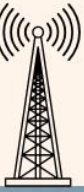


NATIONAL LEVEL STUDENT CONFERENCE

IEEE TECHNICOKNOCKDOWN-2025

TKD-25



Organized by Department of E&TC ENGG. SIT Lonavala

**Technically sponsored by
IEEE Bombay section & IETE Pune Centre**

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Proceedings for

A National Level Student Conference



IEEE TECHNICAL KNOCKDOWN-2025

(TKD-25)

(April 19, 2025)

Organized by



Sinhgad Institutes

Department of E&TC Engineering
Sinhgad Institute of Technology, Lonavala

Documented and Prepared by

Dr. Dnyanesh S. Mantri

Dr. Prashant R. Dike

Mr. Vikram M. Chavan



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IEEE TKD-25

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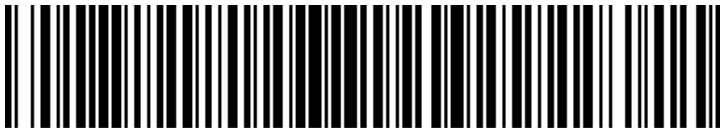
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A National Level Student Conference



"IEEE TECHNICOKNOCKDOWN-2025 (TKD-25)"



Organized by Department of E&TC, SIT Lonavala

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Supported by IEEE SITSB & IETEISF, SIT Lonavala

April 19, 2025

(Online mode)

Theme: Smart Village: Better Place for Better Tomorrow



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Dr. P. R. Dike, Asst Professor, Dept. of E&TC, SIT, Lonavala, Contact: +91-9422014174

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Shubham, Chair IETE ISF, Lonavala, Contact: +91 -85915 31092



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Welcome to

TECHNICOKNOCKDOWN-2025

It is our great pleasure to welcome you all for the 6th virtual “TECHNICOKNOCKDOWN-2025 (TKD-25)” National Level Students Conference for technical paper presentation on April 19, 2025. The TKD-25 is organized by Department of Electronics and Telecommunication Engg, Sinhgad Institutes of Technology, Lonavala, Pune, Maharashtra. The conference is technically sponsored by IEEE Bombay Section and IETE, Pune local center and supported by IEEE SITSB and IETEISF, SIT Lonavala. TKD-25 provides an ideal platform for exchange of ideas among researchers, students, and practitioners.

TKD-25 has received more than 126 papers from all over India in 7 different tracks including, Internet of Things (IoT), Artificial Intelligence and Machine Learning, Cyber Security and Privacy, Next Generation Network, Sensor Networks and Smart Application, Electrical Vehicle, Robotics and Automation,. After a Peer Review Process 97 papers are selected for the oral presentations and finally 60 papers are registered. The registered and presented papers are published in IEEE TKD-25 proceeding with ISBN No.978-81-992245-0-5

We hope that you will find this event interesting and thought provoking. TKD-25 will provide you with a valuable opportunity to share ideas with other researchers, students, and practitioners from institutions. We look forward to the contribution towards the event and see you virtually.

Team
TECHNICOKNOCKDOWN-2025

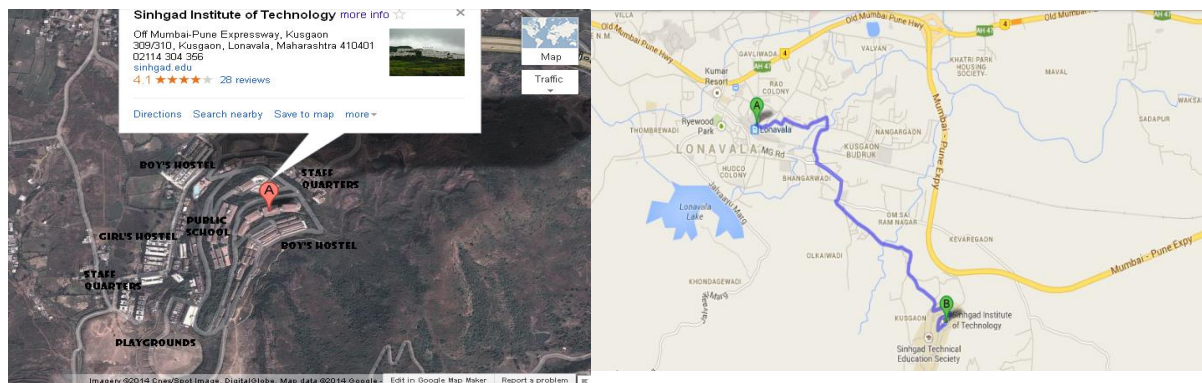
About STES:

Sinhgad Technical Education Society (STES) was set up in August 1993, under the able and dynamic leadership of Prof. M.N. Navale with an objective of providing quality education in the field of Engineering, Dentistry, Management, Computer, Pharmacy, Architecture, Hotel Management and the basic school education from kinder garden onwards. There are 58 institutes under the aegis of STES offering full-fledged school education, Diploma, Graduation, Post-Graduation courses and Ph.D. programs in various branches of Engineering, Science and Management at five educational campuses ideally located in pollution free lush green and picturesque environment conducive for learning. (sit.sinhgad.edu).

About SIT, Lonavala

Sinhgad Institute of Technology (SIT), Lonavala since its establishment in 2004 is involved in practicing teaching-learning methodologies of excellence to deliver quality engineering education for students all over India. The institute is housed in beautiful surroundings, fully residential campus of 220 acres on Pune-Mumbai expressway at Lonavala. Academic discipline with space for individual innovations, emphasis on life skill development of students, 'willing to work' team of faculty members and initiative for Industry interface, have been the silent activity of the college. Institute has following branches; The Institute is accredited by NAAC with Grade "A"

1. E&TC, Engineering
2. Mechanical Engineering,
3. Electrical Engineering,
4. Computer Engineering,
5. Information Technology &
6. Masters in Electrical and Power Systems



Dept. of Electronics and Telecommunication, SIT Lonavala



Vision and Mission of the Institute

VISION

उत्तमपुरुषान् उत्तमाभियंतृन् निर्मातुं कटीबध्दाः वयम्।

We are committed to produce not only good engineers but good human beings, also.

MISSION

Holistic development of students and teachers. We strive to achieve this by imbibing a unique value system, transparent work culture, excellent academic and physical environment conducive to learning, creativity and technology transfer.

Quality Policy

Quality Policy is aimed at achieving excellence in Technical Education with recognition at National & International level. Managements is committed to :

- Provide excellent Infrastructure facilities.
- Employ highly qualified & experienced faculty
- Encourage the faculty for qualifications improvement
- Promote the Industry- Institute Interaction
- Create environment for R & D activities, consultation work and getting Industry-sponsored projects for students
- A special internal Quality Assessment Program has been implemented which monitors all the parameters needed for achieving the goals
- Implementation of the Quality Policy will result in all round development of students relevant to the needs of Industries & will make them competent to face the challenges due to Globalization

Vision and Mission of the Department

VISION

The department of Electronics & Telecommunication is committed to grow on a path of delivering distinctive high quality education, fostering research, creativity and innovation.

MISSION

M1: The E&TC Department in partnership with all stake holders will harness talent, potential for application based indigenous product development in future.

M2: Our endeavor is to provide encouraging environment for life skill development of students while exercising effective learning strategies.

M3: We inculcate unique value system based on excellent academics in project based learning among students to explore and solve problems and challenges of realworld applications.



Short Term Goals

- To improve the results of UG classes
- To implement activity plan for overall development of students.
- To establish professional bodies/students forum for life skill development and expose students and faculty to latest business environment.
- To initiate relevant value addition programs and certifications for improving employability.
- To develop Laboratories for meaningful implementation of curriculum and then for Research.
- To encourage continuous up gradation of faculty members through higher education and external interface with other universities.

Long Term Goals

- To practice Project Based Learning (PBL) approach for UG program by creating collaborations with national and International institutions of reputation.
- To create opportunities for students to expose to industry environment through value addition programs and Industry projects for practical training.
- To foster research in the field of Electronics and Telecommunication Engineering for the benefit of society.
- IEEE International conference in the area of Wireless communication.

Program Educational Objectives (PEOs)

- PEO1** To develop students to achieve high level of technical expertise with Strong theoretical background and sound practical knowledge
- PEO2** To inculcate research environment for enhancement of Academia – Industry collaboration through conference
- PEO3** To prepare graduates to be sensitive to ethical, societal and Environmental issues while engaging their professional duties, Entrepreneurship and leadership.
- PEO4** To enhance ability of students for providing Engineering solution in a global and societal context
- PEO5** Pursue higher education for professional development.

Program Specific Outcomes (PSOs)

- PSO1** Get solid foundation in design and development of electronics modules useful to society.
- PSO2** Able to handle skills based challenges

Strength of Department is Faculty Team work to face any challenges

Chief Patrons

Sinhgad Technical Education Society, Pune



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Founder President,
Sinhgad Institutes, Pune



Dr.(Mrs) Sunand M . Navale
Founder Secretary,
Sinhgad Institutes, Pune



Dr. Rohit M. Navale
Vice President (HR),
Sinhgad Institutes, Pune



Dr. Rachana Navale- Ashtekar
Vice President (Admin)
Sinhgad Institutes, Pune



Directors' Message



Dr. M. S. Gaikwad

Dear Friends,

I am extremely delighted to assert that Sinhgad Institute of Technology (SIT) is hosting a National level student conference “IEEE Technicoknockdown-2025” on April 19, 2025 at Sinhgad Technical Education Societies (STES) Campus Lonavala.

The TKD-25 has Theme of “**Digital Transformation for Rural Upliftment**”, and is very much aligned with the recent technological developments to 5G, 6G, Human Bond Communications and Industry 5.0 etc. The information and communication technology has made a profound impact on almost all sphere of social and personal life of human. The impact of these technologies is likely to continue unabated, therefore it is important that educators, scholars and technocrats keep themselves abreast with the latest trend of technologies. I am sure that the gap between industry and institute will be narrowed by these initiatives enabling mutual benefits and growth I believe that this conference will be an outstanding event for thousands of decision and policy makers , academicians , technocrats and educators.

I congratulate all my participants who have come from various colleges .I assure very delegate attending this event will experience the best academic ambience, hospitality and state of art infrastructural facilities. I am sure that the time spent by you all at Technicoknockdown-25.

A handwritten signature in blue ink, which appears to be 'M S Gaikwad', is placed above the printed name and title.

Dr. M. S. Gaikwad
Director STES Lonavala campus



Principal's Message



Dr. S. D. Babar

Dear Students and Faculty,

It is with great pride and enthusiasm that I welcome you all for the Student National Conference "IEEE TECHNICOKNOCKDOWN 2025 (TKD-25)", scheduled on April 19, 2025. This prestigious event offers a dynamic platform for budding engineers and researchers to showcase their innovative ideas and engage in meaningful academic exchange.

TKD-25 will serve as a forum for young minds to present their ideas and research in emerging areas of technology. This year, the conference will feature insightful presentations and discussions across key tracks including Internet of Things (IoT), Artificial Intelligence and Machine Learning, Cyber Security and Privacy, Next Generation Network, Sensor Networks and Smart Applications, Electric Vehicles, and Robotics and Automation.

I encourage all participants to actively contribute and take full advantage of this opportunity for learning, networking, and growth. May this event inspire new perspectives, spark meaningful discussions, and pave the way for innovative solutions to real-world challenges.

Wishing TKD-25 a grand success! I congratulate all my participants who have come from various colleges. I assure very delegate attending this event will experience the best academic ambience, hospitality and state of art infrastructural facilities. I am sure that the time spent by you all at Technicoknockdown-25.

A handwritten signature in blue ink, appearing to read 'S.D. Babar', is placed above the printed name and title.

Dr. S. D. Babar
Principal, SIT Lonavala



Message from Organizing Chair



Dr. D. S. Mantri

Dear All,

It gives me an immense pleasure to thank all the participants and working team contributed in the virtual National Level Student Conference for technical paper presentation, “TECHNICOKNOCKDOWN-2025” with theme “**Smart Village: Better Place for Better Tomorrow**” on April 19, 2025. TKD-25 is hosted by Department of Electronics and Telecommunication Engg, Sinhgad Institute of Technology, Lonavala, Pune, and Maharashtra. It is technically sponsored by IEEE Bombay Section and IETE, Pune local center, it is supported by IEEE SITSB & IETEISF, SIT Lonavala. The organizing committee of the TECHNICOKNOCKDOWN-2025 is quite unanimous in their determination to make the event highly successful. Department of E&TC, SIT Lonavala always aims to provide the platform for “Willing to Work” professionals and researchers.

The tracks of TKD-25 are grouped broadly according to the theme

1. Internet of Things (IoT)
2. Artificial Intelligence and Machine Learning
3. Cyber Security and Privacy
4. Next Generation Network
5. Sensor Networks and Smart Application
6. Electrical Vehicle
7. Robotics and Automation
8. Others

TKD-25 received more than 126 papers out which only 97 were selected for the oral presentation after peer review and 60 were registered. Also Skilled Session chairs are invited to evaluate the papers during presentations. Conference is imparting knowledge to more than 400 student participants to improve their skill sets.

I am quite pleased to mention that this event is successful in true spirit. This is only because of hard work, cooperation and dedication of all the coordinators as well as the participants, reviewers and faculties of the department. At the last, but not the least, I am thankful to Management of STES, Pune and Dr M. S. Gaikwad, Director STES Campus Lonavala, Dr. S. D. Babar Principle SIT Lonavala & Convener TKD-25 for unstinting support to work as the convener of TKD-25.

Values are More Important than Valuables

A handwritten signature in blue ink, appearing to read 'Dnyaneshwar S. Mantri'.

Dr. Dnyaneshwar S. Mantri
Organizing Chair TKD-25



Faculty Advisor IETE Student's Chapter



Dr.P. R. Dike

It gives me immense pleasure to present proceedings of the "IEEE TECHNICOKNOCKDOWN-2025 (TKD-25)" National level student conference on Green Technology, Technically Sponsored by IEEE Bombay section and IETE ,Pune Center supported by IEEE SITSB and IETE, SIT Lonavala on April 19, 2025, organized by Dept of E&TC, Sinhgad Institute of Technology, Lonavala.

IEEE opens the door to opportunities that will help you develop your professional identity in IEEE's designated fields of interest: sciences, technology, engineering, and mathematics. I congratulate all participants for their contribution and valuable research in different tracks of IEEE TKD-25. I am enlightened to note that students of IEEE SIT student's chapter and IETE student chapter under the guidance of faculty members have taken this massive task as a challenge and I am confident that they will meet to the expectations of participants.

We are infinitely indebted to all the esteemed members of the Advisory Committees, reviewer team, for their invaluable advice and guidance in conception and organization of the conference. I gratefully acknowledge the full support and cooperation I received from all the organizing members along with our student coordinators, without their cooperation and help, this dream could not have been realized at all.

I am thankful to Dr. M. S. Gaikwad, Organizing chairman & Principal, Dr.S.D. Babar, Vice-Principal, & HOD, Dept. of E&TC, Dr. D. S. Mantri, Convener for Full support to work as the convener of this event.

With Most Respectful Regards

A handwritten signature in blue ink, appearing to read 'Prashant Dike', on a light-colored rectangular background.

Dr.Prashant Dike

Branch Counsellor IEIE ISF SIT Lonavala



Co-ordinator's Determination



Mr. Manoj k. Bhosale

It gives me an immense pleasure to welcome you all at a National level TPP “TECHNICOKNOCKDOWN-2025” organised by Dept. of E&TC SIT Lonavala. The event has brought to its success by both IETE & IEEE students chapter. The objective of IETE student's chapter is to segregate the technical knowledge and ideas to give a platform to students, researchers & developers through “TECHNICOKNOCKDOWN-2025”.

I am very much Thankful to all staff & student co-ordinators for their kind support throughout the event. At last but not least I am very much thankful to all the participants and wish you all the best for future

A handwritten signature in blue ink, appearing to read 'M. B.' with a horizontal line underneath.

Mr. Manoj K. Bhosale
Co-ordinator TKD-25



Message from, IETE Pune Centre



Dr.Sunil B Somani

Dear Students, Faculty Members, and Esteemed Guests,

It gives me immense pleasure to extend my heartfelt greetings to all participants of TECHNICOKNOCKDOWN-2025 (TKD-25), a prestigious National Level Students Conference organized under the banner of IETE and IEEE. Events like TKD-25 symbolize the boundless energy, creativity, and intellect of our young technocrats and innovators.

In today's rapidly evolving technological landscape, the need for interdisciplinary knowledge, innovation, and collaboration is more critical than ever. Conferences such as TKD-25 provide a vital platform for students to share their research ideas, showcase their technical skills, and learn from peers and experts across the nation. It is through such vibrant forums that the future architects of science and technology are nurtured.

I am particularly proud to see the spirit of innovation and excellence that TKD-25 inspires. It aligns perfectly with IETE's mission to advance the profession of electronics, telecommunications, and information technology, while fostering professional growth among students and young engineers.

I encourage every participant to make the most of this opportunity—engage actively, present boldly, collaborate earnestly, and most importantly, learn with an open mind. Remember, today's interactions can sow the seeds for tomorrow's groundbreaking innovations.

I convey my best wishes to the organizers for the grand success of TKD-25 and to all participants for a memorable and enriching experience.

Let us continue to dream, design, and deliver a brighter technological future!

A handwritten signature in blue ink, consisting of a stylized 'S' followed by a flourish.

Dr. S. B. Somani
Chairman, IETE, Pune Centre



Message from IEEE Bombay Section,



Dr. Shashikant S. Patil

I am pleased to welcome everyone to the IEEE TECHNICOKNOCKDOWN 2025 (TKD-25) Student National Conference, organized by Sinhgad Technical Education Society's SINHGAD INSTITUTE OF TECHNOLOGY (SIT) Lonavala Pune in association with IEEE Bombay section and IETE, Pune Center, supported by IEEE SITSB and IETE ISF SIT, Lonavala. The theme of this conference is Frontiers of Technologies: Next Generation Networks.

TKD-25 provides a platform to students within India to exchange thoughts about technology research in Artificial Intelligence and Machine Learning, Data Science and Analytics, Communication and Information security, Robotics, and Automation etc. These tracks in the conference have attracted a large volume of submissions from various states across India.

I take this opportunity to thank all the authors who submitted their papers and congratulate the authors of the selected papers that made it through the strict review process and have been selected for presentation.

I believe that the young researchers, who form a large percentage of the authors, would make the maximum use of this opportunity to engage with their peers and seniors to take a step towards leveraging technology for societal contribution and personal growth.

. .

Dr. Shashikant S. Patil
IEEE Bombay Section

Details of Session Chairs



Dr. Vandana Baste Rohokale received her B.E. degree in Electronics Engineering in 1997 from Pune University, Maharashtra, India. She received her Masters degree in Electronics in 2007 from Shivaji University, Kolhapur, Maharashtra, India. She has received her PhD degree in Wireless Communication in 2013 from CTIF, Aalborg University, Denmark. She has completed her post doctorate from ARHUS University under the guidance of Prof. Ramjee Prasad in 2023. She is presently working as Professor, Head and Vice Principal in Sinhgad Institute of Technology and Science, Pune, Maharashtra, India.

Her teaching experience is around 26 years. She has published four books of international publication. She has published around 60 plus papers in various international journals and conferences. Her research interests include Cooperative Wireless Communications, AdHoc and Cognitive Networks, Physical Layer Security, Digital Signal Processing, Information Theoretic security and its Applications, Cyber Security, Artificial Intelligence and Machine Learning, Quantum Computing, etc



Dr. Chandrakant D. Kokane, Completed PhD from SPPU. Presently working as Associate Professor and HoD of Information Technology, NMIET, Pune. He Worked as Assistant Professor in the Department of Information Technology DY Patil College of Engineering, Akurdi and Department of Information Technology Sinhgad College of Engineering, Vadgaon-Bk, He got best research paper award in DSNCR (Doctoral symposium -2020) he is receiptant of best research paper award in ICCCNT-2021 at IIT Khargpur, best

research topic award in ICACECS-2022, Hyderabad, Telangana. He has delivered expert session on “Latex Report Writing”, Building Neural Network and Fine Tuning, Word Sense Disambiguation with Machine Learning and is a Certified Trainer of Microsoft Azure AZ-900. He has Total teaching experience 8.6 years and published more than 25 papers in reputed journals and Conferences



Dr. Nishant Nilkanth Pachpor is currently working as an Assistant Professor in the Master of Computer Applications (MCA) Department at the International Institute of Management Science (IIMS), Chinchwad, Pune, since January 2022. He holds a Ph.D. in Computer Science and Engineering from Amity University, Rajasthan (2024), an M.Tech in CSE from PIET, Nagpur (2018), and an MCA from SSGMCE, Shegaon (2004). He began his academic career as a Lecturer at BCS College, Yavatmal, and has held various positions including Computer Programmer at DRDA, Zilla Parishad Yavatmal, and Project Coordinator for Zensar’s

Center of Excellence.

Dr. Pachpor has taught a wide range of subjects including C, Java, Advanced Databases (ADBMS), Operating Systems, Web Application Development He has authored and co-authored over 20 research papers published in reputed journals and conferences. He holds a design patent titled “An Electronic Device for Medical Image Denoising” and has a registered copyright for the project “Digitizing the Paperwork and Automating the Manual Work of Mess Owners – Mess Card System”. He has played key roles in various academic

events, serving as TPC Member for IEEE's GCWCN conferences in 2014 and 2018 Dr. Pachpor is also recognized as a research supervisor by Savitribai Phule Pune University



Dr. Vijaykumar Shrimant Shirwal, Ph.D. (Electronics Engineering) Associate Professor in Electronics & Telecommunication Engineering Dept. of Nagesh Karajagi Orchid College of Engineering & Technology, Solapur. He has Teaching Experience of 25 years and Industrial Experience as a Design and Development Engineer 03 years. He Published 15 papers in International Journal and Conferences, one patent and guided more than 50+ project at UG and PG. He received the Funding of 2.5 L from RGSTC for the Project:

Intelligent Hybrid Electrical Vehicle. His Research Interest are in Wireless Communication Embedded System Design



Dr. Shrinivas R. Zanwar is graduated in Electronics & Telecommunication Engineering from College of Engineering, Osmanabad (MS) India in 2009 and received Masters from Dr. Babasaheb Ambedkar Marathwada University, Aurangabad in 2012. He has awarded PhD. in Electronics Engineering from Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. He has teaching experience of 15 years. Currently he is associated with CSMSS Chh. Shahu College of Engineering, Sambhaji Nagar as Professor & HoD in Artificial Intelligence & Data Science.

He is Life Member of IEI, ISTE and IETE. He has published two book chapters, 07 Journal papers in indexed and reputed Journals (Springer, Elsevier, IEEE etc.) and 06 papers in IEEE/Springer conferences. He is reviewer of various journals of Springer, Elsevier, IEEE, etc.). He worked as session chair in various conferences. He worked on various committees at University and College. His research interest is Signal & Image Processing, Deep Learning & Computer Vision.



Dr. Mrs. Rutuja A. Deshmukh is graduated in Electronics and Telecommunication Engineering from Rasoni College of Engineering, Nagpur (MS) India in 2009 and received Masters from Rashtra Sant Tukdoji Maharaj Nagpur University in 2011. She was awarded PhD. in Signal Processing. She has teaching experience of 15 years. From 2010 to 2012 she was working as an assistant professor at Priyadarshini College of Engineering, Nagpur.

From 2013 she is associated with D. Y. Patil College of Engineering, Akurdi Pune and presently she is working as Associate Professor and Head of Department in Electronics and Telecommunication Engineering. She is an IEEE member, Life Member of ISTE. She has published one book, 15 Journal papers in indexed and reputed Journals (Springer, Elsevier, IEEE etc.) and 6 papers in IEEE conferences. She is reviewer of international journals (Springer, Elsevier, IEEE, Communication society etc.) and conferences organized by IEEE. She has worked as session chair for various IEEE conferences and also organized IEEE conference in 2025. She has worked on various committees at University and College. Her research interests are in signal processing, VLSI, Machine learning and Artificial Intelligence.



Dr. P R. Dike
Session Incharge



Mr. M. K. Bhosale
Session Incharge



Dr. V. G. Rajeshwarkar
Session Incharge



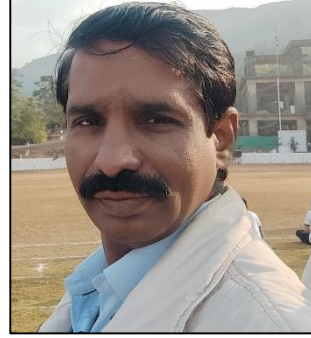
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SINHGAD INSTITUTE OF TECHNOLOGY, LONAVALA

Department of Electronics and Telecommunication Engineering

**National level Student Conference IEEE TECHNICOKNOCKDOWN-2025 (TKD-25)**

Technically Sponsored by IEEE Bombay section and IETE, Pune center supported by IEEE SITSB and IETE SIT, Lonavala



Schedule - Session I,II,III,IV, V,VI



Saturday, April 19, 2025

Inauguration : 10.00 am to 10.30 am		https://shorturl.at/rMjJR			
Artificial Intelligence and Machine Learning -1				Session-I	
Session-I Link		https://meet.google.com/dce-edja-ifd			
SN	Time	Paper ID	Title of Paper	Author Name	Coordinator/Chair
1	10:45 am to 12:45 pm	AIML-02	CLICK & CART - FASHION CLASSIFICATION AND OBJECT DETECTION	Utkarsha Vijay Dhanawade	Student Coordinator
2		AIML-05	FACE DETECTION AND RECOGNITION STUDENT ATTENDANCE SYSTEM	Sojwal Borale	Tanishka Ithape-8180821627
3		AIML-06	MEDICAL INSURANCE CLAIM VALIDATION SYSTEM	Aldar Sanket ABA	Session Coordinator
4		AIML-08	E-SHOP CLOTHING WITH VIRTUAL TRY-ON	Sujit Gawade	Mr.S.S.Salve 9561821394
5		AIML-10	DEVELOPMENT OF AN INTELLIGENT CROP PREDICTION SYSTEM USING MACHINE LEARNING	V.S.Kanherkar	Session Chair
6		AIML-11	SMART PREDICTIVE MAINTENANCE FOR HOSPITAL EQUIPMENT	Anjali Bhausaheb Pachore	Dr.Chandrakant D Kokne 899909997
7		AIML-13	DEEP LEARNING FOR SOYBEAN DISEASE DETECTION WITH VGG-16 MODEL	Yash Dinkar Dalal	
8		AIML-14	CROP YIELD DISEASE DETECTION USING DEEP LEARNING	Mangesh Tulshiram Ghorade	
9		AIML-15	FAKE ACCOUNT DETECTION ON INSTAGRAM: A MACHINE LEARNING APPROACH	Gayatri Sanjaykumar Yadav	
10		AIML-16	ADVANCEMENTS IN FAKE PROFILE DETECTION: A REVIEW OF MACHINE LEARNING APPROACHES	Sakshi Anil Ugale	
Artificial Intelligence and Machine Learning -2+ NGN				Session-II	
Session-II Link		https://meet.google.com/nzq-igyu-atm			
SN	Time	Paper ID	Title of Paper	Author Name	Coordinator/Chair
1	10:45 am to 12:45 pm	AIML-18	SMART ATTENDANCE MONITORING SYSTEM	Ingole Preeti Satish	Student Coordinator
2		AIML-19	FRUIT COUNTING AND YIELD ESTIMATION FOR ORCHARD MANAGEMENT SYSTEM	Shreya Parkale	Parth Dabhade-7385514578
3		AIML-20	AI-POWERED MULTILINGUAL AND INTELLIGENT LANGUAGE TRANSLATION PLATFORM WITH REAL-TIME PROCESSING	Sanika Doshi	Session Coordinator
4		AIML-21	AI-ML PROGNOSTIC MODEL FOR AGRI-HORTICULTURAL PRICE VARIABILITY	Atharv Kadam	Mr. M.K.Bhosale 7588628575
5		AIML-22	VISIONASSIST:REAL-TIME OBJECT DETECTION AND AUDIO GUIDANCE FOR THE BLIND PERSON	Harshal Taware	Session Chair
6		AIML-29	ADVANCED TECHNOLOGY FOR IMPROVED TIME MANAGEMENT IN TRAFFIC SIGNALS	ABHINANDAN HORE	Dr.Nishant Pachpor 9421888425
7		AIML-33	DISASTER MANAGEMENT USING MACHINE LEARNING	Janhvi Arya	
8		AIML-35	DEEPPFAKE DETECTION OF IMAGES USING DEEP LEARNING	Sonu Prasad Mahato	
9		AIML-42	INNOVATIVE DEEP LEARNING APPROACH FOR PARKINSON'S DISEASE PREDICTION:LEVERAGING CONVOLUTIONAL NEURAL NETWORKS FOR EARLY DETECTION	Neha S. Andhare	
10		NGN-01	EDGE-NFV(NETWORK FUNCTION VIRTUALIZATION):A KEY ENABLER FOR NEXT-GENERATION NETWORK	Muskan Rani	
Internet of Things (IoT)				Session-III	
Session-III Link		https://meet.google.com/rqw-yebe-xee			
SN	Time	Paper ID	Title of Paper	Author Name	Coordinator/Chair
1	10:45 am to 12:45 pm	IoT-06	SOIL HEALTH MONITORING SYSTEM FOR PRECISION AGRICULTUR	Jay Ranaware	Student Coordinator
2		IoT-11	IOT ENABLED SYSTEM FOR BRIDGE COLLAPSE AND FLOOD MONITORING	Suchel Manwar	Tharkeshwari Thombare - 9545171594
3		IoT-14	SMART PARKING SYSTEM: A DEEP LEARNING AND DJANGO-BASED FRAMEWORK FOR REAL-TIME PARKING MANAGEMENT AND USER INTERACTION	Anurag Kakade	Session Coordinator
4		IoT-17	BUS TRACKING APP USING GPS	Shubhangi Suresh Dhore	Dr.V.G.Rajeshwarkar 9423292099
5		IoT-19	SMART LIBRARY MANAGEMENT SYSTEM USING RASPBERRY PI 3B PLUS	Shivani Minanath Shitole	Session Chair
6		IoT-21	MACHINE LEARNING BASED SMART WATER DISTRIBUTION AND MONITORING SYSTEM	Unnati Phulmante	Dr. VijayKumar Shirwal 91 95525 29258
7		IoT-22	INTELLIGENT IRRIGATION AND WORM IDENTIFICATION	Saurabh Sanjay Bhosale	
8		IoT-24	IOT-BASED HUMAN WEARABLE EPILEPTIC SEIZURE ALERT SYSTEM	Yogesh Prabhakar Budhalkar	
9		IoT-25	GRAIN DISPENSER USING IOT	Shubham S. Linge	
10		IoT-26	AUTONOMOUS DELIVERY USING DRONE	Siddhi N. More	

Internet of Things (IoT)+ Robotics and Automation (RA)					Session-IV
Session-IV Link		https://meet.google.com/akk-cehz-ubr			
SN	Time	Paper ID	Title of Paper	Author Name	Coordinator/Chair
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2		IoT-29	POTHOLE DETECTION AND NOTIFICATION SYSTEM	OM JADHAV	Sabyasachi Mohapatra - 7841921853
3		IoT-30	AUTOMATED SMART SHOPPING TROLLEY: AN IOT AND SENSOR-BASED FRAMEWORK FOR INTELLIGENT RETAIL ASSISTANCE AND HANDS-FREE NAVIGATION	Shravani Kadam	Session Coordinator
4		IoT-33	PUF PARKCHAIN: SECURE AND SMART PARKING BASED ON PUF AUTHENTICATION.	Gaurav Narayan Shelke	Dr.Prashant R.Dike 9422014174
5		IoT-34	BIOMETRIC AUTHENTICATION AND RISK ALERT SYSTEM FOR CHEMICAL LABORATORIES	Vaishnavi Ghatge	Session Chair
6		RA-03	ENHANCING DEEPCRAK FOR ARBITRARY IMAGE SIZES VIA TILING-BASED SEGMENTATION	Abi Talib	Dr.V.M.Rohokale 9689922524
7		RA-02	DESIGN AND DEVELOPMENT OF MULTI-PURPOSE AGRICULTURE ROBOTIC CAR USING ESP32.	Akanksha Kalantre	
8		RA-07	SOLAR POWERED REMOTE CONTROL SEED SOWING MACHINE	Pratiksha H.Salunkhe	
9		RA-08	ADVANCED DRIVER ASSISTANCE SYSTEM USING IMAGE PROCESSING FOR BLINDSPOT DETECTION	Sakshi Umesh Chavan	
10		RA-01	AUTOMATIC CONTINUITY AND RESISTANCE TESTING OF 20A ROTARY CAM SWITCH	Om Waman Khandale	
Others					Session-V
Session-V Link		https://meet.google.com/wyu-jnpr-aft			
SN	Time	Paper ID	Title of Paper	Author Name	Coordinator/Chair
1	10.45 am to 12.45 pm	OT-1	GREEN LEAF DISEASE DETECTION AND IDENTIFICATION USING RASPBERRY PI	Samruddhi Prakash Pawar	Student Coordinator
2		OT-3	REAL TIME ATTENDANCE MONITORING SYSTEM USING BIOMETRIC AUTHENTICATION	Rohan Ravindra Londhe	Vedika Ghinmine 9022068780
3		OT-4	CFD ANALYSIS OF RC PLANE FOR OPTIMIZED ENVIRONMENTAL MONITORING IN SMART CITIES	Pratham R. Kale	Session Coordinator
4		OT-5	FLAT FINDER : DISCOVER YOUR PERFECT RENTAL	Kunal Divekar	Mr.Satish Asane 9325642433
5		OT-6	AUDIO COMPARISON USING PYTHON	Saurabh Patil	Session Chair
6		OT-7	SMARTSPEND : AI FINANCIAL MANAGEMENT WEBAPP	Rutuja Mahadev Mane	Dr. Shrinivas Zanwar 9766725039
7		OT-9	MULTI-VIEW FEATURE FUSION FOR EFFECTIVE MALWARE CLASSIFICATION USING DEEP LEARNING	Aishwarya Chaitanya Ayare	
8		OT-15	TREND TRY-ON: DISCOVER YOUR PERFECT LOOK WITH VIRTUAL TRY-ONS	Rushikesh Dikkar	
9		OT-16	SIMULATION AND ANALYSIS OF ANTENNA USED FOR AR/VR APPLICATIONS	Tanmay J Chimankar	
10		OT-17	VEHICULAR TRAFFIC AND ADAPTIVE AMBULANCE SIGNAL CHANGE USING RASPBERRY PI	Devendra Hawaldar	
Others+SNSA + EV					Session-VI
Session-VI Link		https://meet.google.com/ysu-wcru-idx			
SN	Time	Paper ID	Title of Paper	Author Name	Coordinator/Chair
1	10.45 am to 12.45 pm	OT-18	COLLEGE COUNSELLOR APPLICATION	Shrikrushna Ankush Nalawade	Student Coordinator
2		OT-25	DESIGN AND DEVELOPMENT OF A NON-MYDRIATIC FUNDUS CAMERA FOR RETINAL IMAGE	Vimlendu Yadav	Tanusha Mahakal 7720971669
3		OT-26	POWER GENERATION USING SPEED BREAKER	Raj Kamble	Session Coordinator
4		OT-28	LI-FI BASED AUDIOTRANSMISSION	RUSHITA SANJAY AMRUTKAR	Mrs.Pallavi Mhetre 9404249846
5		SNSA-02	SNSA-02 SMART WATER LEVEL MONITORING AND CONTROLLING SYSTEM	Nivedita Sugandhi	Session Chair
6		SNSA-03	ACCIDENT ALERT AND LOCATION TRACKING SYSTEM	Prajakta Prabhakar Lavand	Dr. Rutuja Deshmukh +91 7709 004 301
7		SNSA-06	LIDAR BASED MICRO DRONE WITH PROXIMITY SENSING	Dipali kandangire	
8		SNSA-04	WEATHER FORECASTING APP BY FLUTTER	Pooja Ghude	
9		EV-01	EVCS PLUG AND PAY: EV CHARGING STATION LOCATOR APP WITH RESERVATION AND PAYMENT FEATURE	Anant Shivaji Nikam	
10		EV-02	ADVANCEMENT IN HIGH EFFICIENCY TRACTION MOTOR FOR ELECTRIC VEHICLES	Shruti Ratan Mandlik	



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Organizing ChairTKD-25



AIML:02 Click and Cart Fashion Classification and Object Detection

Nandini Khandade¹, Sapna Kedare², Utkarsha Dhanawade³, Pranjal Madhvi⁴, Prof. Aarti Devmane⁵
 1,2,3,4,5 IT Department Shivajirao S. Jondhale College of Engineering Dombivli, India
 nandinikhandade@gmail.com¹, sapanakedar01@gmail.com², utkarshadhanawade249@gmail.com³,
 pranjalmadavi2002@gmail.com⁴, artidevmane03@gmail.com⁵

ABSTRACT: In the fast-paced world of e-commerce, object detection and fashion classification are both key to driving user experience and operational efficiency. "Click & Cart" is a sophisticated system aimed at overcoming issues in fashion retail by bringing together cutting-edge computer vision technologies for object detection and machine learning methods for fashion classification. The system utilizes deep learning models, specifically Convolutional Neural Networks (CNNs), to identify and detect fashion products like clothing, accessories, and shoes from product images. It also employs object detection algorithms such as YOLO (You Only Look Once) and Faster R-CNN to identify important components within images, allowing for the extraction of detailed information like color, fabric, and style. With both detection and classification integrated, Click & Cart supports personalized recommendations, virtual try-on, and optimizing inventory. Through this model, customer satisfaction will be enhanced using more effective search, real-time recommendations, and an improved online shopping experience. In addition to this, Click & Cart presents a solution with scalability across numerous platforms and sites, offering the same level of consistency whether using online or mobile shopping channels.

Keywords: YOLO(You Only Look Once) , CNN, R- CNN, Keras, Tensorflow.

AIML:05 Face Detection and Recognition Student Attendance System

Sojwal Borale¹, Aditya Pandav², Vivek Narkhede³, Amit Risodkar⁴
 1,2,3,4 Dept. Electronics & Telecommunication Engg. SSGMCE, Shegaon Maharashtra, India.
 sojwalborale@gmail.com¹, adityapandav9@gmail.com², viveknarkhede2003@gmail.com³,
 amitrisodkar@gmail.com⁴

Abstract: Facial recognition is a reliable and widely used method for identifying individuals based on their unique facial features. This technology plays a crucial role in applications such as security, access control, and personal authentication. A face recognition system typically operates in two key stages: face detection and face recognition. The detection phase identifies whether an image contains a face, while the recognition phase matches the detected face to a stored identity or database. This project focuses on designing and implementing a robust face recognition system using advanced image processing techniques. It leverages popular libraries such as TensorFlow and TFlern for building the recognition model. These tools provide a flexible framework for developing machine learning algorithms, enabling accurate detection and identification of faces from input images. Additionally, the project introduces a feature for generating audio feedback by recording and storing the names of authorized individuals. This enhances the system's usability by providing audible confirmation of recognized individuals, making it suitable for various interactive applications. The integration of OpenCV for image handling and Tkinter for creating a user-friendly graphical interface further enriches the system's functionality. By combining advanced image processing methods and intuitive design, this project showcases a practical approach to real-time face recognition, offering a versatile solution for real-world scenarios.

Keywords: Face Recognition System, TensorFlow, TFlern, OpenCV, Tkinter, Image Processing.

AIML:06 Medical Insurance Claim Validation System

¹Sonal Tiwari, ²Sanket Aldar, ³Kanishk Mane, ⁴Deepali Narkhede
Student, Department of Information Technology^{1,2,3} Assistant Professor, Department of Information
Technology⁴
Shivajirao S. Jondhale College of Engineering Dombivli, Maharashtra, India.

Abstract: Medical fraud is the intentional filing of a false claim or misrepresentation of facts to obtain payment. As a result, health benefits have decreased and medical costs have increased. The fraud later revealed significant financial problems. The reform, machine learning and deep learning such as random forests, logistic regression, and artificial neural networks have been successfully used to analyze health insurance. Medical Insurance Claims Validation System (MICVS) is a comprehensive framework designed to improve the efficiency and accuracy of the medical health insurance claims validation manner. In a quick-paced health care environment, powerful insurance declare agreement performs an important function in ensuring economic stability for fitness care companies and supplying uninterrupted carrier to patients.

Keywords: Health insurance claim validations, Machine learning, healthcare, regression, big data analytics.

AIML:08 E-Shop Clothing with Virtual Try-On

Pratik Kape¹, Sarthak Joshi², Sujit Gawade³, Satyajeet Babar⁴, Prof. Jaishri Shilpakar⁵
1,2,3,4,5 Department of Computer Engineering P.G Moze College of Engineering Pune, India
kapepratik42@gmail.com¹, sarthakj134@gmail.com², gawadesujit86@gmail.com³,
satyajeetbabar7@gmail.com⁴, jaishrip52@gmail.com⁵

Abstract: The rise of e-commerce in fashion has revolutionized shopping but presents challenges like size selection, fit accuracy, and high return rates. Virtual Try-On (VTO) technology based on deep learning addresses these issues by enabling users to visualize apparel before purchase. This research integrates deep learning, leveraging Generative Adversarial Networks (GANs) and Convolutional Neural Networks (CNNs) to develop a realistic VTO system.

Results indicate improved user engagement, higher conversion rates, and reduced returns, enhancing consumer confidence. While challenges like processing constraints and garment texture accuracy remain, advancements in real-time AR fitting and AI-driven personalization can further refine VTO. By transforming online apparel shopping, this technology paves the way for AI-driven innovations in fashion and beyond.

Keywords: Virtual Try-On (VTO), E-Commerce Fashion, Artificial Intelligence (AI), MERN Stack, Deep Learning, Generative Adversarial Networks (GANs), Convolutional Neural Networks (CNNs), Augmented Reality (AR), Size and Fit Prediction, AI-Powered Personalization

AIML:10 Development of An Intelligent Crop Prediction System Using Machine Learning

Dr. J.M.Patil¹, V. S. Kanherkar²

1,2 Dept of Computer Science & Engineering Shri Sant Gajanan Maharaj College of Engineering,
Shegaon India.

jmpatil@ssgmce.ac.in¹, vaishnavikanherkar508@gmail.com²

Abstract: In a country where almost 58% of the population works as farmers, farmers' inability to choose the optimal crop for the land by conventional and non-scientific methods may be a real problem. The sustainability of agriculture is now seriously threatened by changes in the weather, climate, and other environmental factors. In order to boost crop production and yield, this research presents a crop recommendation system for Indian agriculture that uses machine learning. The forecasts made by machine learning algorithms will help farmers choose which crop to plant in order to maximize production by accounting for factors like temperature, rainfall, acreage, etc. In this case, the classifier models used include logistic regression, decision trees, and random forests. As a result, the system will predict the above 80% best crop for given data of soil. which helps the crops to achieve a successful growth. The data set used in this system is gathered from multiple sources. The raw data is transformed into processing data using data parsing and purification techniques. An effective crop value updating system is created by subjecting the acquired data to a machine learning system and run- time analysis. This approach would increase production while reducing the challenges farmers encounter when selecting crops.

Keyword: Machine Learning, Crop Yield Prediction, Decision trees, random forests, Logistic Regression

AIML:11 Smart Predictive Maintenance for Hospital Equipment

Satish Tukaram Pokharkar¹, Anjali Bhausaheb Pachore², Nikita Sopan Katore³, Sakshi Arjun Andhale⁴

1,2,3,4 Deapment of Eletronics and computer Engineering Pravara Rurual Engineering college Loni
(SPPU Pune)Loni, India

satishpokharkar37@yahoo.com¹, anjalibpachore@gmail.com²,
katorenikita2020@gmail.com³, sakshiandhale77@gmail.com⁴

Abstract: As institutions strive to achieve world-class service delivery, there is a growing recognition of the importance of effectively maintaining operational facilities and equipment. This is especially relevant in the healthcare sector, where both machines and equipment are becoming increasingly sophisticated and technologically advanced—making them more challenging to manage and maintain.

This study aimed to evaluate the efficiency of maintenance strategies employed in three public hospitals. The key objectives were to identify the various maintenance approaches used for hospital equipment, examine the challenges associated with these practices, and assess their impact on the quality of healthcare service delivery. To gather relevant data, purposive sampling was employed, and 55 questionnaires were distributed among equipment operators and maintenance staff. The findings highlighted a significant issue of equipment unavailability, largely caused by frequent failures. These failures were linked to ineffective maintenance schedules, frequent breakdowns, and a shortage of skilled personnel.

Keywords: Equipment Maintenance, Healthcare Service Delivery, Public Hospitals, Maintenance Strategies

AIML:13 Deep Learning for Soybean Disease Detection with VGG-16 Model

¹Prof. Vikram Ingole, ²Yash Dalal, ²Ankita Navghare, ²Mangesh Ghorade, ²Vaishnavi Girhe

¹Assistant Professor, ²Undergraduate students Department of Electronics and Telecommunication Engineering

Shri Sant Gajanan Maharaj College of Engineering Shegaon, India.

Abstract: Soybean is an important crop worldwide, which plays an important role as a source of oil and protein for survival. Like humans, crops are susceptible to bacterial, fungal, and viral diseases, so their early detection and treatment can prevent significant losses. Accurate diagnosis of diseases is critical in soybean farming, because it requires human labour also the process is lengthy. VGG-16 is a specialized deep learning algorithm, involving feature extraction which is the most effective at crop image analysis and disease detection.

The objective of this research is to explore the VGG-16 model using data enhancement techniques, ensuring the crop health, and the analysis of crop health detection become easier than before. The model was trained using publicly available data as well as manually collected dataset to ensure effective & accurate results. Its performance was carefully tested on dataset includes images of both healthy and diseased soybean plants, with 20% reserved for analysis & the results demonstrated an impressive accuracy of 99%. Which indicates the validity and accuracy of the model. This study presents a practical and efficient solution for automated soybean disease control using VGG-16, providing a scalable approach to improve plant health management and support sustainable agriculture

Keywords: Plant Disease, VGG16, Deep Learning, Agriculture, and Manual dataset.

AIML:14 Crop Yield Disease Detection using Deep Learning

1Prof. Vikram Ingole, 2Yash Dalal, 2Ankita Navghare, 2Mangesh Ghorade, 2Vaishnavi Girhe

1Assistant Professor, 2UG students Department of Electronics and Telecommunication Engineering

Shri Sant Gajanan Maharaj College of Engineering Shegaon, India.

Abstract: Soybean is an essential crop worldwide, providing substantial quantities of oil and protein for food consumption by humans and animals. Like humans, crops are susceptible to bacterial, fungal and viral diseases, so early detection and treatment is essential to avoid large crop losses. In soybean agriculture, disease identification is a crucial task, as diseases can significantly affect the quantity and quality of crops. ML models, specifically Convolutional neural networks (CNNs) based on deep learning, have demonstrated remarkable success in analyzing images for disease detection in various crops. The model is developed, and data enhancement techniques are used to extend the data set. These models can estimate yield with varying degrees of precision by analyzing images of soybeans and extracting relevant features. Instead of relying on the available data set, the model was trained on a manually collected data set as well. After training, the model was rigorously tested to verify its performance. Experiments using a 20% data set for testing, including healthy and unhealthy plant images showed that the model achieved an extraordinary accuracy of 98%. In conclusion, this study presents a study of robust in-depth model that provides an effective approach to plant health monitoring.

Keywords: Plant Disease, CNN, Deep Learning, Agriculture, and Manual dataset.

AIML:15 Fake Account Detection on Instagram: A Machine Learning Approach

1st Vyanktesh Rampurkar, 2nd Gayatri Yadav, 3rd Sakshi Ugale, 4th Manjiri Makode, 5th Pranjal Kshirsagar

Department of Computer Engineering Vidya Pratishthan's Kamalnayan Bajaj Institute of Engineering and Technology, Baramati (Pune), India

vyanktesh.rampurkar@vpkbiet.org¹, gayatrisyadav2003@gmail.com², sakshiugale23@gmail.com³, manjirimakode6@gmail.com⁴, pranjalk1110@gmail.com⁵

Abstract: The growth of social media platforms in recent years has resulted in an unparalleled increase in phony profiles, raising serious concerns about online security and trust. Using cutting-edge machine learning techniques, this research article offers a thorough investigation into the identification of phony Instagram profiles. Support Vector Machines (SVM) and Ensemble Learning techniques are included in our work to analyze important attributes including follower-following ratios, engagement metrics, and profile completeness. Ultimately, the suggested system seeks to improve the integrity of social media interactions by providing a dependable solution that strikes a compromise between technical rigor and human interpretability by utilizing both statistical analysis and data-driven methodologies. Through extensive experimentation and analysis, the paper discusses the challenges of imbalanced datasets and adversarial attacks, and offers insights into adaptive and deep learning strategies for real-time detection.

Keywords: Fake Profile Detection, Instagram Security, Machine Learning, Support Vector Machine, Ensemble Learning, Data Imbalance, Feature Engineering, Web-based Application, Adaptive Learning, Social Media Analysis.

AIML:16 Advancements in Fake Profile Detection: A Review of Machine Learning Approaches

1st Vyanktesh Rampurkar, 2nd Gayatri Yadav, 3rd Sakshi Ugale, 4th Manjiri Makode, 5th Pranjal Kshirsagar

Department of Computer Engineering Vidya Pratishthan's Kamalnayan Bajaj Institute of Engineering and Technology, Baramati (Pune), India

vyanktesh.rampurkar@vpkbiet.org¹, gayatrisyadav2003@gmail.com², sakshiugale23@gmail.com³, manjirimakode6@gmail.com⁴, pranjalk1110@gmail.com⁵

Abstract: With the rapid expansion of social media, the prevalence of fake profiles has surged, leading to concerns related to scams, misinformation, and cyberbullying. This study explores a machine learning-based approach for detecting fraudulent Instagram profiles, utilizing the Support Vector Machine (SVM) algorithm. The model evaluates accounts based on key characteristics, including the follower-to-following ratio, engagement patterns, and profile completeness, to classify them as genuine or fake. Experimental analysis indicates that SVM performs effectively in identifying fraudulent accounts, offering a robust method for enhancing online security.

Keywords: Fake Profile Detection, Instagram, Machine Learning, Support Vector Machine, Social Media Security.

AIML:18 Smart Attendance Monitoring System

1st Ms.Ingole Preeti, 2nd Ms.Wayal Sayali, 3rd Ms.Nanaware Payal, 4th Mr.Patil Balasaheb
dept. Electronics and Telecommunication Engineering VPKBIET,Baramati.
preetiingole21@gmail.com¹, sayaliwayal@gmail.com², payalnaware93@gmail.com³,
balasaheb.patil@vpkbiet.org⁴

Abstract: This paper presents the development of a Smart Attendance Monitoring System using machine learning and face recognition technology to automate the process of tracking student attendance. The system uses cameras to record the student entry and exit times and save this data in an Excel Sheet. By leveraging face recognition, the system identifies students and monitors how long they remain in the classroom. If student stays for at least 30 minutes, their attendance is automatically marked as present. This approach eliminates manual attendance-taking, improves accuracy, and prevents proxy attendance, providing an efficient solution for educational institutions.

Keywords: Attendance Monitoring, Machine Learning, Face Recognition, Open CV.

AIML:19 Fruit Counting and Yield Estimation for Orchard Management System

1st Shreya Parkale, 2nd Akshata Nale, 3rd Rushikesh Raut , 4th Shreyas Sawant, 5th Dr.Chaitanya Kulkarni
Department of AIDS VPKBIET Pune, India
shreyaparkale1344@gmail.com¹, akshatanale2122@gmail.com², rushikeshrautrwr@gmail.com³,
shreyassawant009@gmail.com⁴, chaitanya.kulkarni@vpkbiet.org⁵

Abstract: Fruit counting and yield estimation are crucial for effective orchard management, resource allocation and market forecasting. Traditional methods for managing these aspects are labor-intensive, time consuming and often lack precision but deep learning and computer vision technology have recently automated this process. In this work, we provide a precise methodology that helps to build accurate and reliable fruit counting and yield estimation system for orchards using image processing coupled with object detection and deep learning approach. This work presents a web application that leverages the MiniLabelNet-Count framework, a weakly supervised deep learning model designed for detecting and counting fruits in images. By utilizing only binary presence/absence annotations during training, the application minimizes the need for extensive manual labeling, making it accessible for a wide range of users, including farmers and agricultural researchers. The system detects fruit with YOLO and Masked R-CNN models and tries to reduce the occlusion rate. The results of the system are compared with ground-truth and evolution metrics. The proposed system proved to be highly accurate and stable in fruit detection, tracking as well as in yield estimation on the various parameters like weather conditions, soil quality, fruit count and size. It gives a promising solution to enhance efficiency, accuracy and profitability in apple orchard management.

Keywords: Fruit Counting, Yield Estimation, Deep Learning, Weakly Supervised Learning, YOLO, MiniLabelNet-Count, Faster R-CNN

AIML:20 AI-Powered Multilingual and Intelligent Language Translation Platform with Real-Time Processing

Doshi Sanika^[1], Prof. M.D .Kawade^[2] Chougule Sammed^[3] Rokade Pratham^[4] Luhade Darshan^[5]

1,3,4,5 Department of Computer Engineering, SNJB's LSKBJ, College of Engineering,

2Assistant Professor, Department of Computer Engineering, SNJB's LSKBJ, College Of Engineering, Chandwad, Chandwad,

sanikadoshi98@gmail.com¹, kawade.mdcoe@snjb.org², sammedc18@gmail.com³,
rpratham40@gmail.com⁴, darshanluhade24@gmail.com⁵

Abstract: This smart text translation platform utilizes cutting-edge ML and NLP methods, such as Transformer models (BERT, T5) and Seq2Seq models with attention, to deliver extremely accurate, context-sensitive translations while maintaining syntax, semantics, and cultural subtleties. Multilingual support, it uses AI-based algorithms and real-time processing to provide quick and accurate translations. With an easy-to-use interface and a high-performance engine, it supports smooth interactions for users across different applications such as education, commerce, medicine, and global communication. Its scalability ensures it adjusts to changing linguistic trends, which enables constant development and readiness for the future. Through breaking down language barriers, it enables world connectivity, supports inclusivity, improves accessibility, and transforms multilingual interaction into reality, allowing for effortless cross-cultural communication.

Keywords: Machine Learning (ML), Natural Language Processing (NLP), Transformer Models, BERT, Context-Aware Translation, Real-Time Processing, Neural Machine Translation (NMT).

AIML:21 AI-ML Prognostic Model for Agri-Horticultural Price Variability

1st Atharv Kadam, 2nd Pratik Thakare, 3rd Gayatri Jagdale, 4th Vaishnavi Chavan, 5th Chaitanya Kulkarni
1,2,3,4,5 Department of AIDS VPKBIET Pune, India

athukadam2003@gmail.com¹, pratikthakare0201@gmail.com², gayatrijagdale72@gmail.com³,
vaishnavic823@gmail.com⁴, chaitanya.kulkarni@vpkbiet.org⁵

Abstract: Accurate price forecasting of agri-horticultural commodities like pulses and vegetables (e.g., onion and potato) plays a vital role in ensuring food security and stabilizing markets. The Department of Consumer Affairs monitors prices of 22 essential commodities through an extensive network of price reporting centers and uses buffer stocks of pulses (gram, tur, urad, moong, masoor) and onion to manage supply and control price fluctuations. In this work, a data-driven forecasting framework is developed using machine learning techniques, focusing solely on historical price trends through lag and rolling statistical features. The results demonstrate that simple yet structured time series features can offer reliable short-term forecasts, supporting timely policy decisions for buffer stock release and market intervention. This method provides a streamlined and scalable alternative to traditional forecasting approaches.

Keywords: Agri-horticultural commodities, Price forecasting, Buffer stocks, market interventions, Lag, Rolling features, Short-term forecasts, Machine learning.

AIML:22 Vision Assist: Real-Time Object Detection and Audio Guidance for the Blind Person

1st Harshal Taware, 2nd Pranit Thomabar, 3rd Pragati Hingane, 4th Smit Vhora, 5th Hema Jadhav
 1,2,3,4 student AI&DS Engineering, VPKBIET, Baramati, India
 5 Asst.Prof. AI&DS Engineering, VPKBIET, Baramati, India
 harshalt2808@gmail.com¹, pranitthombare21@gmail.com², hingane.pragatip@gmail.com³,
 hingane.pragatip@gmail.com⁴, hemakjadhav@gmail.com⁵

Abstract: Blind individuals face considerable difficulties in interacting with their environment due to their inability to detect objects and avoid obstacles independently. This research examines recent progress in developing systems that combine real-time object detection with audio guidance for individuals with visual impairments. These solutions utilize advanced deep learning algorithms, including YOLO and CNN, to identify objects in live video feeds and convert this information into spoken feedback using text-to-speech technology such as Text-to-Speech. Innovative and affordable implementations, like AI-Sense Vision and wearable devices, incorporate sensors and computer vision to improve mobility, environmental awareness, and self-reliance. By integrating object recognition with natural language processing and multi-modal data analysis, these user-friendly systems enable visually impaired people to navigate various settings with greater confidence and autonomy, both indoors and outdoors.

Keywords: YOLOv5, Text-to speech, CNN, Multi-model data analysis, Audio guidance.

AIML:29 Advanced Technology for Improved Time Management in Traffic Signals

Abhinandan Hore¹, Asif Khan²

1 M. Tech, Department of CSE, Greater Noida Institute of Technology (Eng. Institute), Noida, India
 2 Associate Prof., Dept. Of CSE, Greater Noida Institute of Technology (Eng. Institute), Noida, India
 abhiccollege2002@gmail.com¹,officialjersey15@gmail.com²

Abstract: This paper introduces the time optimization for the traffic signal performance, aims to reduce traffic and time in the most convenient way. In this paper, a smart convergence framework model is created. The study of the model includes with the techniques of artificial intelligence and machine learning algorithms approaches. This research is to generally way to implement in a real world where there is a big problem of traffic congestion in metro cities and towns. This research will leads to a betterment of the people in terms of transport. Generally, an automated signals is controlled with the fixed time system of signals. Fixed time systems traffic control systems operates the signals at fixed intervals of time which impacts the wastage of time if there sometimes less number of vehicles in a queue. This research paper combines multiple methods, such as AI with metaheuristics, to enhance accuracy and adaptability. It combines multiple approaches, Genetic Algorithms with Fuzzy Logic. It leverages strengths of multiple algorithms. Hybrid methods have shown that improvements of up to 40% in reducing delays. Here, in my research, tried to effectively contribute for time optimization for traffic control signal for its efficiency by Hybrid models, which combines Genetic Algorithms with Fuzzy logic. The effectiveness or "accuracy" of these algorithms is typically measured in terms of their ability to optimize traffic metrics rather than traditional classification/regression accuracy. Real-world accuracy may vary based on the city, traffic patterns, and sensor fidelity. This research, we have shown simulation of hybrid model which is a combination of Genetic algorithm and fuzzy logic for traffic signal control.

Keywords: Machine Learning (ML), Traffic signal optimization, Genetic Algorithm, Multi-Agent Systems, Fuzzy Logic, Hybrid Genetic Algorithm-Fuzzy.

AIML:33 Disaster Management using Machine Learning

Janhvi Arya¹, Manasvi Kamble², Trupti Londhe³, Atharva Wayadande⁴, Aarti Bakshi⁵

^{1,2,3,4} U.G. Student, ⁵ Assistant Professor

^{1,2,3,4,5} Department of Electronics and Telecommunication Engineering, K.C. College of Engineering and Management Studies.

Abstract: Natural disasters like earthquakes, floods, cyclones, and wildfires continue to pose severe threats to human life, infrastructure, and the environment. Traditional disaster management approaches often rely on reactive measures, which limits the ability to mitigate the impact effectively. To overcome this issue our project “Disaster Management using Machine Learning” aims to develop a machine learning-based disaster management system that integrates Internet of Things (IoT) technology to offer an early warning solution for multiple types of disasters. By deploying a network of sensors that monitor parameters such as humidity, temperature, gas levels, and seismic activity, real-time data is collected and transmitted to a cloud platform.

Machine learning algorithms are then applied to analyze sensor data, detecting anomalies and predicting potential disaster events. The system provides alerts and actionable insights via a mobile application, allowing for efficient response and resource allocation. Unlike traditional methods focused on a single disaster type, this system is adaptable to various environments and disaster scenarios, making it an all-encompassing solution for both urban and rural settings. The proposed solution is intended to improve preparedness, reduce response time, and minimize loss, ultimately enhancing community resilience against disasters.

Keywords: Disaster Management, Machine Learning, Linear Regression, Prediction, Alert System

AIML:35 Deepfake Detection of Images using Deep Learning

Sonu Prasad Mahato*, Srushti Patwa*, Gauri Pansare*, Prof. R.S. Piske

*Department of E&TC Engineering, VPKBIET, Baramati, Maharashtra, India

sonubab2222@gmail.com¹

Abstract: The increasing prevalence of realistic AI-generated images, or deepfakes, challenges digital information integrity. This paper introduces an integrated web platform using deep learning to identify such images. Our method employs a VGG19 Convolutional Neural Network (CNN), adapted via transfer learning using a diverse 20,000-image dataset focused on human subjects and high-quality fakes. A FastAPI backend handles processing and orchestrates inference calls to a basic remote model service and an advanced analysis API placeholder. User interactions, including feedback via Google Docs API, are managed through this backend. A React/TypeScript frontend offers an intuitive interface for image submission and result viewing. Emphasizing modularity, the system achieved 83.0% classification accuracy on our test set. This accessible tool (<https://ai-recognizer-app.netlify.app/>) aids in verifying image authenticity against digital misinformation.

Keywords: Deepfake Detection, Deep Learning, Convolutional Neural Network (CNN), VGG19, Transfer Learning, Fast API, React, Image Forensics, AI-Generated Images, Digital Trust.

AIML:42 Innovative Deep Learning Approach for Parkinson's Disease Prediction: Leveraging Convolutional Neural Networks for Early Detection

¹Neha Andhare, ²Aishwarya Jadhav, ³Vaishnavi Jadhav and ⁴Dr. Savita Sangam
1,2,3,4 Department of Information Technology, SSJCOE, Dombivli, India

Abstract: Parkinson's disease (PD) is a progressive neurodegenerative disorder that primarily affects movement control. Early diagnosis and intervention are critical for improving patient outcomes and quality of life. PD poses a significant challenge for accurate diagnosis due to its similarities with other neurological conditions, resulting in a 25% rate of inaccurate manual diagnoses. Convolutional neural networks (CNN) are a type of deep learning model that have been shown to be effective in image analysis as they are able to learn complex patterns in images and identify subtle changes that may be indicative of disease. In this project, we introduce an innovative CNN-based automated diagnostic system that effectively distinguishes PD from healthy controls (HC). We have used the Parkinson Progression Markers Initiative (PPMI) dataset, which provides publicly available benchmarked magnetic resonance imaging (MRI) images for both PD and healthy controls (HC). It contains a total of 31436 records of MRI scans and is categorized into PD (18690) and healthy control (12746). Furthermore, data is divided into training, validation, and testing sets with a ratio of 80%, 10%, and 10%, respectively.

Keywords: Deep Learning, Parkinson's Disease Prediction, Convolutional Neural Networks, Early Detection, Medical Image Analysis, Biomarker Identification.

NGN 01: Edge-NFV (Network Function Virtualization): A Key Enabler for Next-Generation Network

Muskan Rani¹, Nidhi Goswami², Smita Kansal³
1,2,3 IT Department (Institute of Technology & Science, Mohan Nagar, Ghaziabad)
muskanrani0904@gmail.com¹, nidhigoswami008@gmail.com², smitakansal@its.edu.in³

Abstract: Network Function Virtualization (NFV) at the edge is a transformative approach for next-generation networks, enabling ultra-low latency, scalability, and flexibility in service deployment. This research paper, explores the evolution, implementation, and future aspects of NFV at the edge, examining its core components, benefits, and technical challenges. The study investigates various use cases across telecommunications, smart cities, and industrial IoT sectors. Additionally, the paper identifies key research for the detailed examination of security, considerations, resource management strategies, and integration requirements, this analysis provides information about current capabilities and future potential of NFV at the edge, highlighting the role in shaping next-generation network infrastructure.

Keywords: Edge Computing, Network Function Virtualization, Network Orchestration, Virtual Network Functions, Network Intelligence.

IOT 06: Soil Health Monitoring System for Precision Agriculture

Prof. V. R. Kulkarni¹, Rutik P. Shinde², Jay N. Ranaware³, Sagar S. Karkud⁴

“BSCOER, PUNE”

vkulkarni_entc@tssm.edu.in¹, rutikshinde776@gmail.com², jayranaware7074@gmail.com³,
karkudsagar@gmail.com⁴

Abstract: This project presents a Soil Health Monitoring System designed for precision agriculture using IoT and sensor technology. The system continuously monitors soil moisture, pH, temperature, and nutrient levels, providing real-time data to farmers. Smart sensors collect the data, which is processed by a microcontroller and displayed on a cloud-based platform. This enables better decision-making for irrigation, fertilization, and crop management. By integrating IoT and data analytics, the system helps optimize resources and supports sustainable farming practices.

Keywords: Soil quality monitoring, precision farming, IoT, agricultural technology.

IOT 11: IOT Enabled System for Bridge Collapse and Flood Monitoring

Prof. P. A. Patil¹, Vedant Waghmode², Suchel Manwar³, Sanika Shinde⁴

1 Faculty, 2,3,4 Student “BSCOER, PUNE”

kulkarni.prati@gmail.com¹, vedantwaghmode0@gmail.com², suchelmanwar1111@gmail.com³,
ssanika566@gmail.com⁴

Abstract: The project "IoT Enabled System for Bridge Collapse and Flood Monitoring" aims to enhance bridge safety through real-time structural health monitoring. It integrates IoT technology with advanced sensors to detect cracks, strain, while monitoring water levels for flood risks. Data is transmitted via GSM to a central unit for analysis, enabling quick action to prevent failures. This system reduces manual inspection efforts, minimizes maintenance costs, and enhances public safety. Its scalable design allows deployment across multiple bridges. By providing continuous monitoring and timely alerts, the project ensures proactive maintenance, reducing the risk of catastrophic bridge failures.

Keywords: Bridge monitoring, flood detection, IoT technology, wireless sensors

IOT 14: Smart Parking System: A Deep Learning and Django-Based Framework for Real-Time Parking Management and User Interaction

1st Anurag Kakade, 2nd Shreyash Khuspe, 3rd Atharv Kore, 4th Dr. Jyoti Rangole

1,2,3,4 Department of E&TC Engineering VPKBIET, Baramati Maharashtra, India
anurag.kakade20@gmail.com¹, shreyashkhuspe@gmail.com², atharvkore9@gmail.com³,
jyoti.rangole@vpkbiet.org⁴

Abstract: This paper introduces a vision-based smart parking system that leverages deep learning for real-time parking space occupancy detection and the Django web framework for user management. A Convolutional Neural Network (CNN) processes video feeds to classify parking spaces as occupied or vacant, achieving an accuracy of over 96%. The Django backend provides user authentication, profile management, and live navigation via Google Maps integration. Experimental results from a prototype deployment demonstrate robust performance with low latency and high user satisfaction, advancing smart parking solutions with a practical framework for urban parking management.

Keywords: Smart Parking, Deep Learning, Convolutional Neural Network, Django, Real-Time Detection, User Interface, Navigation, Parking Management

IOT 17: BUS Tracking App Using GPS

Dhore Shubhangi Suresh¹, Dumbre Gayatri Ramchandra², Pokharkar Ratikant Sharad³, Dere Kapil D⁴
1,2,3,4 Dept.of Computer Engineering, Jaihind College of Engineering Kuran, India
shubhangidhore6@gmail.com¹, gayatridumbre1506@gmail.com², ratikantpokharkar008@gmail.com³,
kapilddere@gmail.com⁴

Abstract: Efficient transportation management is essential for colleges to ensure student safety and punctuality. This paper presents a real-time college bus tracking system integrating GPS, IoT, Firebase, Google Maps API, and AI chatbot technology. The system includes three user roles: Admin, Bus Driver, and Student. Admins monitor live bus locations, track maintenance schedules, and receive alerts on bus conditions (fuel, temperature, vibration). Drivers update trip status and send emergency SOS alerts. Students receive real-time bus arrival notifications, track live locations, access an AI-powered chatbot (Gemini Pro) for assistance, and view safety videos.

Keywords: College Bus Tracking, GPS, Firebase, AI Chatbot, IoT, Google Maps API, ESP32, Student Safety, Real-time Tracking, Smart Transport.

IOT 19: Smart Library Management System Using Raspberry Pi 3b+

S.V. Malage¹, Shivani M. Shitole², Shalaka S. Sonawane³, Shraddha B. Dighe⁴

1 Asst Prof.2,3,4 student Department of Electronics and Telecommunication Engineering in JSPM's BSIOTR, under Pune University, Wagholi, Pune

svmalge_entc@jepmbsiotr.edu.in¹, shivanishitole6@gmail.com², shalakasonawane38@gmail.com³, shraddhadighe2019@gmail.com⁴

Abstract: A Smart Library Management System using a Raspberry Pi is a modern solution designed to make library operations more efficient and improve the experience for users. In this project, the Raspberry Pi acts as the brain of the system, working together with a barcode scanner, an infrared (IR) sensor, and a fingerprint sensor to automate key tasks like issuing books, handling returns, and managing inventory. Here's how it works: The barcode scanner quickly reads book information, making it easier to track books. The fingerprint sensor ensures secure and personalized access to library resources, keeping things safe and user-friendly. The IR sensor detects whether books are on the shelves, allowing for real-time inventory monitoring. The Raspberry Pi ties everything together, managing the database and ensuring all the hardware components work smoothly. By reducing the need for manual work, minimizing errors, and speeding up processes, this smart system makes libraries more efficient and enhances user satisfaction.

Keywords: Smart library management, Raspberry pi, IR sensor, Barcode scanner.

IOT 21: Machine Learning based Smart Water Distribution Management System

Ms. Unnati Phulmante¹, Ms. Utkarsha Sathe², Ms. Vaibhavi Sawant³, Ms. Snehal Sabale⁴

Electronics and Telecommunication Vidya Pratishthan's Kamalnayan Bajaj Institute of Engineering and Technology Baramati, Maharashtra

unnatiphulmante@gmail.com¹, utkarshasathe453@gmail.com², vaibhavisawant1404@gmail.com³, snehal.sabale@vpkbiet.org⁴

Abstract: Water distribution management is a critical challenge in modern urban and rural settings due to increasing demand and diminishing resources. This project introduces a Smart Water Distribution Management System that leverages machine learning and IoT technologies to optimize water supply based on predicted consumption patterns. The system utilizes a machine learning model trained on historical water consumption data to forecast water usage across various regions. The predictions guide the real-time distribution of water using a network of Raspberry Pi, ultrasonic sensors, pH sensors, electronic valves, and flow meters. The hardware setup monitors water levels, quality, and flow, ensuring efficient and safe delivery. The proposed system minimizes water wastage, ensures equitable distribution, and adapts dynamically to regional needs. The integration of IoT sensors and predictive analytics facilitates automated decision-making, addressing both operational efficiency and sustainability goals. This research demonstrates the potential of smart technologies in revolutionizing water resource management for a sustainable future.

Keywords: Machine Learning, Automation, Water Distribution, Water Distribution Monitoring, Water Conservation Technology, Embedded Systems in Water Management, Raspberry Pi, IoT-based Water System, Real-time Water Usage Data, Solenoid Valve Control.

IOT 22: Intelligent Irrigation and Worm Identification

Saurabh Sanjay Bhosale¹, Shweta Thaksen Doke², Bhaveshwari Sharad Pawar³, Prof. U. V. Bomble⁴
 1,2,3 student,4 Faculty Electronics And Telecommunication M.E.S Wadia COE Pune, India
 saurabhosale0096km@gmail.com¹, shwetadoke4@gmail.com²,
 divyani2802@gmail.com³, gauri.bomble@gmail.com⁴

Abstract: This research proposes a Intelligent Irrigation and Worm Identification to optimize resource use in agriculture. By integrating IoT sensors, image processing, and machine learning, the system detects worm infestations and automates irrigation and targeted pesticide application. This approach reduces water wastage, minimizes pesticide overuse, and enhances crop yield, promoting sustainable and cost-effective farming. The proposed system employs CNN-based image processing to detect worm infestations in crops accurately. Upon detection, the system analyzes environmental conditions using soil moisture and temperature-humidity sensors to determine optimal irrigation and pesticide application. This system optimizes water usage by supplying it based on real-time soil moisture levels and ensures pesticides are applied only where needed, minimizing excessive chemical use. By integrating machine learning and IoT-based monitoring, the system enhances decision-making in agriculture, leading to improved crop health and yield. Experimental results demonstrate that the CNN model achieves high accuracy in worm identification, and the automated system significantly reduces water wastage and unnecessary pesticide application. This approach promotes sustainable agriculture, conserves natural resources, and lowers operational costs for farmers. This study advances precision farming by providing a scalable and effective solution to contemporary agricultural challenges. Future work may involve enhancing the model's accuracy with larger datasets and integrating predictive analytics for proactive pest and irrigation management.

Keywords: Intelligent irrigation, worm identification, CNN, IoT, Arduino

IOT 24: IOT-based Human Wearable Epileptic Seizure Alert System

Prof. P.R. Dike¹, Yogesh Prabhakar Budhalkar², Sakshi Bhartilak³, Dnyanedev More⁴
 Department Of Electronics & Telecommunications Sinhgad Institute of Technology, Lonavala
 budhalkaryogesh@gmail.com²

Abstract: Epilepsy is one of the most prevalent chronic neurological disorders, affecting approximately 10–12 million people in India and around 65 million people worldwide. It ranks as the fourth most common neurological condition, following migraines, Alzheimer's disease, and stroke. Epileptic seizures can lead to serious injuries and health risks for patients, including physical injuries such as falls, head injuries, fractures, burns, and breathing problems due to convulsive status epilepticus. This concern causes significant anxiety for patients, their parents, and caregivers. To address this issue, we propose a Wearable IoT-Based Seizure Alert System designed to detect seizures in real-time and notify caregivers or emergency responders. The system alerts those nearby to help protect the patient from physical injuries. Our system integrates an ESP32-C3 microcontroller with a heart rate and SpO₂ sensor, accelerometer, gyroscope, and electromyography (EMG) sensor to monitor physiological parameters and measure muscle activity related to abnormal movements associated with seizures. Upon detection of a seizure, the device automatically sends an SMS alert with the user's location to caregivers or family members, ensuring a quick response. Additionally, the device is equipped with a speaker alert to inform people nearby about appropriate actions to take during a seizure. The system also includes an alert application to store data collected from the sensors and track the patient's progress. The proposed Wearable IoT-Based Seizure Alert System provides a real-time, reliable, and efficient solution for monitoring and detecting epileptic seizures.

Keywords: Seizure Detection System, ESP8266 / ESP32 / ESP32-C3, Wearable Health Monitoring, Arduino-based Seizure Detector, IoT-based Health Alert, Epilepsy Alert Device.

IOT 25: Grain Dispenser Using IOT

Prof. Rajratna P. Khadse (Assist.Professor)¹, Shubham S. Linge², Nitin K. Munde³, Sainath M. Patil⁴,
Laxman N. Jambhalkar⁵

1,2,3,4,5 Electronics And Telecommunication *JSPM Narhe Technical Campus Pune* Pune, India
khadserp@gmail.com¹, shubhamlinge1415@gmail.com²,
nitinmunde1605@gmail.com³, patilsainath465@gmail.com⁴, laxmanj3633@gmail.com⁵

Abstract: This project presents an IoT-based automated grain dispenser system designed using the ESP32 microcontroller. The system integrates components such as a load cell with an HX711 amplifier for real-time weight measurement, a servo motor for controlled dispensing, an I2C LCD for status display, and a web-based interface for remote configuration. Users can set a desired grain weight threshold through a responsive HTML webpage hosted on the ESP32. Once the input threshold is reached, the system triggers the servo motor to stop the dispensing process. Data persistence is handled using the ESP32's onboard flash memory via the Preferences library, ensuring that calibration values are retained across reboots. The combination of Wi-Fi connectivity and embedded control enables remote access, automation, and enhanced convenience, making this solution ideal for smart kitchens, grain storage, and ration distribution systems.

Keywords: IoT, ESP32, load cell, grain dispenser, web interface, HX711, smart automation, servo control.

IOT 26: Autonomous Delivery using Drone

Siddhi More¹, Disha Surana², Akshata Shendge³, Dr. M. M. Jadhav⁴

1,2,3,4 Department of E&TC VPKBIET, Baramati, India
moresiddhi3208@gmail.com¹, dishasurana03@gmail.com², akshatashendge09@gmail.com³
madan.jadhav@vpkbiet.org⁴

Abstract: Autonomous drone delivery is transforming logistics by offering a faster, more flexible, and eco-friendly way to transport goods. With the rise of e-commerce and growing demand for instant deliveries, drones are helping to solve last-mile delivery challenges by improving speed, accessibility, and efficiency. The use of advanced technologies like IoT and machine learning has made drones smarter, enabling real-time decisions, better navigation, and collision avoidance. However, their widespread use still faces several challenges. Issues such as regulatory restrictions, airspace management, safety concerns, and public trust continue to limit adoption. Technical limitations like short battery life, weather dependency, and limited payload capacity also add to the complexity. This paper reviews the current state of drone delivery, explores recent advancements, and highlights ongoing challenges. It also outlines future directions for research and development to help drones become a reliable part of mainstream delivery systems.

Keywords: Autonomous Delivery, Drone Logistics, Smart Drones, Unmanned Aerial Vehicles (UAVs), Last-Mile Delivery, Parcel Delivery, Sustainable Transportation, IoT in Drones

IOT 27: Wireless Landmine and Metal Detector with Surveillance Camera

Dr. V.G Rajeshwarkar¹, Sumit Biranwar², Shubham Vaidya³, Akansha Sangave⁴
Dept. Electronics and Telecommunications (SPPU) Sinhgad Institute of Technology Lonavala,
Maharashtra, India.

Abstract: In recent years, advancements in robotics and sensor technology have paved the way for the development of intelligent systems capable of performing complex tasks in hazardous and high-risk environments. One such innovation is the spy robot with metal detection capabilities—a multifunctional robotic system designed for surveillance, reconnaissance, and threat detection. This project focuses on the design and implementation of a compact, remotely controlled robot equipped with a real-time video camera and a metal detector sensor, aimed at enhancing situational awareness and ensuring safety in critical areas such as military

Keywords: Metal Detection, Security Robot, Bomb Detection, Military Surveillance, Remote Surveillance System, Real-Time Monitoring

IOT 29: Pothole Detection and Notification

Dr. V.G Rajeshwarkar¹, Om Ghate², Rohit Dhumal³, Om Jadhav³
Dept. Electronics and Telecommunications (SPPU) Sinhgad Institute of Technology Lonavala,
Maharashtra, India.

Abstract: Road surface potholes pose a significant safety hazard and cause inconvenience to commuters. This project aims to develop a system that effectively detects and notifies authorities about the presence of potholes, enabling timely repairs and improving road conditions. The system utilizes advanced image processing techniques to analyze road surface images captured by a camera mounted on a vehicle. By identifying patterns and irregularities indicative of potholes, the system can accurately locate and classify their severity. Once detected, the system transmits real-time information, including GPS coordinates and pothole images, to a central server. This information is then relayed to relevant authorities, such as road maintenance agencies, through various communication channels like SMS, email, or mobile applications. By automating the process of pothole detection and notification, this system can significantly reduce response time and expedite road repairs. This ultimately contributes to safer and smoother roads, enhancing the overall driving experience and reducing the risk of accidents caused by potholes.

Keywords: Pothole Detection, Image Processing, GPS Coordinate, Real-time Notification Road Maintenance, Vehicle-mounted Camera

IOT 30: Automated Smart Shopping Trolley: An IOT and Sensor-Based Framework for Intelligent Retail Assistance and Hands-Free Navigation

Shravani Kadam¹, Rutuja Nanavare², Rohit Piske

1,2,3 Dept. of Electronics and Telecommunication Engineering VPKBIET, Baramati, India
shraunikadam289@gmail.com¹,rutujanavare161@gmail.com²,rohit.piske@vpkbiet.org³

Abstract: This project presents a Smart Shopping Trolley designed to enhance the retail experience through automation and ease of use. The system utilizes RFID technology to detect items placed in the trolley, updating the total cost in real time, and transmitting the data to an Android application via Bluetooth. It also features a human follow-up mechanism that uses sensors to track and follow the user, reducing the need for manual handling. By automating billing and movement, the trolley streamlines shopping, reduces waiting time at the checkout, and improves user convenience. The hardware is built using Arduino components, making it both cost-effective and adaptable for modern retail environments.

Keywords: Smart shopping trolley, RFID technology, human-following robot, Arduino, autonomous navigation, IoT, obstacle avoidance, real-time billing, integration of mobile applications, retail automation, ultrasonic sensors.

IOT 33: Puf Park Chain: Secure and Smart Parking Based on PUF Authentication

Prof.G. A Bhatane¹, Gaurav Narayan Shelke², Shubham Santosh Darekar³, Omkar Dipak Yelam⁴, Ansh Bharat Gudgile⁵

Electronics and Computer Engineering Sanjivani College of Engineering Kopargaon, India
bhataneganeshece@sanjivani.org.in¹, gauravshelke381@gmail.com², sdarekar611@gmail.com³,
omkaryelam11@gmail.com⁴, anshgudgile@gmail.com⁵

Abstract: Arrangement to address the developing challenges related with urbanization and expanding vehicular activity. Such framework coordinating sensors, cameras, and other IoT associated gadgets to screen stopping spaces in genuine time. Be that as it may, there are numerous security vulnerabilities in existing arrangements, particularly when it comes to car confirmation at stopping passage focuses. IoT sensors may be helpless to Cyber-attacks and false exercises, such as car robbery, can abuse these vulnerabilities due to restricted built-in security highlights. The unwavering quality of verification frameworks, based on IoT sensors can too be compromised by components such as extraordinary climate conditions and physical harm. The cyber-physical arrangement we propose depends on Physical Unclonable Capacities (PUFs) for distinguishing proof and confirmation in IoT gadgets to relieve these challenges. The utilize of PUFs improves the unwavering quality and security of savvy stopping frameworks against unauthorized get to and extortion. Moreover, to guarantee the judgment and secrecy of the information inside the keen stopping environment and to move forward confirmation handle, we propose the usage of a custom-made blockchain system. This system joins lightweight neighbourhood blockchains devoted to person stopping openings, complemented by a central blockchain that oversees information at the city level. The exploratory comes about illustrate the possibility of the PUF computation handle, exhibiting an worthy runtime for down to earth usage. Within the exploratory comes about, we assessed the SRAM utilized for the PUF usage prepare and illustrated its solidness.

IOT 34: Biometric Authentication and Risk Alert System for Chemical Laboratories

Atharva Gaikwad¹, Debshika Dutta², Vaishnavi Ghatge³, Yash Badade⁴, Dr. Shobha Nikam⁵
 1,2,3,4,5 Department of Electronics & TelecommunicationsAISSMS IOIT Pune, Maharashtra, India
 atharvagaikwad7091@gmail.com¹,debshika06dutta@gmail.com², vaishnavighatge77@gmail.com³,
 yashbadade234@gmail.com⁴, Shobha.nikam@aissmsioit.org⁵

Abstract: When chemical laboratories are exposed to harmful gases like toluene, they pose significant safety issues, leading to severe health problems. Inadequate gas detection systems and unauthorized access cause serious safety risks. This project aims to improve safety and security of chemical laboratories by combining biometric authentication with real-time gas detection. Biometric authentication system has been widely used in the industries for safety while gas detection system is important for industrial safety. However, both these systems work independently and thus, leaves the gap in providing complete safety solutions. The system uses microcontrollers, fingerprint module for biometric authentication and gas detection sensors for gas detection. Wirelessly, real-time data and risk warnings are transmitted. A model was built consisting of fingerprint authentication system and gas detection system. Entry is controlled by fingerprint authentication system, while the gas detection system inside the lab triggers alarms and locks door if toluene level exceeds 200 ppm.

Keywords: Biometric authentication, gas detection system, occupational safety & health administration.

RA 03: Enhancing Deep Crack for Arbitrary Image Sizes via Tiling-Based Segmentation

Abi Talib¹, Riboy Cheriyan², Aromal S.³, Alby Biju⁴, and Aleena Anna Asok⁵
 abi.rba2125@saintgits.org¹, riboy.cherian@saintgits.org², aromals.rba2125@saintgits.org³,
 alby.rba2125@saintgits.org⁴, aleena.rba2125@saintgits.org⁵
 1,3,4,5 student ,2 Professor, Department of Electronics Engineering, Saintgits College of Engineering
 (Autonomous), Kerala, India

Abstract: Deep Crack is a deep-learning-based crack segmentation model, initially designed to process images of fixed dimensions (227×227 pixels). This constraint limits its applicability for real-world structural inspections, where images often vary in resolution. We propose a tiling-based segmentation approach, enabling Deep Crack to process arbitrarily sized images by splitting them into smaller patches, processing each individually, and merging the results into a seamless full-resolution output. This method introduces adaptive stride and padding techniques to prevent loss of crack continuity across tiles. This enhancement significantly improves the model's practicality for high-resolution crack detection, UAV-based inspections and automated structural analysis. Experimental results demonstrate that our tiling-based approach maintains high segmentation accuracy while allowing Deep Crack to handle large-scale images efficiently.

Keyword: UAV, Tiling-based Image Processing, Crack Segmentation

RA 02: Design and Development of Multi-Purpose Agriculture Robotic Car Using ESP32

Akanksha Kalantre¹, Dnyaneshwari Jadhav², Sanskruti Bamane³, Prof. Manali Kate⁴

1,2,3,4 Dept. of Electronics & Telecommunication VPKBIET Baramati, India

akanksha96096@gmail.com¹, dnyaneshwari.jadhav1103@gmail.com²,

bamanesanskruti6@gmail.com³, manali.kate@vpkbiet.org⁴

Abstract: Every aspect of our lives is changing, and the agriculture industry is not exempt from the profound effects of technological innovation. Harvests are becoming more abundant and of higher quality thanks to effective agricultural practices. The conception and creation of an autonomous multifunctional robot that might be utilized for soil excavation, watering, the harvesting process, and seeding is covered in this study. The Agri- culture Robot project offers a ground-breaking effort in the realm of autonomous agriculture through the seamless integration of mobile application development, IoT, and robotics. The system succeeds at doing precise agricultural tasks including filling, sowing, fertilizer distribution, and excavation with the aid of servo actuators, an ESP32 module, a computer system, and other sensors. The integrated mobile application, which was created via MIT App Inventor and uses Bluetooth for communication, makes it simple for users to keep an eye on and manage the Agri Bot's activities from a distance. Beyond its effective hardware and software integration, the project's use of cutting-edge technology like obstacle detection sensors and machine learning algorithms for crop recognition has the potential to completely transform traditional agricultural operations. The cooperative capabilities and modular design of swarm robots imply sustainability and adaptability to shifting agricultural needs. Future opportunities as the initiative establishes the foundation for autonomous agriculture include automated navigation, analytics of data for decision assistance, green power options, and improved remote monitoring. Working with agricultural specialists and making constant adjustments based on feedback from the real world are crucial for the optimal deployment in a range of farming circumstances. The Agri Bot project marks a dramatic change in agricultural and technical development and suggests that autonomous systems will be crucial in directing the agricultural industry in the future.

Keyword: Agri-Bot, Agriculture, Robotics, IoT, Mobile App, ESP32 Microcontroller.

RA 07: Solar Powered Remote Control Seed Sowing Machine

Dr.D.S. Mantri¹, Pratiksha H. Salunkhe², Pratiksha V. Mahajan³, Soniya S. Pawar⁴

Department of E&TC Engineering (Sinhgad Institute of Technology, Lonavala) Pune, India

dsmantri.sit@sinhgad.edu¹, pratikshasalukhe86@gmail.com², pratikshamahajan697@gmail.com³,

soniyapawar732002@gmail.com⁴

Abstract: "The solar-powered remote-control seed-sowing machine with seed and fertilizer tanks is an innovative agricultural solution designed to enhance the efficiency and sustainability of the sowing process. This machine integrates solar energy as a primary power source, reduces dependency on conventional fuels, and promotes eco-friendly farming practices. Equipped with a seed tank and fertilizer tank, it allows for precise seed sowing and simultaneous fertilization, ensuring optimal growth conditions for crops. Remote control functionality offers ease of operation, enabling farmers to control the sowing process from a distance, reduce manual labour and improve accuracy. The system design focuses on energy efficiency, cost-effectiveness, and environmental sustainability, making it a valuable tool for modern agriculture. Additionally, the incorporation of renewable energy reduces operational costs and minimizes the carbon footprint, thereby contributing to sustainable farming practices."

Keywords: Eco-friendly, fertilization, energy efficiency, cost-effectiveness, environmental sustainability.

RA 08: Advanced Driver Assistance System Using Image Processing For Blindspot Detection

Sakshi Chavan¹, Shubham Pawar², Shreyas Mahajan³, Mayur Gawade⁴

1,2,3,4 Dept. of Electronics and Telecommunication Engineering VPKBIET Baramati, India
 sakshicha19gmail.com@gmail.com¹, sp2822003@gmail.com², mahajanshreyas90@gmail.com³,
 mayur.gawade@vpkkbiet.org⁴

Abstract: Road safety continues to be a critical concern worldwide, driving innovation in Advanced Driver Assistance Systems (ADAS) to help minimize accidents and enhance driver awareness. This paper introduces a cost-effective ADAS proto- type designed for blind spot detection and obstacle recognition, utilizing image processing techniques and affordable hardware components. The system is built around a Raspberry Pi, which acts as the central processor and interfaces with a camera and ultrasonic sensor. Real-time image analysis is carried out using OpenCV to identify lane markings and detect objects, while the ultrasonic sensor measures the proximity of obstacles in blind spots. When a potential risk is identified, a buzzer provides an audible warning to the driver. Additionally, a DC motor controlled via a driver module simulates vehicle motion for testing purposes. Experimental results show that the system effectively detects obstacles and provides timely alerts, confirming its reliability. Future work aims to enhance detection accuracy and incorporate more advanced vision-based features to further improve system performance.

Keywords: Advanced Driver Assistance Systems (ADAS), blind spot detection, image processing, OpenCV, Raspberry Pi, ultrasonic sensor, automotive safety.

RA 01: Automatic Continuity and Resistance Testing of 20A Rotary CAM Switch

Abhijit V Lohakane¹, Om W Khandale², 3rd Kunal C Mahajan³, Hrutik S Kanade⁴, Priti Choudhari⁵
 1 Project Manager Rishabh Instrument Nashik, India

2,3,4,5 Dept. of EnTC, MET Institute of Engineering Nashik, India

abhijit.Lohakane@rishabh.co.in¹, omkhandale7@gmail.com², kunalmahajankm2003@gmail.com³
 hrutikkanade121@gmail.com⁴, pritchoudhari20@gmail.com⁵

Abstract: This study focuses on the creation of an automated solution for testing continuity and resistance in rotary cam switches by leveraging Programmable Logic Controller (PLC) and Supervisory Control and Data Acquisition (SCADA) systems. Manual testing processes are often inefficient, inconsistent, and susceptible to human error, which can hinder product quality and slow down production lines. The proposed system automates the testing procedure, ensuring reliable, precise, and rapid measurements. A four-wire resistance testing method is implemented to reduce inaccuracies caused by contact and lead resistances, thereby increasing overall accuracy. The integration of SCADA facilitates live system monitoring, automatic data recording, and report generation, significantly improving quality assurance practices. This work highlights a step forward in industrial automation by enhancing the precision, dependability, and scalability of switch testing operations.

Keywords: SCADA, Automation, Rotary Cam Switch, Continuity Testing, Resistance Measurement, Four Wire Resistance Testing Method.

OT 01: Green Leaf Disease Detection and Identification Using Raspberry PI

Pawar Samruddhi¹, Andhare Priya²

1,2 Department of Electronics & Telecommunication JSPM's BSIOTR, Wagholi, Pune.

pawarsamruddhi2003@gmail.com¹, priyaandhare90@gmail.com²

Abstract: For crops to remain healthy and agricultural methods to be optimized, green leaf disease detection and diagnosis are essential. Plant disease detection at an early stage can greatly lower crop losses and enhance production quality. In order to detect and identify leaf illnesses, this study proposes a novel method that uses a Raspberry Pi that is integrated with a GSM module, camera, database, and monitor display. In order to provide precise disease identification and real-time monitoring capabilities, the system analyzes leaf images taken by the camera using image processing and machine learning algorithms. One benefit of the GSM module is that it provides instant notifications, which enables farmers to respond quickly to diseases that are discovered. As the system's central processing unit, the Raspberry Pi makes low-cost, power-efficient real-time monitoring options possible. To take crisp pictures of the plant leaves, a camera module is connected to the Raspberry Pi. Advanced machine learning models, such Convolutional Neural Networks (CNNs), which have been trained on a sizable dataset of leaf diseases, are used to pre-process and analyze these photos. Based on the attributes taken from the photos, the trained model correctly diagnoses the leaf diseases, recognizing typical conditions including early blight, powdery mildew, and bacterial blight. The GSM module of the system is essential for giving farmers timely alerts. When a disease is identified, the Raspberry Pi uses GSM to send a text message to the farmer's cell phone with important information about the illness and recommended precautions. By reducing the need for manual checks and greatly improving crop health management, this feature guarantees that farmers can respond swiftly and effectively to disease outbreaks. The system also stores information on plant diseases, such as pictures, disease types, and historical records, in a local database. Farmers can monitor disease trends over time with the aid of this database, which makes historical disease incidences easily accessible. The farmer can observe real-time

Keywords: Green leaf disease, Raspberry PI, crop management

OT 03: Real Time Attendance Monitoring System Using Biometric Authentication

Dr. P. N. Shinde¹, Rohan Ravindra Londhe², Niraj Prakash Chaudhari³

1,2,3 BSCOER, Pune

pnshinde_entc@tssm.edu.in¹, londherohan15@gmail.com², nirajchaudhari101@gmail.com³

Abstract: Traditional attendance methods are inefficient, prone to human error, and susceptible to fraudulent practices such as proxy attendance. This paper presents a fingerprint-based system that integrates the R307 fingerprint sensor with an ESP32, ESP32-CAM, Firebase cloud storage, and a Telegram bot for real-time alerts. The system captures fingerprints for authentication and stores data in Firebase, which is accessible via a web-based dashboard. Additionally, the ESP32-CAM module captures images of unauthorized users attempting to mark attendance, enhancing security. The Telegram bot sends immediate notifications to the administrator for unauthorized access attempts, allowing timely intervention. Cloud integration enables remote access, ensuring scalability, data security, and efficient management. The proposed solution automates attendance tracking, enhances monitoring, and reduces fraudulent practices. It is designed for educational institutions, workplaces, and corporate organizations, providing a scalable and secure biometric management solution. Future improvements include additional biometric authentication methods, offline capabilities, and AI-based analytics to further enhance security and efficiency.

Keywords: biometric authentication, cloud storage, fingerprint recognition, real-time monitoring

OT 04: CFD Analysis of RC Plane for Optimized Environmental Monitoring in Smart Cities

Kamlesh T. Kahar¹, Sahil P. Mathurkar², Pratham R. Kale³, Tejas S. Kale⁴

1,2,3,4 E&TC Department Shri Sant Gajanan Maharaj College of Engineering, Shegaon, Maharashtra, India

Abstract: As urbanization speeds up, smart cities need effective environmental monitoring systems to control air quality, pollution, and weather patterns. Broad coverage and real-time data are frequently absent from traditional approaches. For real-time environmental monitoring, unmanned aerial vehicles (UAVs), especially radio-controlled (RC) aircraft, offer an affordable and adaptable option. In order to optimize UAV design and guarantee stability, effectiveness, and aerodynamic performance, or CFD, is essential. The criteria, efficiency comparison with other UAVs, design and development, 3D modeling, simulation, and CFD analysis are all covered in this paper's exploration of CFD-based design enhancements for an RC plane used for environmental monitoring in smart cities. We also go over how crucial CFD simulations are for enhancing flight dynamics, refining aerodynamic designs, and guaranteeing long-term dependability for extensive urban deployment.

Keywords- Computational Fluid Dynamics, UAV, RC Plane, Smart Cities, Environmental Monitoring, Aerodynamics, Air Pollution Control, Fusion 360, Flight Optimization, Fixed-Wing UAVs, CFD Simulation

OT 05: Flat Finder: Discover Your Perfect Rental

Tilak Nakade¹,Karan Garje²,Yuvraj Hamde³,Prof. Varsha Raule⁴,Kunal Divekar⁵

1,2,3,4,5 Department of computer engineering P.G Moze College of Engineering Pune, India

tilaknakade00@gmail.com¹, garjekaran05@gmail.com²,

yuvrajhamde@gmail.com³,raulevarsha19@gmail.com⁴,kunaldivekar8283@gmail.com⁵

Abstract: The increasing urban population has led to a growing demand for rental accommodations, making the process of finding a suitable flat time-consuming and complex. Traditional methods rely heavily on real estate agents or scattered online listings, which often fail to provide personalized recommendations or an efficient search experience. This paper presents a comprehensive Flat Finder platform that integrates an interactive map, smart search filters, and a recommendation system to streamline the process of flat hunting. Leveraging modern web technologies such as the MERN stack, Google Maps API, and AI-driven recommendation engines, the platform enhances user experience through advanced filtering, real-time notifications, and chatbot assistance. This paper details the system architecture, development process, and technologies used in the Flat Finder project. A review of recommendation system literature is presented to support the personalized suggestion feature. The study also discusses the results and future enhancements, including improved AI-driven recommendations and extended property management features. The findings suggest that the proposed system significantly reduces search time and improves user satisfaction by offering a structured and intuitive property search experience.

Keywords: Flat Finder, Recommendation System, Real Estate, MERN Stack, Google Maps API, Personalized Search, Chatbot, Notification System.

OT 06: Audio Comparison using Python

Saurabh Patil¹, Sneha Thele², Aniket Shiral³, Vikas Deshmukh⁴

1,2,3,4 Electronics and Telecommunication Department VPKBIET Baramati, Maharashtra, India
saurabhpatil052003@gmail.com¹, sthele24@gmail.com², aniketshiral110@gmail.com³,
vikas.deshmukh@vpkbiet.org⁴

Abstract: In order to analyse and compare audio frequencies at the highest volume, this paper explains how to create an audio comparison model using Python and the librosa module. The Flask-powered system compares a master audio file to a test audio file, looks for a frequency match, and displays the match on the web interface as a virtual LED. The research looks at the possibilities of audio analysis in a number of fields, such as signal processing and audio fingerprinting. To enable accurate and real-time audio comparison, a comprehensive system design integrates user-friendly Flask interface with Python-based utilities.

Keywords: Audio Signal Processing, Frequency Matching, Python, Librosa, Audio Comparison, Noise Reduction, Real-time Analysis, Machine Learning, Tkinter GUI, Flask Web Application.

OT 07: Smart Spend: AI Financial Management Webapp

Rutuja Mane¹, Anjali Sawant², Khushi Mahajan³, Prof. Jaishri Shilpakar⁴, Alisha Mujawar⁵

Department of Computer Engineering P.G Moze College of Engineering Pune, India
manerutuja837@gmail.com¹, anjalisawant4349@gmail.com², khushimahajan266@gmail.com³,
jaishrip52@gmail.com⁴, alishamujawar195@gmail⁵

Abstract: Financial management is crucial in today's digital era. The increasing use of digital transactions necessitates intelligent financial management systems that provide real-time insights and automation. Traditional budgeting methods often lack personalization and fail to deliver proactive financial guidance. This paper introduces Smart Spend, an AI-driven financial management platform that integrates automated expense tracking, smart budgeting tools, and AI-driven financial recommendations to streamline personal finance management. Leveraging modern web technologies such as Django, AI-based analytics, and secure transaction processing, the system enhances user experience through real-time notifications, predictive insights, and chatbot assistance. This paper details the system architecture, development process, and technologies used in the Smart Spend project. A review of financial recommendation system literature is presented to support the personalized budgeting feature. The study also discusses the results and future enhancements, including improved predictive analytics and extended financial planning features. The findings suggest that the proposed system significantly improves financial awareness and decision-making by offering a structured and intelligent money management experience.

Keywords: Smart Spend, Financial Management, AI-driven Budgeting, Expense Tracking, Financial Recommendations, Predictive Analytics, Digital Wallet, Chatbot Assistance, Real-time Insights.

OT 09: Multi-View Feature Fusion for Effective Malware Classification Using Deep Learning

Prof M.D. Shelar¹, Aishwarya Ayare², Shiva Shree Nimbalkar³, Trushna Bagade⁴, Muskan Mujawar⁵
1,2,3,4,5 Computer Engineering VPKBIET Baramati, India
manoj.shelar@vpkbiet.org¹, aishwaryaayare31@gmail.com², shivashree27.nimbalkar@gmail.com³
bagadetrushna@gmail.com⁴, mujawarmuskan0667@gmail.com⁵

Abstract: The rapid increase in global malware infections has necessitated the development of robust malware detection systems to mitigate threats, such as ransomware and crypto-miners, that aim for financial gain. Deep learning-based Convolutional Neural Network (CNN) model for classifying malware in Portable Executable (PE) binary files using a fusion feature set approach. An extensive evaluation of various deep learning architectures and machine learning classifiers, including Support Vector Machines (SVM), was conducted across multi-aspect feature sets encompassing static, dynamic, and image-based features, ultimately selecting the CNN model for optimal performance. The model achieved an accuracy using fusion feature sets, demonstrating its robustness and generalizability on unseen malware datasets.

Keywords: Deep learning, malware detection, Malicious File Detection, Multi-View Learning, Static and Dynamic Analysis

OT 15: TREND TRY-ON: Discover Your Perfect Look with Virtual Try-Ons

Ms. Punashri Patil¹, Prathamesh Gajbhiye², Sumit Dighe³, Rushikesh Dikkar⁴, Sushant Shrivagi⁵
1,2,3,4,5 Information Technology AISSMS IOIT Pune, India
punashri.patil@aissmsioit.org¹, prathameshgajbhiye28@gmail.com², sumitdighe2003@gmail.com³,
rushikeshdikkar2708@gmail.com⁴, sushantshrivagi@gmail.com⁵

Abstract: The TREND TRY-ON: Discover Your Perfect Look With Virtual Try-Ons is a Python Flask-based web application designed to allow users to virtually try on clothing and accessories through real-time camera input or uploaded images, providing a seamless and personalized online shopping experience. By eliminating the need for physical trials, the platform simplifies apparel selection, offering features such as user authentication with login and registration to manage individual profiles. Once logged in, users can choose from items like shirts, goggles, and trousers from a virtual wardrobe. Utilizing the YOLOv8 algorithm for body detection, the system accurately calculates the user's height and width based on camera feed or images, ensuring precise scaling of selected items. These garments or accessories are then resized and realistically overlaid onto the detected body, giving users an interactive preview of how the items would look when worn. By leveraging deep learning for object detection and providing AR-like visualizations, the Virtual Trial Room enhances user engagement and streamlines decision-making in the online shopping process.

Keywords: Machine Learning, YOLOv8 Algorithm, Body Detection, Image Processing

OT 16: Simulation and Analysis of Antenna Used for AR/VR Applications

1st Tanmay Chimankar, 2nd Vaishnavi Wadkar, 3rd Mayur Mane, 4th Mitesh Sawant, 5th Prof. Anupama Chaurasia,
6th Dr. Shubhangi Verulkar

1,2,3,4,5,6 Dept. of EXTTC K.C. College of Engg. and MSR Mumbai University, Thane, India
tanmaychimankar004@gmail.com¹, wadkarvaishnavi230@gmail.com², mayurmane6902@gmail.com³,
sawantmitu03@gmail.com⁴, anupama.chaurasia@kccemsr.edu.in⁵, shubhangi.verulkar@kccemsr.edu.in⁶

Abstract: This study focuses on the simulation and evaluation of a slotted square microstrip patch antenna designed to operate at 26 gigahertz, targeting millimeter-wave applications in augmented and virtual reality systems. The increasing need for compact, lightweight, and high-performance antennas in wearable devices has inspired this work. The antenna is constructed using a Rogers RT/Duroid 5880 substrate, known for its low dielectric constant and minimal signal loss. To improve impedance matching and extend bandwidth, a square slot is incorporated into the patch design. The design process was supported by simulation-based optimization using Ansys HFSS 2024, instead of relying solely on analytical methods. Key performance indicators, such as return loss, bandwidth, radiation pattern, directivity, and efficiency, were thoroughly analysed. The results indicate stable directional radiation, high efficiency, and wide impedance bandwidth at the target frequency, making the antenna suitable for seamless integration into modern AR/VR platforms where consistent wireless performance and compact design are critical [1], [3], [24].

Keywords: Microstrip patch antenna, AR/VR, millimeter wave, antenna simulation, wearable antenna, return loss, band- width, HFSS, compact design.

OT 17: Vehicular traffic and adaptive ambulance signal change using Raspberry pi

Sulakshna. S .Patil¹, Devendra Hawaldar², Ganesh Nage³, Khushi Raut⁴

1,2,3,4 Dept. of Electronics and Telecommunication Sinhgad Institute of Technology
Lonavala, India

spatil.sit@sinhgad.edu¹, devendrahawaldar.sit.entc@gmail.com², ganeshnage.sit.entc@gmail.com³,
khushipraut@gmail.com⁴

Abstract: The increasing traffic congestion in urban areas poses a significant challenge to emergency response times, especially for ambulances, fire trucks, and other emergency vehicles. Delays in these situations can be life-threatening, making it crucial to find solutions that can improve response times. This paper explores the development of a Traffic Control System (TCS) for Ambulance Tracking using RFID technology and adaptive signal management, aimed at enhancing emergency vehicle navigation through congested areas. The system utilizes real-time RFID tracking to monitor ambulance movements and adjust traffic signals accordingly, allowing ambulances to move more efficiently through urban traffic. The proposed solution also includes an emergency mail notification system for alerting relevant authorities in case of emergencies. Through this system, the goal is to optimize traffic flow, improve situational awareness for ambulance drivers, and enhance safety. The paper also discusses the risks associated with the system and outlines risk management strategies. Overall, the system aims to reduce delays, improve emergency response times, and ensure safer and more efficient urban traffic management.

Keywords: Adaptive traffic control, Emergency response times, RFID tracking, Traffic congestion

OT 18: College Counsellor Application

Shrikrushna Nalawade¹, Onkar Holkar², Mayur Gawade³, Aniket Birajdar⁴

1,2,3,4 Dept. of Electronics and Telecommunication Engineering VPKBIET Baramati, India.

shrikrushnanalawade9696@gmail.com¹, onkarholkar5656@gmail.com², mayur.gawade@vpkbiet.org³,

birajdaraniket27@gmail.com⁴

Abstract: The College Counsellor Application is designed to address the increasing mental health concerns faced by young people, especially as they shift from high school to college. It offers tailored mental health support, professional counseling, and a carefully curated collection of wellness resources. Developed as an android application using Kotlin, it ensures broad accessibility and usability. This paper discusses the current trends in mobile counseling applications, emphasizes the importance of communication, and analyzes Kotlin's contribution to building scalable solutions for student mental health concerns. Teenagers often face significant emotional and personal challenges like stress, anxiety, and depression that are intensified by social pressures and academic expectations. Traditional counseling services often fall short due to issues such as high student-to-counselor ratios, geographic barriers, and the stigma associated with seeking support. This application aims to bridge the gap in mental health care by offering reliable, on-demand support anytime and anywhere, promoting both academic success and overall well-being among young people. The app is designed to enhance access to mental health services by delivering dependable, offering continuous, available from any location, to foster the well-being and academic progress of youth.

Keywords: Kotlin, Student Mental Health, Healthcare, Firebase, Counseling, Mobile App.

OT 25: Design And Development of A Non-Mydriatic Fundus Camera for Retinal Image

1st Vimlendu Yadav, 2nd Rohit Rathod, 3rd Manas Gadge, 4th Sushma Kore

E&TC Department, K.C. COEMR Thane, India

vimlenduyadav@kccemsr.edu.in¹, rohitrathod@kccemsr.edu.in², manasgadge@kccemsr.edu.in³,

sushma.kore@kccemsr.edu.in⁴

Abstract: Diabetic retinopathy (DR) is a major cause of blindness worldwide, and early detection is critical in preventing blindness. The availability of traditional fundus cameras is still a problem, especially in low-resource environments. This article is focused on designing and developing a non-mydriatic fundus camera with a portable and low-cost method of retinal imaging without dilation. It has a dual-LED illumination system with a red LED continuously on for alignment and a white LED for use when taking a photograph to achieve good retinal visualization. A Bluetooth-based trigger is synchronized with an iPhone for precise acquisition of images. Anti-glare coatings and measures to reduce reflections enhance sharpness in images. This is a system for use in telemedicine and remote screenings and is portable to improve access to retinal imaging, thereby enabling early detection and treatment of retinopathies such as DR.

Keywords: Non-mydriatic fundus camera, retinal imaging, diabetic retinopathy screening, teleophthalmology, portable healthcare technology, smartphone-based fundus photography, LED illumination system.



OT 26: Power Generation Using Speed Breaker

Prathamesh Saheb Bansode¹, Raj Namdev Kamble², Varsha Kshirsagar³

1,2,3 E&TC RMD Sinhgad Technical Institutes Campus Pune, India

bansodeprathamesh05@gmail.com¹, rnk.r.kamble@gmail.com², Varsha. Phd@ gmail.com³

Abstract: -The project explores a cost-effective and eco-friendly method of generating electricity by capturing the kinetic energy from vehicles passing over speed breakers. Using a rack-and-pinion mechanism connected to a generator, the system converts the motion of vehicles into electrical energy. This energy can be stored or used for purposes like street lighting and charging stations. The concept is particularly effective in high-traffic areas, offering a sustainable solution for power generation.

OT 28: LI-FI Based Audio Transmission

Rushita Sanjay Amrutkar¹, Mrunal Hemant Dhumal², Bhagyashri Vitthal Avadan³, DrVarsha Kshirsagar⁴

1,2,3,4 Dept of E&TC, RMD Sinhgad School of Engineering, Warje Pune Maharashtra, India.

rushitaamrutkar.rmdstic.entc@gmail.com¹, mrunaldhumal.rmdstic.entc@gmail.com²,

bhagyashriavadan.rmdstic.entc@gmail.com³, Varshak.phd@gmail.com⁴

Abstract: In recent year, instead of using conventional photodiodes a promising wireless communication technique called light integrity in life has evolved in recent years conventional wireless networks like wi-fi are frequently prone to interference and have a restricted bandwidth the suggested model provides a low-cost secure and interference-free audio transmission solution making it appropriate for indoor uses including remote communication and smart house public address systems this study suggests a novel lifi-based audio transmission system that uses high-brightness leds as transmitters to enable reliable real-time audio and solar panels to capture visible light the solar panels increased surface area enhances signal reception and efficiency in a variety of lighting conditions.

Keywords: Audio Transmission, Light Fidelity (Li-Fi), Wireless Audio, Solar Panel Receiver, LM386 Audio Amplifier.

SNSA 02: Smart Water Level Monitoring and Controlling System

Manish N. Tibdewal¹, Harshvardhan Patil², Nivedita Sugandhi³, Ishwarchandra Tikar⁴

Department of Electronics and Telecommunication Engineering

Shri Sant Gajanan Maharaj College of Engineering, Shegaon, Buldhana – 444 203, Maharashtra - India

Abstract: Water scarcity and inefficient water resource management have become critical challenges in both urban and rural settings. Manual methods of monitoring water levels and controlling pumps lead to excessive water wastage, energy consumption, and inconvenience to users. To address this issue the work done, proposes a ‘Smart Water Level Monitoring and Controlling System. It is an automated solution to optimize water usage and energy. It uses an ultrasonic sensor which output is calibrated with the water tank levels. It sends the signal to the Arduino uno for processing. Eventually it sends a signal to the relay for switching the motor on/off control. The ultrasonic Key features include automated pump operation, real-time alerts such as warning and levels. And a manual operation mode is also incorporated. The system is very effective and efficient for preventing overflow and dry-run conditions. All these Features developed are cost-effective and scalable. The smart system is outperformed with its reliability, accuracy, and potential to revolutionize water resource management. It is used for domestic and commercial purpose, which will promote sustainability and smarter living.

Keywords: Automated Pump Control, Ultrasonic Sensor, Automated Pump Control, Ultrasonic Sensor, Overflow Prevention, Dry-Run Protection, Cost-Effective, Scalable.

SNSA 03: Accident Alert and Location Tracking System

Prajakta Lavand¹, Vaishnavi Kamthe², Anushka Navale³, Shilpa Kale⁴

Department of E&TC KJCOEMR, Pune

Plavand2011@gmail.com¹, kamthevaishnavi96@gmail.com², navaleanushka19@gmail.com³,
Shilpakale.kjcoemr@kjei.edu.in⁴

Abstract: An innovative and modern device for tracking and monitoring the transporting vehicle in order to ensure the security of humans, passengers, or kids. The suggested approach notifies the relevant authorities right away of the location and pictures of the bus interior in the event of an emergency, such as an accident, breakdown, or fire. Pi cameras are used to take pictures, while GPS modules are used to determine the location. There are two keys and a panic switch. In the scenario of a van breakdown or being stopped in traffic, keys can be used. Parents or guardians will get an email alert. When an emergency takes place, the panic switch is active. In each situation, an email including pictures of the vehicle' inside is forwarded to the respective authority and parents. Fire sensor implemented in the given system which acts as a fire detector. If the Fire is detected then fire sensor will be active and immediately buzzer will be on.

Keywords: Buzzer, Camera, Fire sensor, GPS module, Panic switch, Raspberry Pi, Wi-Fi

SNSA 06: LIDAR Based Micro Drone With Proximity Sensing

Prof. Mayur Raut¹, Ms. Anuja Pawar², Ms. Yogita Gholve³, Ms. Dipali Kandangire⁴
Department of E&TC Engineering (Sinhgad Institute of Technology, Lonavala) Pune, India
tpo.sit@sinhgad.edu¹, pawaranuja316@gmail.com², gholveyogita@gmail.com³
kandangiredipali@gmail.com⁴

Abstract: Now-a-days drones are widely used for various purposes. The accuracy obstacle detection provided by LIDAR technology leads to a better navigation capability, especially for autonomy when flying at dangerous areas. Meant for tasks that need a helping hand in maintaining mobility and weatherliness and safety, such as search and rescue operations; environmental monitoring or even infrastructure inspection. This paper aims to address these questions by presenting the details of drone design including integration of LIDAR sensors, data processing algorithms and onboard decision-making mechanisms. It will know what its surrounding environment looks like via LIDAR data and it can plan the path through advanced machine learning techniques. The drone navigation in dynamic environment with high accuracy is a very challenging problem and our experiments are tailored to show that under such settings, the number of human corrections required will be minimal but as fast resilient that will quickly adapt and recover from challenges.

Keywords: LIDAR, micro drone, proximity sensing, autonomous navigation, obstacle detection, machine learning.

SNSA 04: Weather Forecasting App by Flutter

¹Mansi Padekar, ² Soham Chile, ³Pooja Ghude, ⁴Prof.Deepali Narkhede
1,2,3 Student, Department of Information Technology
4 Assistant Professor, Department of Information Technology
Shivajirao S. Jondhale College of Engineering Dombivli, Maharashtra, India.

Abstract: This research paper presents the development of a weather forecasting application using Flutter and the Open Weather Map API. The application provides real-time weather updates, including temperature, humidity, wind speed, and other meteorological data. The app is designed for cross-platform compatibility, ensuring a seamless user experience on both Android and iOS devices. It incorporates a user-friendly interface and efficient API integration, making it a reliable solution for weather monitoring.

Keywords: Weather App, Flutter, OpenWeatherMap API, Mobile Application, Cross-Platform Development

EV 01: EVCS Plug and Pay: EV Charging Station Locator App with Reservation and Payment Feature

Nirjara Khutale¹, Dhananjay Nagarkar²

Department of Electronics and Computer Science

Pillai HOC College of Engineering and Technology, Rasayani Panvel, Maharashtra India

nirjaravk21hecse@student.mes.ac.in¹, dhananjayvn21hecse@student.mes.ac.in²

Abstract: Vehicles primarily powered by fuels such as un-leaded gasoline and diesel have been extensively used for many years. However, this heavy reliance on these fuels has led to their significant depletion and contributed to increasing pollution levels. In response, the automotive industry has made remarkable advancements, leading to the emergence of Electric Vehicles (EVs). One of the key advantages of electric vehicles is the ability to charge them at home. However, a major challenge lies in the availability of charging infrastructure, particularly when vehicle owners are away from their local areas and require immediate charging solutions. To address this issue, the 'EVCS Plug and Pay' application has been developed. This initiative offers additional services such as battery replacement and battery delivery, providing significant benefits to users. Furthermore, battery swapping is an alternative that vehicle owners can opt for in cases of high demand at charging stations, enabling quicker access to the required charge. The application enhances user convenience, making EV ownership more practical and efficient even in challenging situations.

Keywords: Electric Vehicles, Charging Station, Reservation, Battery, Charging Point

EV 02: Advances In High Efficiency Traction Motor for Electric Vehicles

Shruti Mandlik¹

1, Electrical Engineering Sanjivani College of Engineering Kopargoan, India

shrtmandlik@gmail.com¹

Abstract: Recent developments in high-efficiency traction motors for electric vehicles (EVs) are examined in this study. Improving motor economy is essential for raising total vehicle performance and range as the need for environmentally friendly transportation rises. The paper discusses the benefits and drawbacks of several motor technologies, such as switching reluctance motors, induction motors, and permanent magnet on efficiency and thermal management are investigated, including high-energy-density magnets and sophisticated cooling systems. The integration of sophisticated control techniques, like vector control and predictive algorithms, to maximize motor performance under various operating circumstances is also covered in the article. Significant gains in torque density and energy efficiency are shown by experimental results, suggesting that these developments are essential for the upcoming generation of electric vehicles. The results offer a way forward for producers hoping to make EVs more competitive in a market that is changing quickly.

Keywords: electric traction system, Electric vehicle (EV) performance, High-efficiency motors, Advanced magnetic materials, Thermal management solutions, Motor drive control, Motor optimization strategies, Noise and vibration reduction, Future mobility solutions

Lonavala Prides

Karla Caves

Karla Caves is one of the oldest Buddhist cave shrines in India and one of the most fascinating places to visit in Lonavala. The caves are carved on a rocky hillside and they date back to the 2nd and the 5th century BC. The caves are divided into several sections as halls and monasteries.



Lohagad Fort

Lohagad Fort (Iron Fort) is a historical fort situated along the Sahyadri hills in the Lonavala region of Maharashtra. It is one of the best tourist places to visit in Lonavala and also one of the popular heritage in Maharashtra.



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