisticated malware threats. Traditional security measures, including static and dynamic analysis, often fail to detect evolving attack strategies. To address this issue, we propose the Hybrid LearningEnabled Intelligent Multivector Malware Detection Mechanism, which integrates multiple detection techniques, including machine learning and adaptive analysis, to enhance Android application security. This paper presents an indepth review of the mechanism, exploring its core principles, real-world applications, and effectiveness in malware detection. Additionally, we discuss open research challenges and potential future enhancements to improve the robustness, scalability, and reliability of Android security solutions.

Keywords:

Android Malware, Hybrid Analysis, Machine Learning, Adaptive Detection, Multivector Approach.

Detecting Deforestation from Satellite Images

Dr. S.Kirubakaran
Professor, Department of AI&ML, CMRCET, Hyderabad, Telangana, India

S. Rishi
Student, Department of AI&ML, CMRCET, Hyderabad, Telangana, India

A. Shivas
Student, Department of AI&ML, CMRCET, Hyderabad, Telangana, India

V.Yogesh
Student, Department of AI&ML, CMRCET, Hyderabad, Telangana, India

Abstract:

Satellite imagery is essential for numerous applications, including disaster management, security operations, and environmental monitoring. Traditional methods rely heavily on manual detection of objects and structures over vast areas, making the process labor-intensive and time-consuming. To enhance efficiency, automation is necessary; however, conventional object detection and classification techniques lack the required precision and reliability. Deep learning, particularly convolutional neural networks (CNNs), has shown significant potential in image analysis tasks. This paper presents an automated object and facility classification system for high-resolution, multi-spectral satellite imagery, leveraging deep learning techniques. Trained on the IARPA Functional Map of the World (fMoW) dataset, the system classifies objects into 63 categories using an ensemble of CNN models integrated with satellite metadata. Developed in Python with TensorFlow and Keras, the model runs on a Linux-based system utilizing an NVIDIA Titan X GPU. At the time of writing, our approach secured second place in the fMoW TopCoder competition, achieving an overall accuracy of 83%, an F1 score of 0.797, and over 95% accuracy in 15 specific categories.

Keywords:

Detecting deforestation ,CNN, Datasets. RESNET.

Express Lingo : Ai Video Voice Translation Platform

Mr. Ravindranath Gatte
Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, Andhra Pradesh

Doki Deekshitha
Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, Andhra Pradesh

Indra Reddy Aavula
Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, Andhra Pradesh

Chokka Gnapika Sri
Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, Andhra Pradesh

Harithus Avgs
Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, Andhra Pradesh

Abstract:

In an increasingly globalized world, the ability to communicate seamlessly across language barriers is paramount. This interdisciplinary project proposes the development of a real-time voice translation system leveraging advanced machine learning (ML) and natural language processing (NLP) techniques. Our innovative technological solution integrates automatic speech recognition (ASR), NLP, neural machine translation (NMT), and text-to-speech (TTS) technologies into a unified platform, offering context-aware and instantaneous translations. This system is designed for real-time performance with low latency, making it ideal for applications in industries such as tourism, international business, healthcare, and customer service, where immediate and accurate translation is essential. Unlike existing solutions, our system features adaptive learning mechanisms for continuous improvement and customization, natural-sounding voice outputs, and high scalability. The uniqueness of our solution lies in its seamless integration of advanced technologies, enhanced contextual understanding, and real-time efficiency, setting it apart from competitors. Given its innovative nature, the project is patentable and holds significant commercial potential, either through technology transfer to established companies or by launching a new enterprise/startup to deliver these services to a broad market.

Real-Time Detection of Humans in Complex and Adverse Environments

Benedict John Alston*
Department of Electronics and Communications, St. Joseph's College of Engineering, OMR, Semmanchery, Chennai-600119, India

Dr.Shirley Selvan
Department of Electronics and Communications, St. Joseph's College of Engineering, OMR, Semmanchery, Chennai-600119, India

Abstract:

This project aims to enhance the detection capability of the conventional CCTV system in adverse conditions, such as those caused by tear gas and fog, where normal surveillance methods fail. Applying sophisticated image processing techniques and machine learning algorithms, such as YOLOv8, enhances human presence detection in low-visibility environments. It will be added to the existing CCTV infrastructures, thus making it a cost-effective alternative to special equipment like thermal cameras and LiDAR. This system allows for real-time, accurate human detection even in obscured visibility conditions, which is very beneficial to law enforcement, emergency response, and public safety. The approach focused on efficiency in data sourcing, model development, and system integration to deliver high performance with minimal latency and cost.

 ISBN: 978-93-92104-23-7

Patient Management System using Next.js

Bhavna Sharma
Department of Computer Science and Engineering, Galgotias University, Greater Noida, Uttar Pradesh, India

Ayushman Singh Rajawat
Department of Computer Science and Engineering, Galgotias University, Greater Noida, Uttar Pradesh, India

Dr. Ajay Shanker Singh
Department of Computer Science and Engineering, Galgotias University, Greater Noida, Uttar Pradesh, India

Abstract:

This paper proposes the development of a patient management system (PMS) using modern web technologies such as Next.js, TypeScript, Twilio, and TailwindCSS. The system aims to streamline healthcare by providing an efficient interface to manage patient records, schedule appointments, and enable doctor-patient communication Twilio has been integrated to handle SMS notifications use, and build the interface with TailwindCSS for a more modern design. The program uses TypeScript to ensure type safety and improve development performance. This paper discusses the design, implementation, and benefits of using this tech stack for healthcare applications. The results of this work are important because they provide an efficient, reliable, and user-friendly way to manage patient data, ultimately contributing to better health care and patients' satisfaction.

Keywords:

Patient Management System, Next.js, TypeScript, Twilio, TailwindCSS, Web Application.

Quantifying and Enhancing Diversity in LLM-Generated Synthetic Data

Dr. G. V. Kale
Department of Computer Engineering, Pune Institute of Computer Technology, Maharashtra

Aditya Shah
Department of Computer Engineering, Pune Institute of Computer Technology, Maharashtra

Atharva Date
Department of Computer Engineering, Pune Institute of Computer Technology, Maharashtra

Maheshwar Bhosale
Department of Computer Engineering, Pune Institute of Computer Technology, Maharashtra

Samarth Mali
Department of Computer Engineering, Pune Institute of Computer Technology, Maharashtra

Abstract:

The use of Large Language Models (LLMs) for synthetic data generation has gained significant traction, but challenges related to data diversity, variability, and relevance remain critical. This survey explores the limitations of LLM- generated synthetic data, with a primary focus on measuring and improving diversity. We formalize key metrics to quantify diversity and variability, enabling rigorous evaluation. Addition- ally, we examine techniques to enhance LLM outputs, including prompt tuning, few-shot learning, temperature adjustments, and agentic approaches like chain-of-thought reasoning. Our work provides a structured analysis of these methods, highlighting best practices for generating high-quality synthetic data.

Keywords:

Synthetic Data Generation, Few-Shot Prompt- ing, Diversity, Homogenity, Agentic Approaches.

Leveraging Deep Learning for Ayurvedic Leaf Recognition and Utilization

Ms. CH. AANUSHA
Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, Andhra Pradesh

Adabala Devi
Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, Andhra Pradesh

Sk Musthak Ahmed
Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, Andhra Pradesh

Marrapu Narendra
Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, Andhra Pradesh

Ketavath Dileswar
Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, Andhra Pradesh

Abstract:

In addition to their many medicinal uses, herbal plants also have the added benefit of releasing oxygen into the air at no cost to the environment.There are a lot of medicinal plants that are also helpful for future generations since they contain active ingredients. A lack of understanding of medicinal plants, together with issues like climate change, population increase, occupational secrecy, and inadequate government funding for study, are causing the extinction of many important plant species. Current algorithms sometimes struggle to accurately identify herbal leaves throughout the year because of the latency of dimensions parameters like length and breadth. Therefore, to enhance the detection rate for herbal leaf identification, the suggested approach zeroes in on the incomplete dataset issues. In this research, we provide a deep learning method that makes use of a CNN trained on the VGG-16 and VGG-19 models. The picture segmentation procedure is yielding excellent results with the addition of dimension parameters in the datasets.The process of using a machine learning classifier in conjunction with ex-orgate operations to confirm the acquired result is known as deep knowledge-based identification.The detection rate of herbal leaves is being improved by this twostage authentication (TSA) technique. For picture segmentation, we used ResNet as well. As a result of combining image segmentation with machine learning, the proposed architecture is becoming more robust.Also, the detection accuracy is being improved by using intelligent selection of images segmentation techniques to segment the leaf from the image. Deep Learning, VGG 19, Herbal Plant Identification.

Image Based Virtual Try-On System

Keerthana K
Department of CSE , Vimal Jyothi Engineering College, Kannur, India

Adharv S Kumar
Department of CSE , Vimal Jyothi Engineering College, Kannur, India

Nived K Surendran
Department of CSE , Vimal Jyothi Engineering College, Kannur, India

Hridwetha Chithran
Department of CSE , Vimal Jyothi Engineering College, Kannur, India

Divya B
Department of CSE , Vimal Jyothi Engineering College, Kannur, India

Abstract:

This paper presents a system that uses machine learning to digitally render garment appearance on individuals, allowing users to see how clothing fits without physical interaction. This empowers the users to visualize how a particular garment looks without trying that physically. By leveraging automated visual analysis and digital image manipulation, the system realistically simulates how the particular garment looks on different body sizes and shapes with accuracy and without changing the integrity of the garment. This system can redefine online shopping by providing a highly immersive and tailored shopping experience. It can make a revolutionary change in e-commerce.

Keywords:

Image synthesis, image processing, virtual clothing.

 ISBN: 978-93-92104-23-7

Scoutmorph, an Advanced Multi-Modal Robot Designed for Search Operations in Challenging Environments

Joel Joseph
student, Christ Deemed to be University, Banglore

Abstract:

ScoutMorph is a versatile robot designed to excel in search operations by combining crawling, flying, and transformation capabilities to navigate complex terrains while avoiding obstacles. Its ability to adapt extends to providing live tracking and video footage, supporting situational awareness, and enabling future autonomous path-planning enhancements. This innovative system is a powerful tool for navigating disaster zones, confined spaces, or challenging terrains, offering the flexibility needed for effective search operations. Taking inspiration from nature's adaptability, ScoutMorph can effortlessly switch between different locomotion modes depending on the demands of the mission. Although currently operated manually, its sophisticated onboard systems ensure reliable performance even in the most challenging and dynamic environments. Designed for unstructured, multi-terrain environments, ScoutMorph can dynamically reconfigure its appendages transforming them into wheels for rolling, or thrusters for propulsion ensuring maximum adaptability in diverse scenarios. One of the primary hurdles in developing a compact crawler integrated with a thruster is designing passive mechanical components that enhance the robot's stability during movement. These elements must not only support smooth and controlled locomotion but also contribute to energy efficiency while keeping the overall weight to a minimum. As development continues, the goal is to enhance Scout Morph's autonomy, allowing it to make real-time decisions about its movement and optimize energy efficiency for extended operational time. Future improvements will focus on refining its sensor suite and to expand its ability to interact with its surroundings.

Keywords:

Adaptable Robot, Appendage Repurposing, Path Planning and localization, Sprawl Mechanism.

Detection of Phishing Websites using Machine Learning

Sadineni Pradeep
Information Technology (CSB), SRKR Engineering College, Bhimavaram, India

Kallempudi Pydam Naidu
Information Technology (CSB), SRKR Engineering College, Bhimavaram, India

Katuri Karthik
Information Technology (CSB), SRKR Engineering College, Bhimavaram, India

Shaik Riyaz
Information Technology (CSB), SRKR Engineering College, Bhimavaram, India

Dr. S. Rama Gopala Reddy
Information Technology (CSB), SRKR Engineering College, Bhimavaram, India

Abstract:

Phishing schemes remain one of the most significant threats to online safety, preying on users through fake websites. The ever-changing strategies deployed by attackers make it difficult for traditional methods to detect these attacks. Hence, there is a need for a more nuanced approach. This research analyzes the potential of using ensemble learning methods like Decision Tree, Random Forest, Gradient Boosting, and XG Boost in phishing website detection. The goal of the research is to improve classification effectiveness and strength by combining the predictive capabilities of these models. It is evident from the experiment that systems that are built on the concept of ensemble have significantly outperformed more rudimentary systems in so far as detection of fraudulent websites and enhancing cyber security is concerned.

Keywords:

Phishing detection, Cybersecurity, Machine learning, Ensemble learning, Decision Tree, Random Forest, Gradient Boosting, XG Boost.

ISBN: 978-93-92104-23-7

CropOptima: AI-driven Crop Suitability, Health Monitoring, and Resource Optimization System

Dr. K. Satyanarayana Raju
Information Technology, SRKR Engineering College, Bhimavaram, India

Ayinavilli SivaTeja Goud
Computer Science & Business Systems, SRKR Engineering College, Bhimavaram, India

Makireddy Uday Sai
Computer Science & Business Systems, SRKR Engineering College, Bhimavaram, India

Kavali Hemantha Rayudu
Computer Science & Business Systems, SRKR Engineering College, Bhimavaram, India

Padala Kedarnadh Reddy
Computer Science & Business Systems, SRKR Engineering College, Bhimavaram, India

Abstract:

This paper proposes a holistic framework for smart agriculture that utilizes advanced artificial intelligence (AI) and machine learning (ML) algorithms to maximize farming procedures. Based on the study of diverse environmental parameters such as soil characteristics, weather conditions, and past yield levels, the system correctly suggests the most appropriate crops and fertilizer approaches for a specific region. Apart from that, a deep learning–based module of image analysis is utilized to detect and diagnose early-stage crop disease so that farmers can initiate timely remedial steps. By offering insights into the data level and providing real-time information, the developed system intends to enhance agricultural yield, minimize the wastage of resources, and enhance sustainable farming patterns. Farmers can arrive at better choices with the holistic methodology, resulting in less loss and improved profitability as well as yield overall.

Keywords:

Suitable Crop Prediction, Fertilizer Recommendation, Crop Disease Detection, Machine Learning, Deep Learning.

Integration of Multidimensional Health Data: Deep Learning-Based Sequential Classifiers for Early Prediction of Osteoporosis and Osteopenia

P. Pushpa Sri
Department of Information Technology Students, Department of Information Technology, S.R.K.R. Engineering College, Bhimavaram, Andhra Pradesh, India

B. Madhavi
Assistant Professor, Department of Information Technology Students, Department of Information Technology, S.R.K.R. Engineering College, Bhimavaram, Andhra Pradesh, India

P. Mounika Lakshmi Priya
Department of Information Technology Students, Department of Information Technology, S.R.K.R. Engineering College, Bhimavaram, Andhra Pradesh, India

K. Kamakshi
Department of Information Technology Students, Department of Information Technology, S.R.K.R. Engineering College, Bhimavaram, Andhra Pradesh, India

Abstract:

Early disease detection with primary medical data analysis has been facilitated by new insights given by sequential analysis methods. Sequential patterns in data sets are valuable for population at risk definition for particular diseases, creating new drugs, and predictor discovery of prevalent medical conditions. Correctness of sequential data results, however, can differ based on the methods used, such as feature selection techniques, class imbalance handling, algorithm preferences, performance metrics, and attribute convolution. The identification of osteoporosis and osteopenia, two harmful diseases that predominantly strike women postmenopause and are mainly initiated by small bone fractures that can ultimately lead to death, becomes simplified by sequential data extraction. To forecast osteoporosis and osteopenia in the initial stages using a health database, this study is aimed at developing a classifier based on deep learning algorithms.

 ISBN: 978-93-92104-23-7

Product Insights Through Sentiment Analysis on Product

Y S S L P Saranya
Department of Information Technology, S.R.K.R Engineering College(A), (JNTUK) Bhimavaram A.P, India

K Syam Kumari
Department of Information Technology, S.R.K.R Engineering College(A), (JNTUK) Bhimavaram A.P, India

N Desai
Department of Information Technology, S.R.K.R Engineering College(A), (JNTUK) Bhimavaram A.P, India

T snigdha
Department of Information Technology, S.R.K.R Engineering College(A), (JNTUK) Bhimavaram A.P, India

S Nafisha
Department of Information Technology, S.R.K.R Engineering College(A), (JNTUK) Bhimavaram A.P, India

T L S Lalithambica
Department of Information Technology, S.R.K.R Engineering College(A), (JNTUK) Bhimavaram A.P, India

Abstract:

E-commerce and online marketplaces are growing quickly, and so are user-generated product reviews. Co With the growth of e-commerce, consumers are utilizing product reviews more than ever. However, the volume of user reviews makes gathering useful information virtually impossible to do manually. In this paper, the development of a machine learning driven sentiment analysis system that categorizes e-commerce product reviews into positive, negative, and neutral is described. This helps users quantify product value with ease. The proposed system includes support vector machine, Naïve Bayes, and logistic regression classification methods and TF-IDF and Word2Vec feature extraction methods. The model is trained with a labeled dataset and evaluated with the accuracy, precision, recall, and F1-score metrics. In addition, the system was implemented on a Django web application to allow users to predict sentiment from uploaded datasets in real-time. The experimental results show that the SVM classifier with TF-IDF features excel in accuracy comparison to other models. This confirms the power machine learning automation has for sentiment analysis which enhances the decision-making process for the consumer alongside businesses.

Keywords:

Product Reviews, SVM, Word2Vec, TF-IDF, Natural Language Processing, Sentiment Analysis, Machine Learning.

Cafeateen- A Pre- Order Food page

Dr. Rashmi Deshpande
Assistant Professor, Department of Computer, Savitribai Phule Pune University, Pune, Maharashtra India

Rutuja Patil
B.E, Computer Science, Savitribai Phule Pune University, Pune, India

Riya Jayath Menon
B.E, Computer Science, Savitribai Phule Pune University, Pune, India

Anish Bettigiri
B.E, Computer Science, Savitribai Phule Pune University, Pune, India

Tejaram Choudhary
B.E, Computer Science, Savitribai Phule Pune University, Pune, India

Abstract:

This project aims at developing a comprehensive pre-ordering food platform specifically designed for college campuses and their cafeterias. The platform seeks to streamline the food ordering process by allowing students and campus staff to browse menus, customize orders, schedule pick-up times, and make secure transactions online and have real time tracking of the order, all in an optimal time frame. This online system is designed to reduce wait times during peak hours, minimize congestion at dining locations, and enhance the overall convenience and efficiency for users.

Keywords:

Real time Tracking, Optimal Time Frame, Secure Transactions, Minimize Congestion, Convenience, Efficiency.

ISBN: 978-93-92104-23-7

Real-Time Video Communication using WebRTC API and Ngrok SSH Tunneling

K. Remya
Department of Information Technology Hindustan Institute of Technology and Science, Kelambakkam, Tamil Nadu 603103, India

Shubhankar Ganesh Yadav*
Department of Information Technology Hindustan Institute of Technology and Science, Kelambakkam, Tamil Nadu 603103, India

Malisetty Sai Tejaswi
Department of Information Technology Hindustan Institute of Technology and Science, Kelambakkam, Tamil Nadu 603103, India

Abstract:

Applications for web-based video conferencing frequently struggle with scalability, security, and real-time performance. The creation of a group conference application using a mesh design, WebRTC API without third-party libraries, and Socket.io for signaling is presented in this paper. For connection creation, publicly accessible free STUN and TURN servers are used, allowing for secure video conferencing with up to ten devices at once. Running an application from a single PC server provides complete encryption which increases security measures. The article explains development process details through a discussion of features together with implementation restrictions and technical requirements. The implemented contemporary technology platform demonstrates secure group conferencing through real-time capabilities creating effective communication. Moving forward the system will concentrate on enhancing scalability as well as user experience to expand its real-world utility.

Keywords:

WebRTC, Mesh architecture, video conferencing with STUN server and TURN server, Socket.io, real-time communication, encryption, group conferencing, and secure application development. development.

Leveraging Interactive Media for Sign Language Acquisition: A Novel iOS Solution

Anshuman Bhatt
Department of Computer Science and Engineering, Galgotias University,Greater, Noida, India

Vishal Patel
Department of Computer Science and Engineering, Galgotias University,Greater, Noida, India

Ms. Jyoti Yaduwanshi
Assistant Professor, Department of Computer Science and Engineering, Galgotias University,Greater, Noida, India

Abstract:

Sign language plays a crucial role in bridging the communication gap between the individuals who are Hard of Hearing or have completely lost hearing and society. However, current resources for learning sign language are often focused on static, non-interactive solutions that fail to engage users and create a user friendly environment that they require to not only learn but also build up confidence to start. This research introduces a smart and interactive iOS application designed to revolutionize the way people learn and practice sign language. By using advanced machine learning techniques and interactive sentence-based exercises, the application offers a comprehensive and inclusive solution for sign language acquisition.

The first version of the application focuses on ASL (American Sign Language), with plans to expand to Indian Sign Language and other regional variants in the future.

ISBN: 978-93-92104-23-7

SketchTrace: Advancing Suspect Identification with GAN-Based Sketch-to-Photo Synthesis and SNN-Based Image Matching

Anna Maria
Department of CSE, Vimal Jyothi Engineering College, Kannur, India

Alan Joseph Norbert
Department of CSE, Vimal Jyothi Engineering College, Kannur, India

Anandhu K P
Department of CSE, Vimal Jyothi Engineering College, Kannur, India

Nathasha Adarsh
Department of CSE, Vimal Jyothi Engineering College, Kannur, India

Anagha N K
Department of CSE, Vimal Jyothi Engineering College, Kannur, India

Abstract:

Identification of suspects from criminal sketches is an important but challenging process in criminal investigations. Conventional processes are based largely on visual matching, which tends to be a time-consuming process with a higher likelihood of errors. SketchTrace, an advanced system via deep learning, is introduced in this work. The system processes hand- drawn criminal sketches and renders them as photorealistic images via a Pix2Pix Generative Adversarial Network (GAN).The resulting images are then matched against a known subject database to fetch their available details via a Siamese Neural Network (SNN), further improving the identification accuracy. By making the process from sketch to photo more efficient and adding an image matching protocol, the system makes it easier for law enforcement to identify suspects.The proposed framework not only improves investigative efficiency but also demonstrates the potential of deep learning in criminal analysis, making it a valuable tool for modern crime-solving efforts.

Keywords:

Criminal identification, Sketch-to-photo transla- tion, Generative Adversarial Networks (GANs), Pix2Pix, Siamese Neural Network (SNN), ResNet, Deep learning, Image matching, Law enforcement, Investigative AI.

ChatGPT Using Django with Voice Assistance

Mr. D. Ranadeep Reddy
Assistant Professor, Department of CSE (AI&ML), CMR College of Engineering and Technology, Hyderabad, Telangana, India

K. Sai Aasish
Student, Department of AIML, CMR College of Engineering and Technology, Hyderabad, Telangana, India

B. Siddharth
Student, Department of AIML, CMR College of Engineering and Technology, Hyderabad, Telangana, India

V. Sai Pranay
Student, Department of AIML, CMR College of Engineering and Technology, Hyderabad, Telangana, India

Abstract:

In the modern era of artificial intelligence, chatbots have become an essential tool for enhancing user interactions and automating responses. This project, "ChatGPT Using Django with Voice Assistance," integrates a chatbot system with voice recognition capabilities to provide an efficient and interactive user experience. Built using Django, the chatbot utilizes MySQL for storing frequently asked questions (FAQs) and user data. The system employs TF-IDF (Term Frequency-Inverse Document Frequency) to process user queries and retrieve the most relevant responses based on cosine similarity.

The project features voice recognition functionality powered by the SpeechRecognition library, enabling users to interact with the chatbot through speech. The recorded audio is converted into text using Google's speech-to-text API. This text is then matched against stored questions, and the chatbot provides an appropriate response. Additionally, users can add new FAQs through an interface, allowing continuous learning and improvement of the chatbot's response accuracy.

Key functionalities include user authentication, an admin panel for managing FAQs, and an interactive web interface built using HTML, CSS, and JavaScript. The backend processes audio files using FFmpeg for format conversion, ensuring compatibility with the speech recognition module.

This chatbot system is ideal for applications in customer support, educational platforms, and automated help desks. By combining voice assistance with AI-driven text processing, the project enhances accessibility and usability, offering a seamless and engaging conversational experience. Future improvements could include deep learning models for more advanced natural language understanding and response generation.

Keywords:

Chatbot, Django, Voice Recognition, TF-IDF, Speech-to-Text, MySQL, Cosine Similarity, AI Chatbot, Machine Learning, FAQ Automation.

ISBN: 978-93-92104-23-7

Turbulence Modelling of Naca Airfoil

A Vinay Kumar
Institute of Aeronautical Engineering, Dundigal, Hyderabad

Mr. K Arun Kumar
Institute of Aeronautical Engineering, Dundigal, Hyderabad

Dr. Bdy Sunil
Institute of Aeronautical Engineering, Dundigal, Hyderabad

Abstract:

Turbulence, in the context of aerodynamics and wing performance, refers to the irregular, chaotic, and fluctuating motion of air caused by instabilities in the flow field. When air flows over a wing, it can remain smooth and predictable (laminar flow) or transition into a disordered and vortical state (turbulent flow) due to various aerodynamic conditions.

This study examines the performance of various Reynolds-Averaged Navier-Stokes (RANS) turbulence models in predicting the aerodynamic characteristics of the NACA 23012 airfoil. The simulations were conducted using ANSYS Fluent 22.1 to evaluate the accuracy and reliability of selected turbulence models. Since turbulence models are essential for capturing the effects of turbulent flow, this study focuses on widely used models based on the Spalart-Allmaras, k-ω SST, and k-ε Standard. These models provide a computationally efficient approach for estimating turbulence viscosity. The analysis was carried out for quadratic meshing of an airfoil for different angles of attack (AoA) from -2° to 18° at a Reynolds number of 3×10^6 and a freestream Mach number at 1.3. The simulations were performed under steady-state, incompressible flow conditions, assuming time-independent velocity, pressure, and density fields. The numerical results were compared with experimental data, revealing that the turbulence models achieved a reasonable accuracy with less error margin for low to moderate AoA. This comparative study highlights the effectiveness of RANS-based turbulence models in predicting aerodynamic performance for airfoil geometry.

Keywords:

Turbulence, RANS, Spalart-Allmaras, k-ω SST, k-ε Standard, Quadratic Mesh.

AgriYield: Smart Predictions for Sustainable Farming

Thella Sowmya Joshi
Department of IT (AI & DS, CSBS, IT), SRKR Engineering College, Bhimavaram, India

Pothula Vanitha
Assistant Professor, Department of IT (AI & DS, CSBS, IT), SRKR Engineering College, Bhimavaram, India

Rubiya Begum
Department of IT (AI & DS, CSBS, IT), SRKR Engineering College, Bhimavaram, India

Sagi Venkata Naga Sripujitha
Department of IT (AI & DS, CSBS, IT), SRKR Engineering College, Bhimavaram, India

Vegesna Hasini
Department of IT (AI & DS, CSBS, IT), SRKR Engineering College, Bhimavaram, India

Abstract:

Agriculture is facing significant challenges due to climate variability, resource limitations, soil degradation, pest outbreaks, and the increasing demand for sustainable practices to ensure food security. To address these pressing issues, AgriYield introduces a comprehensive web-based platform that integrates advanced Machine Learning (ML) algorithms with modern web technologies to provide farmers with actionable insights and intel- ligent decision-making tools. By leveraging vast datasets, includ- ing real-time weather patterns, soil properties, and environmental conditions, AgriYield delivers tailored crop recommendations, empowering farmers to make informed choices and optimize agricultural yields effectively.

The platform's innovative features include crop recommenda- tion systems that analyze climatic conditions and soil health, plant disease detection tools that identify early symptoms of crop diseases through advanced image recognition models, and optimized crop planning solutions that help farmers strategically manage resources and improve productivity. AgriYield also integrates predictive analytics, enabling farmers to anticipate potential challenges and adapt to evolving agricultural scenarios. Beyond decision-making, AgriYield aims to bridge the gap between traditional farming methods and modern technological advancements, enabling the adoption of sustainable practices at scale. By fostering data-driven farming, the platform supports improved resource efficiency, minimizes environmental impacts, and enhances overall agricultural productivity.

ISBN: 978-93-92104-23-7

AgriYield represents a transformative approach to modern agriculture by providing farmers with the tools they need to embrace smart farming techniques, reduce crop losses, and increase profitability. This project envisions creating a resilient agricultural ecosystem that not only addresses present challenges but also supports long-term sustainability, contributing to a greener and more secure future for the agriculture sector.

Keywords:
Agriculture, Machine Learning, Crop Recom- mendation, Weather Analysis, Soil Health, Predictive Analytics, Sustainable Farming, Resource Management, Random Forest, Web Application.

Alora- Autonomous Robotic Arm

Ashish Joseph
Student

Abstract:

Alora is a robotic assistant designed to simplify tasks involving object handling. It uses a Raspberry Pi as the brain of the system, coordinating the movement of its arm through servo motors, which allow for smooth and accurate motion. For object recognition, Alora uses the YOLO (You Only Look Once) algorithm, a powerful real-time detection system that accurately identifies and tracks multiple objects at once. This ensures Alora can recognize and follow objects in its environment quickly.

To handle objects precisely, Alora applies inverse kinematics, a method that calculates the exact movements needed for the arm to reach and manipulate objects without error. This allows it to grab items with precision. Alora is controlled by voice commands, making it highly user-friendly. Whether it's picking up objects, recognizing items, or completing other handling tasks, Alora provides a versatile, efficient solution for a variety of environments.

 ISBN: 978-93-92104-23-7

Thyroid Disease Classification using Machine Learning

Dr. S. Kirubakaran
Associate Professor, Department of AI & ML, CMR College of Engineering and Technology, Hyderabad, Telangana, India

Mr. Anil Kumar
Assistant professor, Department of CSM, CMR College of Engineering and Technology, Hyderabad, Telangana, India

D. Kuldeep
Department of AI & ML, CMR College of Engineering and Technology, Hyderabad, Telangana, India

K. Varun Krishna
Department of AI & ML, CMR College of Engineering and Technology, Hyderabad, Telangana, India

P. Yashwanth
Department of AI & ML, CMR College of Engineering and Technology, Hyderabad, Telangana, India

Abstract:

Thyroid disorders are among the most common endocrine diseases, affecting millions of people worldwide. Early and accurate diagnosis of thyroid disease is crucial for effective treatment and management. This project presents a machine learning-based approach for the classification of thyroid disease using various algorithms, including Decision Tree, Support Vector Machine (SVM), Random Forest, and Multi-Layer Perceptron (MLP).The system processes a thyroid dataset by performing essential data preprocessing steps, such as handling missing values, encoding categorical data, and standardizing numerical features. The dataset is then split into training and testing sets to evaluate the performance of different classification models. The trained models are assessed based on accuracy, precision, recall, F1-score, and confusion matrices.A graphical user interface (GUI) is developed using Tkinter, enabling users to upload thyroid datasets, preprocess data, train models, and visualize the results. The GUI also allows for the prediction of thyroid conditions based on new test data. A comparative analysis of the machine learning models is performed, highlighting their effectiveness in identifying different thyroid disease types.

Keywords:

Thyroid Disease Classification, Machine Learning, Data Preprocessing, Decision Tree, Support Vector Machine (SVM), Random Forest, Multi-Layer Perceptron (MLP).

Document Chatting using Large Language Models

Dr. K. Kishore Raju*
Assistant Professor, Department of Information Technology, Sagi RamaKrishnam Raju Engineering College, Bhimavaram, Andhra Pradesh, India

G. N. V. Sai Kumar
Bachelor of Technology, Department of Information Technology, Sagi RamaKrishnam Raju Engineering, College, Bhimavaram, Andhra Pradesh, India

G. Srinivasa Rao
Bachelor of Technology, Department of Information Technology, Sagi RamaKrishnam Raju Engineering, College, Bhimavaram, Andhra Pradesh, India

A. Venkateswara Rao
Bachelor of Technology, Department of Information Technology, Sagi RamaKrishnam Raju Engineering, College, Bhimavaram, Andhra Pradesh, India

E. Charan Teja
Bachelor of Technology, Department of Information Technology, Sagi RamaKrishnam Raju Engineering, College, Bhimavaram, Andhra Pradesh, India

Abstract:

Older document retrieval systems were mostly based on keyword search—a technique that, until the early 2010s, was the preeminent approach because of its ease and speed. But such methods were structurally constrained by their failure to understand contextual sense and manage semantic subtlety. Large language models (LLMs) have, in the last few years, especially from the mid-2010s, become a revolutionary AI solution to these problems.

Our proposed method introduces a document-chatting system where documents are processed in the order of text extraction, chunking, and vector embedding to pave the way for effective query retrieval. Users can ask for particular information, summaries, or insights from documents, and the language model, with its in-depth knowledge of the contents of the document, produces meaningful and context-sensitive answers. The process fills the gap between human conversation and document searching, transforming how we communicate with textual information.

One of the key advantage of our proposed method is that it can handle multiple documents of various formats such as PDF, Docx, CSV, etc. It offers a more intuitive and natural conversational experience, making information retrieval a seamless part of human interaction.

Keywords:

Artificial Intelligence, Large Language Models.

ISBN: 978-93-92104-23-7

Real-Time Multilingual Support in E-Commerce: A Dynamic Language Translation Model

Ajay Babu Mulakalapalli
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Lakshmi Deepak
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Merla, M.Sreekrishna3*
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Gopika GS
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

In the rapidly growing global e-commerce industry, online product descriptions require fast and precise translation to cater to a diverse customer base. Consumers from different linguistic backgrounds rely on accurate translations to make informed purchasing decisions. However, existing market solutions face several challenges, such as limited contextual accuracy, dependency on specific platforms, and the need for human intervention to refine translations. These limitations create barriers to seamless international shopping experiences and slow down business expansion. To overcome these challenges, the Dynamic Language Translator integrates Sequence-to-Sequence (Seq2Seq) machine learning models with a Chrome extension-based design to provide real-time and automated translation for product descriptions. This system is optimized for major e-commerce platforms, including Amazon, eBay, and WooCommerce, ensuring that translated product details maintain their original meaning across different regions. The core of the system is powered by a Python Flask backend, which acts as a request manager through a Flask API, enabling smooth communication between the translation engine and the browser extension. This approach not only enhances data security but also ensures the protection of business-critical information, allowing companies to maintain their competitive edge. Experiments conducted on this system demonstrated significant improvements in both translation accuracy and processing speed compared to traditional

machine translation tools. By reducing reliance on manual corrections, the Dynamic Language Translator enhances the efficiency of cross-border e-commerce transactions, making global shopping more accessible. This innovative approach eliminates language barriers, allowing businesses to expand their reach and improve customer experience by providing highly accurate, real-time translations of product descriptions in multiple languages. As a result, international buyers can confidently explore and purchase products without facing language-related challenges.

Keywords:

Language Translation, Machine Learning, Chrome Extension, E-commerce, Seq2Seq Model, NLP, Real-time Translation.

ISBN: 978-93-92104-23-7

ML Approaches for Autism Spectrum Disorder Detection and Analysis

Vishnu Vardhan Reddy
Department of CSE(AI&ML), CMRCET, Hyderabad, Telangana, India

Saiteja
Department of CSE(AI&ML), CMRCET, Hyderabad, Telangana, India

Abhishek
Department of CSE(AI&ML), CMRCET, Hyderabad, Telangana, India

Navaneetha
Assissant Professor, Department of CSE(AI&ML), CMR College, Hyderabad, Telangana, India

Abstract:

Cognitive and Social Impairment Disorder is a neurodevelopmental disorder that interferes with an individual's communication and social interaction. Cognitive and Social Impairment Disorder may be diagnosed at any age, but it usually emerges in the first two years of life. As ML is increasingly applied to medical diagnosis, this paper describes the application of several ML methods such as Naïve Bayes, Support Vector Classifier, LR, K-Nearest Neighbors (KNN), Neural Networks, and Convolutional Neural Networks (CNN) in forecasting and analyzing Cognitive and Social Impairment Disorder in children, adolescents, and adults. The performance of the approaches is verified on three publicly available Cognitive and Social Impairment Disorder screening datasets: one for kids (293 instances, 22 features), one for adults (705 instances, 22 features), and one for teenagers (105 instances, 22 features). Performance means that CNN-based models outperform others with accuracy values of 98.53% for adults, 99.30% for kids, and 96.88% for teenagers.

Keywords:

Naive Bayes, Support Vector Classifier, LR, K-Nearest Neighbors (KNN), Neural Networks, and Convolutional Neural Networks (CNN).

Saving Lives with AI: A Real-Time Borewell Rescue Solution

Deekshith
Student, Department of CSE(AI&ML), CMRCET, Hyderabad, Telangana, India

Suhas Reddy
Student, Department of CSE(AI&ML), CMRCET, Hyderabad, Telangana, India

Prashanth
Student, Department of CSE(AI&ML), CMRCET, Hyderabad, Telangana, India

Syed Nurja
Assissant Professor, Department of CSE(AI&ML), CMR College, Hyderabad, Telangana, India

Abstract:

Borewell accidents of children who tumble into open borewells have become a significant issue, and a highly advanced Real- Time AI Monitoring for Borewell Child Rescue Operations that utilizes Artificial Intelligence (AI) and Wireless Monitoring has been developed as a remedy. The conventional rescue processes are executed using heavy equipment and manual labor, so they are slow and prone to mistakes. This project aims to overcome these shortcomings by utilizing AI-based facial emotional recognition, voice detection, and real-time tracking to enable faster and more effective rescue operations.

The system uses Raspberry Pi, a camera module, and deep learning algorithms (VGGNet and VGGish) to assess the child's emotional state and consciousness. On distress, calming music is used to comfort the child, and audio cues are utilized to test responsiveness. A temperature sensor is used to monitor the body temperature to determine the health status of the child. The system also consists of a ReactJS-based web application to provide real-time feedback of the child's status, which helps rescuers make decisions. Additionally, machine learning algorithms (Extra Trees Classifier, Random Forest, and Logistic Regression) are applied to predict the presence of non-functional borewells in order to trigger preventive measures. This AI-driven technique enhances accuracy considerably, reduces rescue time, and decreases risks compared to traditional approaches. By implementing real-time monitoring, AI, and machine learning, this system presents a cost-efficient, accurate, and life-saving solution for borewell rescue missions.

Keywords:

Deep neural network algorithms(VGGNET and VGGish), Artificial Intelligence, ReactJS.

ISBN: 978-93-92104-23-7

Certificateless Multi-Receiver Encryption (CL-SM2-MRE) for Secure and Efficient Cloud Data Sharing

Sree Santhikrishna S
Department of CSE, SKCET, Coimbatore, India

Vinodhan M
Department of CSE, SKCET, Coimbatore, India

Sairam V S
Department of CSE, SKCET, Coimbatore, India

Dr. Reshma V.K
Department of CSE, SKCET, Coimbatore, India

Abstract:

In increasing dependence on data-sharing and cloud computing, secure data security and integrity is proving to be the biggest challenge now. Public Key Infrastructure (PKI) dependence of existing Traditional Multi-Receiver Encryption (MRE) mechanisms results in burdensome certificate management and escrow issues for the keys. This paper introduces a Certificateless Multi-Receiver Encryption (CL-MRE) scheme using the SM2 elliptic curve cryptography algorithm to overcome the shortcomings of current PKI-based and identity-based encryption schemes. The new scheme improves data security by removing certificate management and supporting secure and efficient data transmission in multicast and broadcast scenarios. We prove the security of the scheme under the Random Oracle Model (ROM) and conduct a comparative analysis to assess computational and communication overhead. The findings show that our solution greatly minimizes latency and maximizes efficiency compared to conventional schemes, making it appropriate for secure data sharing in cloud environments.

Keywords:

Certificateless Encryption, Multi-Receiver Encryption (Mre), Sm2 Algorithm, Cloud Security, Elliptic Curve Cryptography, Data Integrity.