Pune Vidyarthi Griha's
College of Engineering & Shrikrushna S. Dhamankar Institute of Management. Nashik.
In Association with

Conference Proceeding

" 2nd International Conference on Recent Advances in Technology and Management "
(ICRATM 2026)

CRC Press
Taylor & Francis Group

The 2nd International Conference on Recent Advances in Technology & Management (ICRATM-2026), is organized by Pune Vidyarthi Griha's College of Engineering & Shrikrushna S. Dhamankar Institute of Management, Nashik for the enhancement of research in various disciplines of Engineering, Management, Science and Technology.

The ICRATM 2026 innovating and inspiring the researchers to adopt the outcome for implementation, which will bring a new prospect for collaboration across disciplines and gain the idea facilitating novel breakthrough.

The ICRATM 2026 provides an academic medium and an important reference for the advancement and dissemination of research results that support high-level learning, teaching and research. The ICRATM 2026, brings together worldwide leading Researchers, Scientists, Academician, Field Engineers, Scholars and Students of related fields of Engineering, Management, Science and Technology.

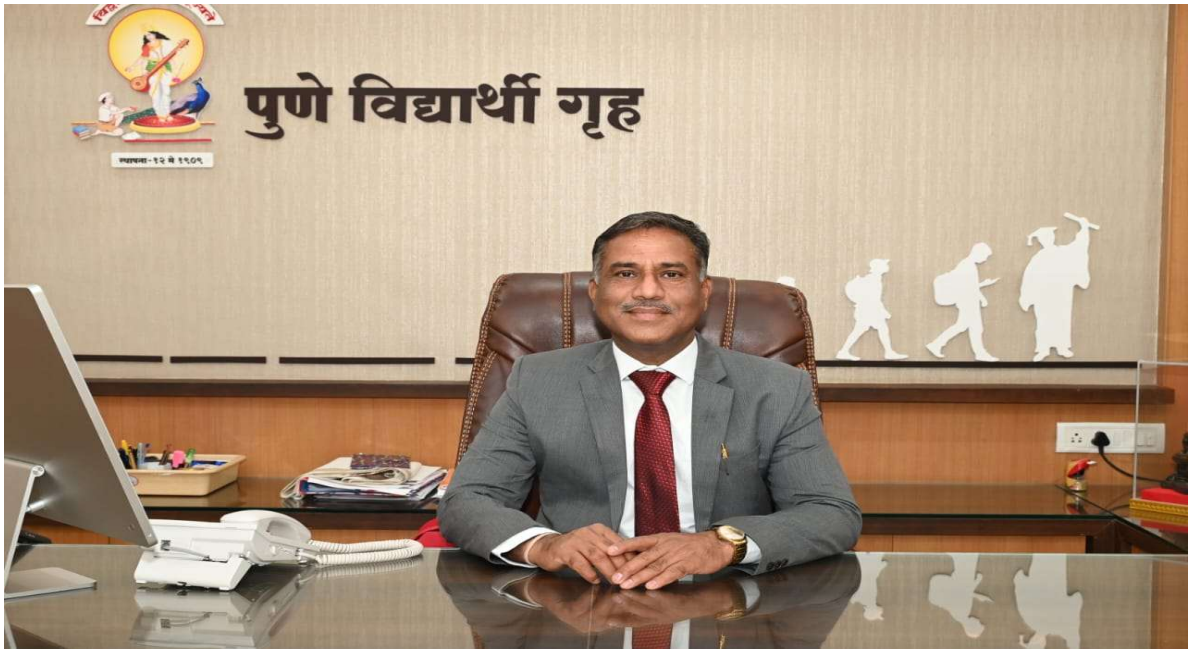
The ICRATM 2026 commencing from 29th April 2026, will feature prominent Keynote Speakers, Tutorials, Panel Discussion, Workshop. The General Chairs, along with the entire team cordially invite you to take part in this upcoming very important event together for most memorable experience.

Papers are invited on the following track but not limited to:

Conference Tracks

Track 1: Engineering and Technology
Track 2: Emerging and New Technology
Track 3: Multidisciplinary
Track 4: Management and Technology

The ICRATM 2026 identify the new issues & directions for further research & development work. It will also provide an exceptional platform to the researchers to meet and discuss the utmost solutions, scientific results and methods in solving intriguing problems with people that actively involved in these evergreen fields.



It is with immense pleasure and a sense of great responsibility that I extend my warmest greetings to each one of you at the International Conference on Recent Advances in Technology and Management (ICRATM) 2026. I am particularly delighted to witness the convergence of brilliant minds, innovative ideas, and transformative technologies on this prestigious platform.

In an era where technology and management are rapidly evolving, ICRATM 2026 serves as a crucial nexus for exploring and disseminating knowledge that can drive societal progress and sustainable development. The theme of this conference resonates deeply with our mission at Pune Vidyarthi Griha, where we have always believed in empowering individuals through education and innovation.

This conference is not just an academic event; it is a celebration of the spirit of inquiry, innovation, and collaboration. It provides a unique opportunity to delve into cutting-edge research, exchange best practices, and forge partnerships that can lead to groundbreaking advancements.

I commend the organizing committee for their tireless efforts in bringing together such a diverse and talented group of participants.

To all the participants, I encourage you to make the most of this opportunity to learn, engage, and network. Let us embrace the spirit of innovation and collaboration, and together, let us pave the way for a brighter and more prosperous future.

Warm regards,
Hon. Shri. Rajendra V. Borhade
Honorary Chair, ICRATM 2026
Chairman, Pune Vidyarthi Griha

On behalf of the organizing committee of the International Conference on Recent Advances in Technology and Management (ICRATM 2026), it is my distinct honor and privilege to welcome you to this confluence of knowledge, innovation, and collaboration. We are immensely proud to host this event under the aegis of Pune Vidyarthi Griha, an institution deeply committed to the advancement of education and technology for the betterment of society.

ICRATM 2026 is envisioned as a platform where leading researchers, academicians, industry experts, and budding innovators converge to share insights, exchange ideas, and explore the latest trends and challenges in technology and management. In today's rapidly evolving world, the synergy between these two domains is more critical than ever, and this conference aims to highlight their interconnectedness and mutual impact.

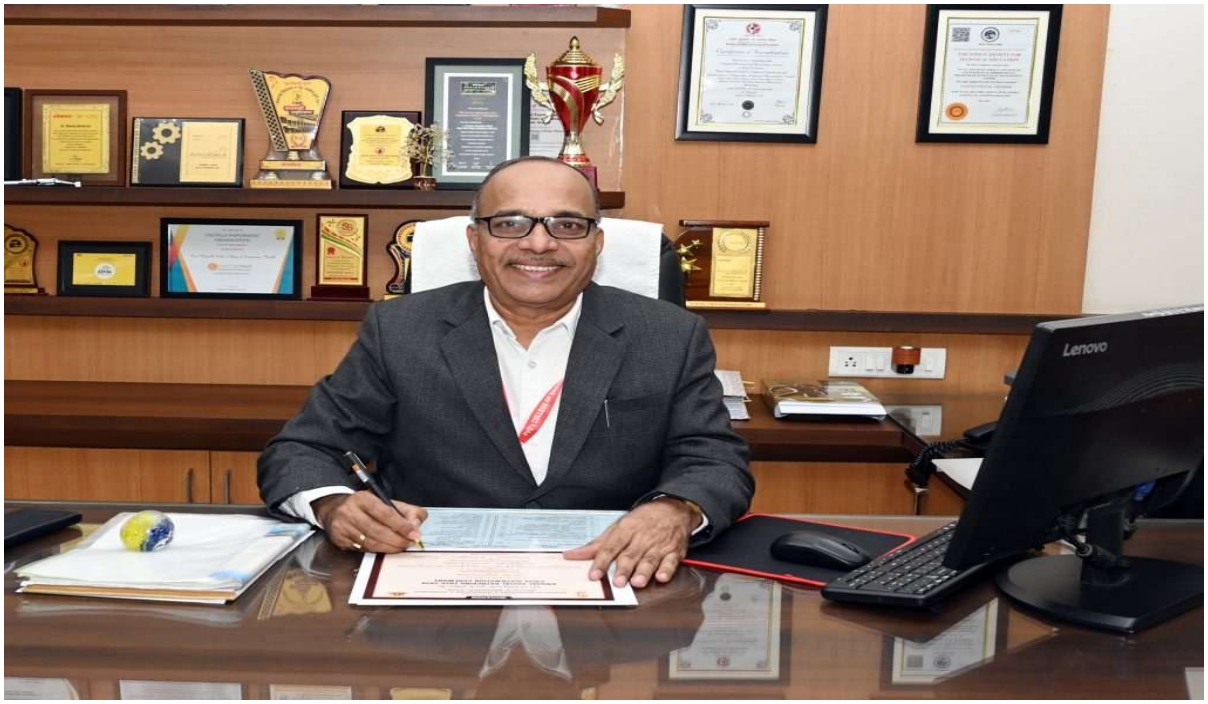
We have curated a program that features a diverse range of topics, including but not limited to artificial intelligence, sustainable technologies, digital transformation, and innovative management practices. Our goal is to foster an environment that encourages interdisciplinary dialogue and the forging of new partnerships.

I extend my heartfelt gratitude to our keynote speakers, presenters, participants, and the dedicated organizing team for their invaluable contributions. Your collective efforts have made ICRATM 2026 a reality, and we are confident that this conference will be a resounding success.

We hope that your experience at ICRATM 2026 will be enriching and inspiring, and that the knowledge and connections you gain here will contribute to your professional growth and the advancement of your respective fields.

Warm regards,

Hon. Shri. Sanjay N. Gunjal
General Chairs, ICRATM 2026
Secretary & Director, Pune Vidyarthi Griha



It is with immense pride and enthusiasm that I welcome you to the International Conference on Recent Advances in Technology and Management (ICRATM 2026), hosted by Pune Vidyarthi Griha's College of Engineering & S. S. Dhamankar Institute of Management, Nashik.

As Conference Chair, I am delighted to witness the culmination of months of dedicated effort in bringing together a diverse and distinguished group of researchers, practitioners, and thought leaders. ICRATM 2026 stands as a testament to our commitment to fostering a platform for the exchange of cutting-edge ideas and the exploration of emerging trends in technology and management.

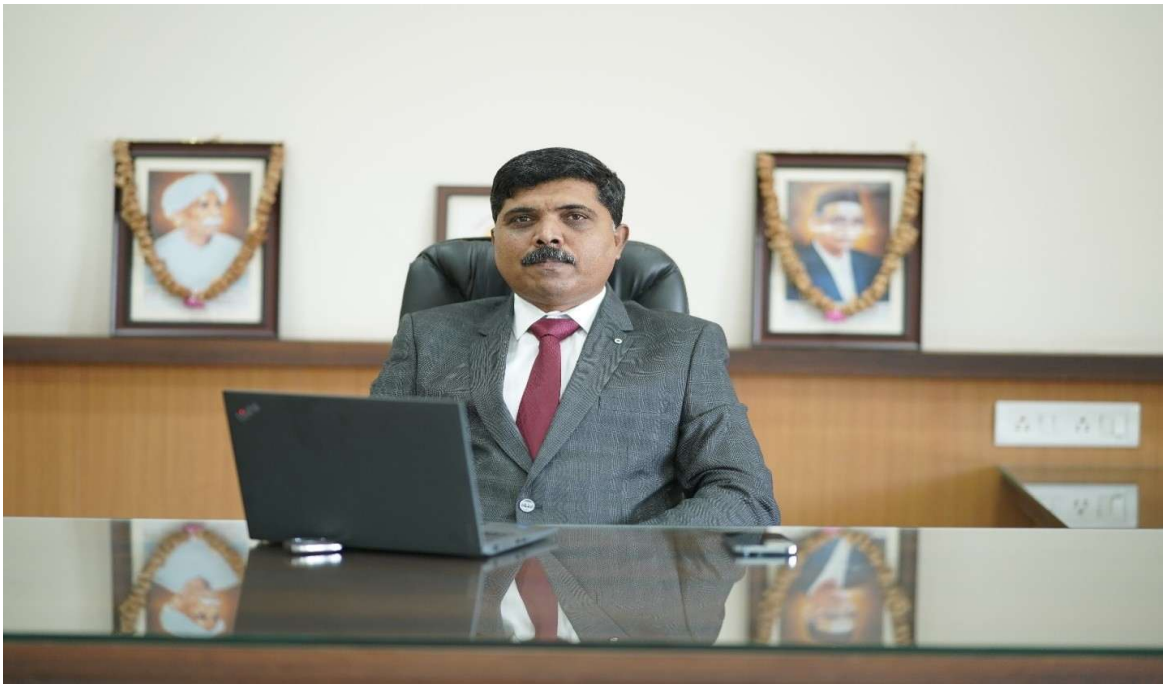
In today's dynamic and interconnected world, the ability to innovate and adapt is more crucial than ever. This conference provides a unique opportunity to engage in meaningful dialogue, share best practices, and forge collaborations that will drive progress and shape the future.

I would like to express my sincere gratitude to the organizing committee, keynote speakers, presenters, and all participants for their invaluable contributions. Your dedication and expertise are the foundation of ICRATM 2026's success.

I am confident that the insights and connections gained during this conference will inspire and empower you to make significant contributions to your respective fields. We hope that your time here will be both productive and memorable.

Warm regards,

Dr. V. J. Gond
Conference Chair, ICRATM 2026
Principal, PVG's PVGCOE&SSDIOM, Nashik



It gives me great pleasure to welcome you to the International Conference on Recent Advances in Technology and Management (ICRATM 2026), organized by Pune Vidyarthi Griha's College of Engineering & S. S. Dhamankar Institute of Management, Nashik.

As the Vice Principal, I am delighted to be part of this prestigious event that brings together an esteemed gathering of academicians, researchers, industry experts, and students from diverse domains. ICRATM 2026 serves as an excellent platform for sharing innovative ideas, discussing emerging technologies, and exploring contemporary management practices.

In an era driven by rapid technological advancements and evolving management paradigms, such conferences play a crucial role in encouraging interdisciplinary collaboration and knowledge exchange. I am confident that the technical sessions, keynote addresses, and discussions will provide valuable insights and inspire new directions for research and development.

I extend my sincere appreciation to the organizing committee for their dedicated efforts in successfully planning this conference. I also express my gratitude to all the speakers, authors, and participants for their enthusiastic involvement and valuable contributions.

I wish all the participants a highly enriching and rewarding experience during ICRATM 2026, and I hope this conference will create lasting academic and professional connections.

Warm regards,

Dr. M. V. Bhalerao
Conference Chair, ICRATM 2026
Vice - Principal, PVG's PVGCOE&SSDIOM, Nashik

As Editorial Chair, I proudly present the ICRATM 2026 proceedings, a culmination of dedicated effort. These proceedings capture cutting-edge research at the intersection of technology and management. The papers showcase the breadth of this dynamic field, from AI and digital transformation to sustainability. They offer fresh perspectives and practical insights for academics and practitioners.

A rigorous peer-review process ensured the highest scientific quality and originality. I sincerely thank the dedicated reviewers for their expertise and feedback. Their commitment was essential to creating a valuable contribution. I deeply appreciate the authors' hard work, dedication, and willingness to share their research. Their contributions represent the cutting edge of knowledge.

These proceedings mark a significant milestone for ICRATM 2026, underscoring our commitment to fostering a vibrant community. We believe these papers will be a valuable resource for years to come. I thank the organizing committee for their unwavering support and collaboration. Their dedication to a world-class conference was inspiring.

I am confident these proceedings will be a valuable addition to your library and a source of inspiration. I wish you a stimulating and productive conference. I look forward to the continued growth and success of ICRATM 2026.

Warm regards,

Prof. S. N. Bhadane
The Editorial Chair, ICRATM 2026

Honorary Chairs

Hon. Shri. Tirthankar Das

Joint Secretary,

(Lok Sabha, Parliament of India, Delhi)

Hon. Shri. Rajendra V. Borhade

(Chairman, Pune Vidyarthi Griha)

General Chairs

Hon. Shri. Sanjay N. Gunjal

(Secretary and Director, Pune Vidyarthi Griha)

Patron

Hon. Dr. Nitin Rane

(Vice Chancellor, Avantika University, MP, India)

Hon.Prof. (Dr.) Mohammad Israr

(President, Maryam Abacha American University of Nigeria, Kano, Nigeria)

Hon.Dr. Sohan Chitlange

(Vice Chancellor, Alard University, Pune, India)

Conference Chair

Dr. V. J. Gond

(Principal, PVGCOE&SSDIOM Nashik)

Dr. Manoj V. Bhalerao

(Vice-Principal, PVGCOE&SSDIOM Nashik)

Prof. Ing. Zuzana Palková, PhD

(Institute of Electrical Engineering,
Slovak University of Agriculture in Nitra, Slovakia)

Dr. Marta Harničárová

(Institute of Technology and Business in České Budějovice, Czech Republic
Institute of Electrical Engineering, Slovak University of Agriculture in Nitra, Slovakia)

Prof. Jan Valíček

(Institute of Technology and Business in České Budějovice, Czech Republic
Institute of Electrical Engineering, Slovak University of Agriculture in Nitra, Slovakia)

Prof. Ing. Roman Danel

(WSG University Poland)

Keynote Chairs

Dr. Bala Prasad Peddigarii

(Chief Innovation Officer Tata Consultancy Services,

Vice Chair – IEEE Hyderabad Section, India)

Dr. Satish Kumar

(Chairman and Nodal Officer, NIRF Ranking,

Dean, National Institute of Technology (NIT),Jamshedpur, India)

Technical Program Committee Chair

Mr. Satish N. Bhadane

International Chair

Dr. Dafik
(University of Jember, Jember, Indonesia)

Dr. Suman Kumar Sanjeev Prasanna
(Independent Researcher, USA)

Dr. Vilas H Gaidhane
(BITS Pilani Dubai)

Dr. I Wayan Budi Sentana
(Politeknik Negeri Bali University, Indonesia)

Dr George Tsaramirsis
(University of Wollongong, Dubai)

Mr. Abrar Ahmed Syed
(Data and Analytics, Gainwell Technologies LLC, Dallas USA)

Mr. Jitender Jain
(Technical Project Manager, Cognizant, USA)

Dr. Vilas H Gaidhane
BITS Pilani Dubai

Dr. Muma Akaya
Pendidikan Mandalika University, Indonesia

Dr. Jaber E. Abu Qudeiri
College of Engineering,
United Arab Emirates University, Al Ain , U.A.E.

Prof. Tatiana Kalganova
Brunel University London, UK

Dr. Arumugam Muthusamy

Senior Manager, Sunway Business School, Sunway University, Malaysia

International Keynote Speaker

Dr. Dalia A. Magdi

(Dean of Computer Science School, Canadian International College, French University, Egypt)

Dr. Vishal Naranje

(Amity University Dubai, UAE)

Dr. Reza Kolahchi

(Zhejiang University, China)

Mr. Abrar Ahmed Syed

(Data & Analytics, Gainwell Technologies LLC, Dallas, USA)

Mr. Jitender Jain

(Technical Project Manager, Cognizant, USA)

National Advisory Chair

Dr. Rajesh Tiwari

Principal, R V S Engg. College, Jharkhand, India

Dr. Udit Mamodiya

Associate Dean, Poornima University, Jaipur, Rajasthan

Dr. Arvind Kumar

Singhania University

Dr. Raghvendra Kumar

GIET University, India

Dr Manoj Kumar Langote

HOD, MCA, Dr Moonje Institute of Management, Nashik

Dr. Pramod D. Patil

Director, NMIET, Talegaon, India

Dr. Ganesh Pathak

Dean, School of Computing, MIT Art Design and Technology University, Pune

Dr. Ram Kumar Solanki

MIT Art Design and Technology University, Pune

Prof. (Dr.) Mandeep Mittal

Bennett University, Delhi

Dr. Srinivas Shetti

Indira Gandhi Institute of Technology (IGIT), Sarang, Odisha, India

Mr. Saurabh Pratabh Yadav

Program Manager, EICT Academy IIT Roorkee

Dr. Dattatray Waghole

Dean Research, JSPMs Jayawantrao Sawant College of Engineering, Pune, India

Dr. Vamsi Krishna Mangalapalli

Aditya University, India

Dr. Manisha Bhende

Dean, Alard School of Engineering and Technology, Alard University, Pune, India

Reviewer Chair

Dr. Dinesh B. Kulkarni
(Professor, WCE, Sangli, India)

Dr. Sunil Tamhankar
(Associate Professor, WCE, Sangli, India)

Dr. Nitin L. Gavankar
(Associate Professor, WCE, Sangli, India)

Dr. Ravindra R. Rathod
(Associate Professor, WCE, Sangli, India)

Dr. Madhav V. Vaidya
(Associate Professor, SGGSIE&T Nanded, India)

Dr. Ganesh K. Pakle
(Associate Professor, SGGSIE&T Nanded, India)

Dr. Chandrakant P. Navdeti
(Associate Professor, SGGSIE&T Nanded, India)

Dr. Medha A. Shah
(Associate Professor, WCE, Sangli, India)

Dr. Dipak V. Patil
(Professor, RHSCOEMS&R, Nashik, India)

Dr. Kishor Wagh
(Professor, AISSMSIOIT, Pune, India)

Dr. Anupama Budhewar
(Professor, JSPM University, Pune, India)

Dr. Sopan A. Talekar
(Associate Professor, KBTCOE Nashik, India)

Dr. Balasaheb S. Tarle
(Associate Professor, KBTCOE Nashik, India)

Dr. Naresh Thoutam
(Associate Professor, SITRC, Nashik, India)

Dr. Amit Barve
(Professor, Parul University, Ahmedabad, India)

Dr. Anant K. Kokane
(Associate Professor, WCE, Sangli, India)

Conference Organizing Chair

Dr. Amol R. Rasane

Dr. Sonali B. Jadhav

Dr. Vijay Sonawane

Dr. Yogita M. Ahire

Dr. Sandeep N. Dive

Mr. Jagdish Y. Kapadnis

Mr. Sanket G. Chordiya

Mr. Prasad A. Lahare

Mr. Sagar M. Panghavane

Mrs. Ashrita H. Joshi

Mrs. S. K. Thakare

Mr. A. S. Pawar

Mr. V. V. Mahale

Mr. Y. R. Shinde

Pune Vidyarthi Griha, formerly known as Pune Anath Vidyarthi Griha, is a well-known charitable institution of Maharashtra, established in 1909 by a group of dedicated and visionary educationists.

The primary mission of the Institute is to provide progressive and value-added education facilities for deserving, poor students of society. Today, the institution has grown into a big banyan tree with branches in Pune, Mumbai, and Nashik.

Pune Vidyarthi Griha's College of Engineering & Shrikrushna S. Dhamankar Institute of Management, Nashik was established in 2010 with an objective of providing professional education to poor, hardworking and intelligent students. The institute offers undergraduate courses in Engineering in the following streams: Mechanical, Computer, IT, E &TC, Artificial Intelligence and Data Science Engineering. The Institute also offers a Two Years full-time MBA course with an intake of 60 seats.

The institute is affiliated to the Savitribai Phule Pune University, Pune, and is approved by All India Council for Technical Education, New Delhi & Directorate of Technical Education, Maharashtra State. It is also accredited by the National Assessment & Accreditation Council.

Located at the heart of Nashik city, around 3 km from the famous Panchavati region, the Masrul campus of Pune Vidyarthi Griha spans an area of 20 acres and is recognized as a major educational hub in the region.

PVGCOE & SSDIOM, Nashik follows a student-centric approach, focusing on overall development. The institute offers comprehensive support through mentoring, academic activities, extracurriculars, seminars, workshops, and career counseling. Students are encouraged to participate in internships, field visits, and industry-sponsored projects, bridging the gap between academia and industry. The institute's alumni have achieved success in higher education, qualifying for state, national, and international examinations, and have secured positions in prestigious companies or ventured into entrepreneurship. This holistic approach ensures students are well-prepared for their future careers and personal growth.

Index

Sr. No	Tiltle	Authors
1	An AI-Driven Parcel Sorting System Using QR Code Recognition and PLC Control: AI-Based Parcel Sorting Using PLC	Dr. Gaurav GadgeRushikesh Shahaji Kokate, Kunal Jalindar Danawale, Aditya Santosh Jamdade
2	Review of Deep Learning Transformer Architecture for Multi-Omics Integration in Rare Disease Diagnosis.	Pallavi Dilip Waghmare Vijay N. Patil
3	FreshScan : AI-Powered Fruit Quality Assessment System using Image Processing and Deep Learning	Siddhant DevsaleDr. Disha Wankhede, Virendrakumar A. Dhotre, Mangesh Devikar, Neel Dharia, Pranit Kothari
4	An AI-Powered Predictive Cloud Resource Allocator Using Prometheus-Based Workload Telemetry	Chetan H. PatilSanket G. Chordiya, Hansa S. Borse,Atharva V. Aher,, Akshada B Dinde, Amit S Chaudhari, Vaishnavi V Darekar
5	Gamified Fitness and Wellness Tracker	Kaveri BadakhDr. Geetha Chillarge, Mayuresh Ambrale, Vivek Jadhav, Ashok Ingle
6	AI Interview System: Adaptive Mock Interview Platform with LLMs and Voice Interface"	ANISH SHINDEROHIT KASHID,SUJAL SURYAWANSHI,FARHANA SAYED
7	An Integrated Intelligent System for Transformer Manufacturing: Combining Predictive Analytics, Automation, and Conversational AI: AI Nexus	Ruturaj Sunil GaikwadSangram Ghumre , Shreyas Gimhavanekar, Vaibhav Gaikwad, Vishakha Gedam
8	Integrated Multi-Dimensional AI Risk Assessment Framework for Early-Stage Indian Startups	Chinmay RaskarAryan Potdar, Ribhav Soni, Amruta Patil, Sachin Pande
9	GrapeNet: An Explainable Customized Deep Learning Framework for Early Grape Leaf Disease Detection	Rashmi TundalwarPrasenjeet Damodar Patil
10	Bridging the Semantic Gap: Natural Language to Relational Algebra and SQL Query Generation	Kirti Hemant WanjalePragati Anandrao Bandagar, Aadi Ashish Bhangdiya, Manasvi Sopan Bandkar, Yogini Prashant Bhamare
11	"SenseBin :IoT Based Solar Powered Smart Dustbin for Real-Time Waste Level, Gas Smell and Lid Status Detection"	SHREE MANGESH AMBEKAR PROF. SAYALI BELHE, SUYASH SUDHIR AMBI, SANKALP SANTOSH AKKAR, AKASH KUMAR

12	Adaptive Online Surrogate-Assisted Multi-Objective Optimization for Analog Circuit Design Using Active Learning and NGSpice Feedback	Umesh Balkishan PhiskeDr. Gopalkrishna D.Dalvi
13	The NGO-Based Donation Management System using Blockchain	Ms. Mrudula ShishupalMs. Divyarani Pawar, Ms. Siddhi Manoj Patil, Ms. Samruddhi Mahadev More , Dr. Priyanka Kadam
14	Driver Drowsiness Detection and Alert System Using Eye Tracking	Shital Atul BarahateYogesh R.Shinde , Sakshi V.Bhusare, Amruta G.Dahale ,Vaishnavi D. Gaikwad
15	Automatic Portfolio Website Builder: A Web-Based System for Automated Portfolio Generation and Skill-Based Job Recommendation	V. R. Lele, S.K. Thakre, Yash V. Pagar, Prathamesh R. Patil, Yash P. Bagul, Tanmay S. LandageVaishali R. Lele, Smita K. Thakre, Yash V. Pagar, Prathamesh R. Patil, Yash P. Bagul, Tanmay S. Landage
16	Design and Implementation of a GNSS-Iot Architecture of Real-Time Location Tracking in Yard Management	Anjali Sanjaykumar PatilSayed Mohammad Adil, Kunal Patekar, Shreyasi Rakesh Chaudhari, Pranali Choudhari, Anita Jadhav, Nitin Shewale
17	Design and Implementation of a Decentralized Uptime Monitoring System with Byzantine Fault Tolerance on Solana	Satish.N.BhadaneDipali A.Shinde,Dhananjay Ahire,Ritesh Chaudhari,Sujit Gaware,Chetan Chavan
18	Croptalk- AI Driven Crop Disease Prediction and Management System	Mrs.Aparna Mahesh Torade.Apurv Deshmukh
19	Blockchain-Enabled, AI-Driven Smart Health Record System for Secure, Interoperable, and Patient-Centric Data Management	Yukta Vishnoi Archana Nanade
20	Ruminix: AI-Based Pomodoro Study Platform	Sanika GojareYukta Vishnoi
21	Blockchain-Enabled Intelligent Pharmaceutical Supply Chain for Counterfeit Drug Detection Using Federated Machine Learning	Shamali A. GupteRajkumar Shende
22	Wireless AI-Based Biomedical Parameter Monitoring System for Human Health and Fatigue Detection	Priyanka Pawar[1], Sunita Mane[2], Supriya Kadam[3]
23	Wireless AI-Based Biomedical Parameter Monitoring System for Human Health and Fatigue Detection	Priyanka Sanjay Pawar Dr.Sunita Vijay Mane,Dr.Supriya Prabhakar Salave
24	An Hybrid Crowdsourced Platform for Civic Problem Reporting and Resolution	Tejaswini BhosaleVishal Hingmire, Rajita Dixit, Vaidehi Nadge, Vaishnavi Jadhav , Jayashree Rajesh Prasad
25	Analysis of Spherical Void Infill Pattern to Improve Strength-to-Weight Ratio of Additively Manufactured Structures	Eyad Al MartiniAbdelrahim Abdelkarim, Abdelrahman Elsaid,

		Alyazia Saeed Saif Alkaabi, Jaber Abu Qudeiri
26	AI-Powered Attention Monitoring with Live Computer Vision Processing	Anurag Makarand KawadePrajwal Sunil Dalvi, Yash Deepak Dhumal, Dr. Kishor Wagh
27	Integrating Advanced Imaging and AI-Based Models for Enhanced Osteoarthritis Detection and Prognosis	PRANJALI P. DESHMUKHDR. PRAMOD U. CHAVAN
28	WeSee – A Helper for the Visually Impaired	RUTIK TUPEProf SHRADDHA TONEY , POOJA THORAT , SARTHAK VELAPURE
29	AI-Based Agricultural Robot for Real-Time Crop Monitoring, Disease Detection and Smart Irrigation	Pimpale Karishma LaxmanYuraj Krishnrao Kanase, Sunita Vijay Mane
30	An Explainable Deep Learning-Based Intrusion Detection System Using SHAP and LIME for Enhanced Transparency	Prasad A. Lahare, Atul Abhale, Jagdish Y. Kapadnis, Smita K. Thakare, Rupali Purkar, Rupali Rahinj
31	HbA1c-Integrated Multimodal Deep Learning for Diabetic Retinopathy Severity Classification and Short-Term Progression Risk Stratification	Ananya V SJasmine Selvakumari Jeya I, Aldrin Joan Pandian W, Kannaiya Raja N, Indirani M, Saravanan S
32	MessCook: An AI-Powered Platform Connecting Home-Based Cooks	Durgesh Sharad ChavanNarendra Sanjay Kamble
33	Ambiguity-Aware Deepfake Image Detection Using StyleGAN2-ADA and CNN with Memory-Guided Recall	Ashrita Harshal Joshi 1.Raviraj Ramesh Bhakare; 2.Aakanksha Balasaheb Bodke ; 3.Chaitali Dileep Bonde; 4.Neha Atul Chaudhari
34	AgriSense: An AI-Based Smart Agriculture Web Platform for Crop Disease Analysis and Decision Support	Suraj GhuleSagar Rajebhosale, Rohan Gadhave, Shubham Gaikwad, Avneet Kaur, Swati Paneri
35	Research Compass: An LLM-Orchestrated Multi-Source Framework for Intelligent Scholarly Paper Retrieval	Anurag MahalpureSatish D. Kale, Anay Joshi, Abhishek Marwade
36	Smart Study Session Optimizer: An AI-Based Approach to Personalized Productivity Enhancement	Monali TinganeViren Lahane, Sejal Behera, Sachin Thanekar, Dnyaneshwari Patil
37	IoT-Based Underwater Robotic System for Object Detection and Navigation	sheetal Jagannath IngawalePooja Vitthal Gore,Amol Bhosale, Pratibha Pramod Chavan, Mamta Vikas pawar.
38	Rheological Characteristics of Limestone water Suspension	Nihaal Sahay, Mukesh Kumar Singh, Satish Kumar, Shalendra Kumar, Shivam kumar, Asisha Ranjan Pradhan
39	A Review of Lightweight and Explainable AI for Clinical Edge Deployment	SHITAL AJIT DUMBREDr. Vinodpuri Gosavi,Dr. Sagar

		Tambe,Dr. Nilima Kulkarni,Dr. Arati Kale
40	Toward a Quantum Internet for Healthcare: A Tiered Hybrid Network Topology with Post Quantum Fallback	Aadesh LawandeStavan Shere, Kashyap Kamble, Saurabh Salunkhe, Dr.Manju Pawar
41	LearnCraft VR: A Gamified Virtual Reality and AI-Driven Approach for Inclusive Education	Rahul Mahendra PatilShilpa Prafull Khedkar, Abhishek Bharatkumar Borate, Anuj Mohan Jadhav, Priyanshu Vilas Shende
42	YOLOv8m-Based Object Detection for Autonomous Vehicles in Indian Road Scenarios.	Riya Parab 1. Rushikesh Gajbe 2. Sujal Ghadge 3. Sarvesh Vengurlekar 4. Milind Shah 5. Pranali Choudhari
43	An Enhanced 3D CNN for Brain Tumor Segmentation and Grading	Dr.Y.Ambica1.Mathukumalli Abhiram , 2.Jayanthi Nandini
44	Trip Genie: Dynamic Travel Itinerary Generator With AI Integration	Swarali Laxman Gurav Gayatri Suhas Gursale , Shravani Shreeram Jawale, Shruti Manohar Hanegaonkar
45	Obstacle Detection Using LiDAR Distance Thresholding	Abhimanyu Chavan Vinay Desai, Milind Shah, Adrian Christopher, Pratik Zope
46	Leveraging Seaborn and XGBoost for Customer Analysis and Early Dissatisfaction Detection	Sayali Aditya BelheChirayu Nitin Patil, Krishna Sahebrao Patil, Rushikesh Bhaskar Pathare, Dnyaneshwar Vasant Patil, Siddhesh Kulthe
47	AIRGUARD-MICRO DOPPLER BASED TARGET CLASSIFICATION USING EDGE AI	Arya DongareDr. Dattatray Waghole , Prof Smita Wagh, Anjum Maner, Kirti Chandratike
48	AI-Driven Placement Prediction and Recommendation System for Enhancing College Student Career Readiness	Adesh GajareChetan Bochare, Shailesh Patil, Manish Khodaskar
49	Speak My Scan: An Assistive Image-to-Speech System for Visually Impaired Users	Riddhi Vijay Bhutada Pranali Dattatray Bangar, Supriya Jagtap, Rohan Bhagchand Bhusare, Kartik Santosh Akolkar, Ritesh Rajkumar Biradar
50	SMARTCRY: IDENTIFYING ABNORMAL INFANT CRY PATTERNS USING MFCC AND MACHINE LEARNING MODELS	Pranav Pramod BadoleDr. Dattatray Waghole, Prof. Smita Wagh, Shrutam Sandeep Hinge, Tanesh Vijay Devhare, Virendra Hemraj Godse
51	AI BASED SMART AND SUSTAINABLE BIOGAS SYSTEM FOR RURAL EMPOWERMENT.	Shreetej Sachin kordeDr.Dattatray Waghole, Joel Daniel Chandanshiv, Shreyas Kailas Aher, Prof. Smita Wagh
52	MedVerify: A Severity-Aware System for Verification of Medical Claims Generated by Conversational AI Systems	Aditi LondheAarya Badhe, Tanish Charthankar, Shrujan Kundgulwar, Sachin Shelke

53	SensAI: Intelligent Career Coaching for Resume Optimization and Employability	Mayur SapateShreyash Trimale , Girish Navale , Saumya Soni
54	An Agentic AI Framework for Adaptive and Inclusive Tax Filing in India	Jay Raju NagoseSoniya Satish Mate, Prajakta Gorakshanath Kale, Dakshit Ramesh Vardekar, Shantanu Kishor Bhavsar, Snehal Niranjan Hon, Yogesh Sureshrao Deshmukh
55	Energy-Aware Network Coding AOMDV for IoT-Enabled MANETs	Vishal Ambaji BogamAshwini Shahapurkar, Aarti Pimpalkar, Nitin Alzende, Vaibhav Sawalkar, Anuja Gaikwad
56	MapMates: An AI-Powered, Gamified City Exploration and Social Networking Platform	Raviraj RaibagkarDr. Priyanka Kadam; Radhika Kawadkar; Rishika Raj; Satyam Rahane;
57	An Explainable Longitudinal Machine Learning Framework for Early Cervical Cancer Risk Prediction	Sneha Kishor DeshmukhSuvarna Eknath Pawar, Sachin Arun Thanekar, Komal Munde
58	NexCard: AI-Driven Smart Card for Secure Payments, Digital Identity, and Professional Networking	BHOUMIK RAJPUTProf.Dr.Hanumant Pawar, Prof.Dr.Reena Gunjan, Arya Chaudhary
59	Automated Glacier Boundary Delineation and Change Detection Using U-Net and CNN on Sentinel-1 SAR Imagery	Jagdish KapadnisKanishk T. Vadge, Jayesh J. Pandey, Prerana R. Thok
60	A Comprehensive Review on Weather Anomaly Detection and Risk Prediction for Smart Agriculture	Pallavi Vilas LengareDr.Shilpa Vikas Shinde, Dr.Pratibha Pramod Chavan, Dr. Prakash Ravindra Somani
61	AI-Native LMS: Auto-Generates Personalized Slide-Based Learning Content	Ashwin Rameshchandra MauryaSoham Satish Kulkarni, Pranav Bhagwan Gonde Patil, Dr. Archana G. Said
62	Hybrid Search Engine for Maharashtra Government Schemes	Kanchan Bhagwat KhemnarAishwarya Ramesh Gunjal, Pranav Manish Kulkarni, Pawan Naveen Poojary, Raviraj Joshi, Manish Khodaskar
63	The Experimental Roadmap to Launching Your Venture	Disha S. WankhedeBaswadeep Bembare, Parth Beldar, Aatish Bagal,Savya Bhamare
64	NeuroFlow IDE: An AI Assisted Interactive Browser-Based Development Environment	Aniket Gajanan AtramAnsh Nandu Bagul, Ruchika Kallappa Birajdar, Yash Ravindra Bhongale, Shobha Mahendrakumar Patil
65	Adaptive Fuzzy Hyperline Neural Classifier	Priyanka WaghmareMehul Raul, Sangram Bhosale, Rangrez Faizan, Ayush Waghchoure

66	A Real-Time Smart Surveillance Framework Using Edge–IoT for Suspicious Activity Detection and Facial Emotion Analysis	Nidhi Prakash NandankarShraddha R.Khonde
67	AI-Driven Vision-Guided Robotic Arm for Real-Time Defect Detection in Smart Manufacturing	Aparna Prakash BairagiDr. S.K. Sonkar
68	An Integrated System for Leaf Disease Prediction and Crop Management	Subodhini Yashavant GuravDr. Rupesh Gangadhar Mahajan
69	OmniAI: A Multi-Agent Conversational Assistant for Task Automation	Priyanka Waghmare, Satchal Patil, Aditya Savale, Prafull Satle, Krishna Tilwane
70	AI-Driven Tuberculosis Detection Using VGG-16	Sharon Kasabe Aadi Upadhyay , Hemant Sonewale , Devalh Parmar
71	Ask Your Trash: A Smart Bin System for Waste Segregation and Tracking	Toshita Pradeep BhagwateYoshita Dnyaneshwar Bardhe, Aishwarya Mutha, Dr. Archana G. Said
72	A Cloud-Based Polyglot Code Execution Framework Using GitHub Integration on Google App Engine	Madhuri Dattatraya KawadeAmit Sampat Ufade
73	Review of Deep Learning Transformer Architectures for Multi-Omics Integration in Rare Disease Diagnosis	Pallavi Dilip WaghmareDr. Vijay N Patil
74	Hospital Management through AI: Smart Health Assistant App	Ms. Priyanka WaghmareSuvidya Sonawane
75	"A Study on IoT-Based Data Collection and Monitoring Systems for CNC Machines in Smart Manufacturing"	Dhanshri Ratnakar Lahore Dr.K.B.Deshmukh, Dr. S.A.Sonawane
76	Automated VSAT Installation and Verification	Durvank Sawant, Parag Patil, Abhishek Rubde, Tanush ShendePranali Choudhari, Nilashree Madakath, Geo Rocky
77	An IoT-Based Smart Irrigation System with Remote and Voice Control	Rutika Vishnu Dhembare1. Shaheen Nizamuddin Khan 2. Dhanshree Rajendra Dhindale 3. Saloni Sanskar Tanmor 4. Shraddha Ashok Jagtap 5. Supriya Prakash Jagtap(Mentor/Faculty)
78	A Comprehensive Audit Framework for Responsible AI Systems	Arnav Aniket VaidyaArya Suresh Thanekar, Shruti Mahesh Mone, Sampada Ravindra Tagalpallewar, Manish Khodaskar
79	Automated Property and Risk Assessment System for Maharashtra	Pranav DivekarVedant Dongare, Komal Shendage, Siddhi Kadam
80	Systematic Review of Terahertz Antenna Design: Materials, Fabrication Challenges, and Future Perspectives	AMIT JAYANT NAIKANIL NANDGAONKAR

81	An Integrated Weather Intelligence Platform for Historical Analysis and Real-Time Extreme Event Alerts	OMKAR ASHOK RASKAR , PRATHAMESH DURYODHAN KUMBHARE, PAWAR HITESH RAJENDRA, RABADE SANDESH GOVINDSING,,SHAIKH SAMEER TABREZ,SAYALI BELHE
82	Real-Time Tomato Leaf Disease Detection Using YOLOv7	Aditya Ramkrushna MahaleDr. A. S. Thorat, Puja Somnath Mahale, Piyusha Rajendra Mahajan, Aadarsh Pravin Patil
83	A Trend-Aware Multi-Modal Generative Framework for Automated Social Media Content Creation	Devendra VeerSmith Mavli , Sarthak Waykar , Chetan Aher.
84	A Design and Implementation of Jet shrouded Wind Turbine System	Vrushali Bhaskar MundphanDeepali Vikas Wagh, Sumit V.Chim, Vaishnavi V.Patil
85	Toxicity Detection in online games using Reinforcement Learning	1)Ruquia taha khatoon2)Dantala Shivaghna,3)Katta Harsha Vardhan
86	Post-Quantum Cryptography for Securing Banking API: A Survey	Kshitij Dhake, Atharva Dhake, Kartik Tichkule, Abhinay Dhamnakar, Sachin Pande
87	AI-Driven Road Safety Monitoring and Civic Issue Reporting System Using Computer Vision	Ketan Nibandhe, M Venkat Soodarshan, Vaibhav Nagawade, Dr. Chetan Aher
88	Virtual Chemistry Lab	Saish Sanjay MekalAyush Vijay Bhosale, Soham Sanjay Sane, Himanshu Machhi
89	YOLO-LFA: Lightweight Feature Attention for Real-Time Vehicle Detection	JASMINE SELVAKUMARI JEYA IPRIYADARSHI NIHAL, PRATYUSH DUBEY, DEV TAILOR, DATTATREY, SHIVALIK MATHUR
90	Machine Learning-Based Network Intrusion Detection System Using Random Forest	Amit Jyotiprakash Kurmi
91	Wellness Buddy: An AI-Enabled Emotion-Aware Companion for Digital Wellbeing Application	Mr. Samarth BidkarMrs. Supriya P. Jagtap , Miss. Arya Pawar , Mr. Nidhish Chincholkar , Mr. Aarush Sengupta , Mr. Adithya Sagri
92	Collaborative Generative AI Agents for Enhanced Organizational Innovation	Komal Sunil MundeKomal Sunil Munde
93	A Smart and Automated Attendance Monitoring System	Monali TinganeRohan Patil, Mrunmayee Boraste, Amruta Kulte, Shruti Kaduskar
94	Risk–Return Profile of Nifty100 ESG versus Nifty 50: Evidence on Sustainable Investing in India	Dr. Riddhi C SanghviDr. Jay J Talati

Paper 1. An AI-Driven Parcel Sorting System Using QR Code Recognition and PLC Control: AI-Based Parcel Sorting Using PLC

Dr. G. S. Gadge1, , Rushikesh Kokate2, Aditya Jamdade3, Kunal Danawale4
1,2,3,4 Department of Electrical Engineering, Vidya Pratishthan's Kamalnayan Bajaj Institute of Engineering and Technology, Baramati, India

Abstract: The increase in parcel traffic caused by e-commerce and courier services has created a need for quicker and more reliable sorting methods. In many small and medium facilities, parcel sorting is still performed manually, which can lead to delays and routing mistakes. This paper presents a parcel sorting setup that uses QR code recognition with PLC-based control. Parcels move on a conveyor belt, and a webcam captures QR labels during movement. OpenCV is used to read the QR data, which is then sent through an Arduino Mega 2560 to a T-950 PLC. According to the decoded destination, the PLC activates pneumatic cylinders that push parcels into separate bins. Trials were carried out using 50 parcels for three destinations. The system achieved an overall sorting accuracy of 98% with an average response time below 200 ms. The developed setup can be useful in courier offices, warehouses, and training laboratories.

Paper 2. Review of Deep Learning Transformer Architecture for Multi-Omics Integration in Rare Disease Diagnosis.

Pallavi Dilip Waghmare1 Dr. Vijay N Patil2
[1, 2] Pimpri Chinchwad Education Trust's Pimpri Chinchwad University

Abstract:

Rare diseases affect a small percentage of the population individually, but collectively they impact millions of people worldwide and often remain difficult to diagnose due to complex genetic and molecular mechanisms. The rapid advancement of high- throughput sequencing technologies has enabled the generation of large-scale multi-omics data, including genomics, transcriptomics, proteomics, and metabolomics, which provide deeper insights into disease mechanisms. Studying a disease with only one type of omics data often gives incomplete information. Genomics helps in identifying gene changes, transcriptomics shows gene expression, proteomics studies proteins and metabolomics provides information about metabolites. Therefore, researchers try to combine these datasets to obtain a better understanding of disease. However, integration is difficult because the data are large, complex and very different from one another.

In recent years, transformer models have been increasingly used for multi-omics integration. These models are capable of learning relationships between different omics layers and usually give better prediction results than conventional machine learning methods. This review presents the important transformer-based methods used for disease prediction and discusses their advantages in handling complex biological data. Despite their better performance, transformer models still face some challenges. Limited sample size, high computational requirements and poor interpretability remain major issues. Hence, further research is required before these methods can be applied effectively in clinical practice.

Paper 3. FreshScan : AI-Powered Fruit Quality Assessment System using Image Processing and Deep Learning

Dr. Disha Wankhede[1], Virendrakumar A. Dhotre[2], Mangesh Devikar[3], Siddhant Devsale[4], Neel Dharia[5], Pranit Kothari[6]

[1]Vishwakarma Institute of Technology, Pune, India; [2]Nutan Maharashtra Institute of Engineering and Technology, Pune, India; [3]Vishwakarma Institute of Technology, Pune, India; [4]Vishwakarma Institute of Technology, Pune, India; [5]Vishwakarma Institute of Technology, Pune, India; [6]Vishwakarma Institute of Technology, Pune, India;

Abstract: Waste of fresh fruit due to poor quality evaluation is a pressing issue. Visual assessment is subjective and non-predictive. This paper introduces FreshScan, a mobile AI-powered system for real-time fruit quality assessment and prediction of shelf-life using YOLOv8 with TensorFlow Lite for on-device model deployment. The system has a mean average precision (mAP) of 73-89% across six fruit categories with a prediction time of 300 ms on smartphones. Shelf life prediction accuracy is 87.4% with an average error of ±1.2 days. FreshScan offers a cost-effective, scalable solution without requiring cloud computing resources and fills this gap in mobile-friendly, integrated fruit quality assessment systems.

Paper 4. An AI-Powered Predictive Cloud Resource Allocator Using Prometheus-Based Workload Telemetry

Prof. Chetan H. Patil[1],Prof. Sanket G. Chordiya[2],Prof. Hansa S. Borse[3] Atharva Vilasrao Aher[4], Akshada Bharat Dinde[5], Amit Suresh Chaudhari[6], Vaishnavi Vilas Darekar[7]
Pune Vidyarthi Griha's College of Engineering & Shrikrushna S. Dhamankar Institute of Management, Nashik

Abstract: With the introduction of cloud computing, there has been an intense revolution in the digital infrastructure space by offering the on-demand and scalable computing resources. Conventional fixed or deterministic resource allocation policies, on the other hand, often lead to either over-allocation or under-utilization and thus trigger a decrease in performance or unnecessary expenditures. This paper presents a framework based on AI-powered Cloud Resource Allocator and Manager, also known as the proposed framework, that uses the models of Machine Learning (ML) and Artificial Intelligence (AI) to predict workload fluctuations, identify anomalies, and automatically coordinate the decisions on cloud scaling. The framework uses time-series forecasting models, including Long Short-Term Memory (LSTM) [1] and eXtreme Gradient Boosting (XGBoost) [2] models with the support of anomaly refinement methods to achieve an effective balance between costs and performance [3]. The proposed model can be used to achieve effective adaptive scaling, better anomaly refinement and an improved cost utilization, according to the tests based on simulated AWS EC2 instances and the monitoring dataset [4]. The obtained results show that pro- active cloud resource allocation can effectively increase the reliability and cost-effectiveness compared to the traditional methods. [5], [6].

Paper 5. Gamified Fitness and Wellness Tracker

Kaveri Badakh, Geetha Chillarge, Mayuresh Ambrale, Vivek Jadhav, Ashok Ingle
Marathwada Mitra Mandal's College of Engineering

Abstract:

The Gamified AI Fitness Assistant (GAFIA) is an innovative and fun way to help you stay motivated, engaged, and have fun while working out. GAFIA utilizes a large number of interactive, gaming-like features that allow for creative delivery of timely physical exercise postures, with real-time corrections to physical exercise standing. By using computer vision technologies such as OpenCV and MediaPipe, GAFIA is capable of estimating the location of a person's bones in real-time (pose estimation) by identifying various physical landmarks throughout the body, as well as calculating joint angles from those landmarks in order to establish the accuracy of a person's physical exercise posture. During exercises such as squats, push-ups, and lunges, GAFIA will provide immediate audio and visual feedback to assist the user in correcting their posture at that exact moment. This immediate feedback allows a person to increase the effectiveness of their workouts while decreasing the likelihood of them getting injured, allowing users to have a safer and more efficient workout experience.

The gamification components such as points, badges, and leaderboard can help users get involved with this application because they will be rewarded for their constant use of the application and hence develop a culture of success. Offline functionality allows users to continue working out without an internet connection, and once they reconnect, their progress updates automatically. This assistant is designed to meet the needs of users of all fitness levels (beginner through to advanced) by providing direction to those new to exercise and maximising efficiency to advanced users. The combination of AI-based error detection for form correction and gamified interactive features work together to improve users' exercise habits and to create an enjoyable and motivating way to exercise.

Paper 6. AI Interview System: Adaptive Mock Interview Platform with LLMs and Voice Interface

Mrs. Farhana K. Sayed, Anish Shinde, Sujal Suryawanshi, Rohit Kashid
Computer Department, AISSMS Institute of Information Technology, Pune, Maharashtra

Abstract

We propose a job interview automation system that utilizes large language models (LLMs) and voice interaction tools to conduct job interviews. Our system uses LLM-driven resume parsing to obtain candidate details, builds context-crafted questions by designing answerable prompts, engages real-time speech-to-text processing through the Speechmatics WebSocket API, and carries out automated answer analysis based on semantic processing. Built in Python with Streamlit, this system integrates LiteLLM to provide access to LLMs collectively, along with Edge-TTS, a text-to-speech service. It asks candidate questions dynamically by processing candidate resumes, job descriptions, and previous answers. It supports voice-only job interviews, offering JSON- formatted reports on candidate answers, providing scores between 0-10 based on each answer.

Experiments have been conducted on this system to evaluate its effectiveness in producing candidate questions, transcribing speech to text at 95feedback on answers submitted by candidates. Our work presents improvements to automated tools used for job interview preparation and initial candidate evaluation.

Paper 7. An Integrated Intelligent System for Transformer Manufacturing: Combining Predictive Analytics, Automation, and Conversational AI: AI Nexus

Ruturaj Sunil Gaikwad, Sangram Ghumre , Shreyas Gimhavanekar, Vaibhav Gaikwad, Vishakha Gedam
Ajeenkya DY Patil School Of Engineering

Abstract

This paper presents an integrated intelligent system combining predictive maintenance, demand forecasting, and conversational AI for transformer manufacturing. The system addresses inefficiencies caused by isolated solutions. A Random Forest model predicts failures, while a forecasting model optimizes inventory. Results show reduced downtime and improved efficiency. The system can be applied in industrial automation and smart manufacturing.

Paper 8. Integrated Multi-Dimensional AI Risk Assessment Framework for Early-Stage Indian Startups

Chinmay Raskar1, Aryan Potdar2, Ribhav Soni3 , Amruta Patil4, Sachin Pande5
1,2,3,4,5 Pune Institute of Computer Technology

Abstract:

New startups in India have high failure rate, with recent studies suggesting that the failure rate of any given startup is between 80% and 90% within the first five years. Current risk assessment tools that are used in to determine the health of the startup in incubation programs still factor financial, legal, and sectoral signals as separate entities, but in real world scenario the combination of this entities is what matters. This paper tells how a good architecture/solution requires an integrated, explainable framework instead of another isolated model. We discuss a framework that combines FinBERT-driven financial sentiment analysis, LegalBERT-driven analysis suited to Indian regulatory text, LSTM-driven sectoral trend modelling, and a reinforcement learning layer to improve the accuracy by adjusting the relative weight of each signal. We argue the use of native explainability through SHAP and attention visualization for all three important domains. The paper is intentionally conceptual and it does not claim implementation or observed results. We try to put forward a reasoned architecture, discussing the set of design choices in prior work, and explicit research angle to it. The Proposed solution will aid in proper assessment of a startup health which will help the entrepreneurs, incubator operators, venture due diligence teams and researchers.

Paper 9. GrapeNet: An Explainable Customized Deep Learning Framework for Early Grape Leaf Disease Detection

Rashmi Tundalwar1, Prasenjeet Damodar Patil2
1,2Department of Computer Science and Engineering,
MIT Art, Design and Technology University, Loni Kalbhor, Pune, India

Abstract:
Speedy and correct detection of grapevine diseases is essential for reducing crop losses and supporting sustainable cultivation. Traditional methods rely on manual leaf inspection, which is time-consuming, experience-dependent, and limited to small areas. In this study, GrapeNet, a custom CNN, and a transfer learning-based Custom ResNet-50 model were used to classify six grape leaf diseases. Data augmentation techniques were applied to enhance model robustness under real-world conditions. Experimental results show strong performance, with Custom ResNet-50 achieving 99% accuracy compared to 95% for GrapeNet. Overall, Custom ResNet-50 outperforms the custom CNN across key metrics, highlighting the effectiveness of deep residual networks for grapevine disease detection in precision agriculture.

Paper 10. Bridging the Semantic Gap: Natural Language to Relational Algebra and SQL Query Generation

Kirti Hemant Wanjale, Pragati Anandrao Bandagar, Aadi Ashish Bhangdiya, Manasvi Sopan Bandkar, Yogini Prashant Bhamare
Vishwakarma Institute of Technology Pune

ABSTRACT:

There are Natural Language to SQL systems that have an immense contribution towards easing database access to users in the form of using their ordinary language for queries without needing a complicated syntax. On the other hand, conventional database management systems require the use of Structured Query Language which poses an obstacle to the use of these systems by non-programmers. In order to solve this problem, this paper presents an implementation of a system that will provide a connection between natural language, relational algebra, and SQL. The suggested method will follow a process-oriented approach in which the user's query is processed to obtain its relational algebra equivalent after which it will be translated to a suitable SQL command. Such a connection will help to make more clear the link between the intention of the user and the operation to be performed in the database. The experiment results show that there is improvement in the accuracy and clarity of the translation process from natural language to SQL.

Paper 11. "SenseBin :IoT Based Solar Powered Smart Dustbin for Real-Time Waste Level, Gas Smell and Lid Status Detection"

Prof. Sayali Belhe[1], Shree Ambekar[1], Suyash Ambi[1], Akash Kumar[1], Sankalp Akkar[1]
Vishwakarma Institute of Technology, Pune, India

Abstract:

With the rate of urbanization, solid waste is being produced in growing pace and therefore waste collection and hygiene difficult. Traditional bins do not have real-time monitoring of fill status, gas level or electricity status and cause delays in collection and unhygiene. This paper presents SenseBin, a solar-powered smart dustbin system using IoT sensors and linked with two connected bins - dry and wet waste segregation. The unit has ultrasonic, gas (MQ135) and lid sensors connected to an ESP controller, with solar power and a battery, is deployed outdoors for continuous operation. To a Firebase real-time database via sensor data is sent to Firebase real-time database and is reflected to a web dashboard. Testing indicated that fill- level sensing, classification of the gas condition, and real-time updates without delay, indicating SenseBin is a potential deployment in smart cities.

Paper 12. Adaptive Online Surrogate-Assisted Multi-Objective Optimization for Analog Circuit Design Using Active Learning and NGSpice Feedback

Umesh Balkishan Phiske1, Dr. Gopalkrishna D Dalvi2
ALARD School of Doctoral Research, ALARD University, Pune

Abstract

Analog circuit sizing remains difficult to automate due to its reliance on repeated high-fidelity simulation and the presence of narrow, nonlinear, and topology-dependent operating regions. This work proposes a scalable online surrogate-assisted optimization framework that integrates machine learning with NGSpice supervision within a multi-objective evolutionary algorithm. The method is validated on a two-stage Miller compensated operational amplifier, targeting simultaneous minimization of power and area using constrained parameterization, Random Forest surrogates, uncertainty-triggered active learning, and NSGA-II. An initial dataset of 500 samples is generated using constrained Latin Hypercube Sampling. Separate regression models predict gain, phase margin, unity-gain bandwidth, slew rate, power, and area, alongside a classifier for saturation feasibility. During optimization, predictive uncertainty determines whether a candidate is evaluated by the surrogate or escalated to NGSpice, with new samples used for online retraining. Through extensive benchmarking of over 600 optimization evaluations, the proposed adaptive framework lowers NGSpice calls by 600 to 190, with a 68.3% reduction over traditional simulation-only optimization, and 2.02010-4, close to the traditional baseline of 2.21310-4, and significantly outperforming the offline surrogate-only baseline of 1.71610-4.

Paper 13. The NGO-Based Donation Management System using Blockchain

Samruddhi M. More[1], Divyarani Pawar[2], Mrudula Shishupal[3], Siddhi M. Patil[4], Dr Priyanka Kadam[5]
Vishwakarma Institute of Technology,Pune

Abstract:

Traditional NGO donation platforms suffer from inadequate transparency, delayed fund tracking, and declining donor confidence owing to the absence of real-time visibility into fund utilization. This paper presents a Blockchain-Based NGO donation management system built on Ethereum smart contracts with role-based access control across three user portals: Donor, NGO, and Admin. Smart contracts automate donation processing, withdrawal approvals, and utilization reporting, thereby eliminating the need for manual intervention. Evaluation on a local Ganache test network demonstrated 100% transaction accuracy, end-to-end fund traceability via unique transaction hashes, an average confirmation latency of 15 seconds, and a System Usability Scale (SUS) score of 78/100. The system ensures that no withdrawal is released until the NGO submits a verified utilization report, providing a trustworthy, tamper-proof alternative to conventional centralized donation models.

Paper 14. Driver Drowsiness Detection and Alert System Using Eye Tracking

Shital A.Barahate1,Yogesh R.Shinde2 , Sakshi V.Bhusare3, Amruta G.Dahale4 ,Vaishnavi D. Gaikwad5
1 Asst. Prof. Electronics & Telecommunication Engineering Department, PVG's COE & SSDIOM, Nashik
2 Asst. Prof. Engineering Science Department, PVG's COE & SSDIOM, Nashik
345 UG Students, Electronics & Telecommunication Engineering, PVG's COE & SSDIOM, Nashik

Abstract:

Driver drowsiness is one of the major causes of road accidents worldwide, leading to reduced alertness, poor decision making and slower reaction time. This paper presents an Eye Tracking Based Driver Fatigue Monitoring and Alert System designed to detect early signs of drowsiness using real-time Image Processing Techniques. The proposed system observes blink rate, eye movements and eye closure duration using eye blinking sensor. Key parameters such as Percentage of Eye Closure (PERCLOS) and Eye Aspect Ratio (EAR) are used to determine the fatigue level. When fatigue is detected beyond a predefined threshold, an alert system is activated to alert the driver. The system is cost-effective, non-intrusive and suitable for real-time implementation in Smart Vehicles as well as Advanced Driver Assistance System (ADAS). So when a sign of fatigue is identified, a buzzer is activated to warn the driver, thereby precluding potential accidents. Experimental results demonstrate improved detection reliability under changing lighting conditions, making it applicable to real-world vehicular environments.

Paper 15. Automatic Portfolio Website Builder: A Web-Based System for Automated Portfolio Generation and Skill-Based Job Recommendation

V. R. Lele1, S. K. Thakare2, Yash V. Pagar3, Prathamesh R. Patil4, Yash P. Bagul5, Tanmay S. Landage6
PVG's COE & SSDIOM, Nashik

Abstract:

In the modern digital recruitment ecosystem, creating a professional portfolio website remains a challenge for many users due to the requirement of technical skills, while identifying suitable job opportunities based on individual skill sets is also difficult. This paper presents an Automatic Portfolio Website Builder integrated with a skill-based job recommendation system to address these challenges. The proposed system enables users to generate a structured and responsive portfolio website through a simple web-based interface without requiring prior technical knowledge. Additionally, a job recommendation module analyses user-defined skills and suggests relevant job roles using TF-IDF and cosine similarity techniques. Experimental observations indicate that the system provides fast response times of approximately 1–2 seconds and delivers relevant job recommendations based on skill matching. The system improves accessibility for non-technical users and offers an integrated platform for portfolio creation and career guidance, making it useful for students and job seekers in real-world applications.

Paper 16. Design and Implementation of a GNSS-Iot Architecture of Real-Time Location Tracking in Yard Management

Anjali Patil[1], Adil Sayed[1], Kunal Patekar[1], Shreyas Chaudhari[1], Pranali Choudhari[1], Anita Jadhav[1]
Nitin Shewale[2]
[1]Fr. Conceicao Rodrigues Institute of Technology (FCRIT), Navi Mumbai, India
[2]Suraj Informatics Pvt. Ltd., Mumbai, India

Abstract:

Modern shipping yards face significant challenges in container tracking due to constant container movement and the inherent limitations of manual record-keeping, leading to misplacements, operational delays, and increased labour overhead. This paper proposes a Global Navigation Satellite System (GNSS)-based asset tracking system mounted on a rover operating within a shipping yard, using a 7Semi L89 GNSS module integrated with a Raspberry Pi 4B for real-time location acquisition and monitoring. The proposed four-layer architecture transmits positional data via Message Queuing Telemetry Transport (MQTT) over Transport Layer Security (TLS) to a FastAPI backend, stores validated fixes in a PostgreSQL database, and visualises container locations through a React-based interface integrated with OpenStreetMap (OSM) and yard-boundary geofencing. Experimental deployment and demonstrated a GPS localization acquisition time of approximately 35 seconds, sub-2-second end-to-end pipeline latency, zero packet loss across 15 test messages, and positional precision of 1–11 metres—sufficient for container-level tracking. The system provides a cost-effective, automated solution for improving tracking accuracy, reducing manual effort, and enhancing operational efficiency in yard management environments.

Paper 17. Design and Implementation of a Decentralized Uptime Monitoring System with Byzantine Fault Tolerance on Solana

Satish Bhadane1, Dipali Shinde2
1 Dhananjay Ahire, 2 Ritesh Chaudhari, 3 Sujit Gaware,4 Chetan Chavan
Pune Vidyarthi Grihas College of Engineering & Shrikrushna S Dhamankar Institute of Management,Nashik 1,2,3,4

Abstract: A website might go down form time to time its API endpoints might go down from time to time. This can cost the website owners big chunk of their revenue and lower customer satisfaction. To avoid this many websites use Uptime monitoring platforms to monitor the online presence of their website. But this centralized uptime monitoring systems can't cover every corner of world as they are hosted on cloud servers in a city. The results of this platform are also not tamperproof which leads in high rates in false results. Traditional monitoring platforms like Pingdom, Uptime robot, better uptime and many more faces these issues. The

solution to tackle this problem is to use Depin on top of Uptime Monitoring platform. Depin is Decentralized Physical Infrastructure network whish uses the blockchain technology to distribute the creation of real world infrastructure[7]. By using Depin we can decentralize the cloud server of centralized monitoring platforms into various small servers. This small servers or working nodes are just people around the globe with compute power monitoring a service. This worker nodes are called validators. Multiple validator from a region will monitor a website and will come to conclusion about a website's status [2]. A region can have multiple validator and there may be conflict between validators in agreeing upon on same result. To solve this we can introduce a consensus algorithm which handle all validators result and produce final result. Honesty of validator is also a big concern in this model. Smart contracts can be used to implement reward and punish mechanisms. As the results are not produced by single entity but by many validators. This makes the final status tamperproof. Websites owners can monitor their website from each corner of world without worrying about the false alert. Validators which are backbone of our system will be incentivized for their work. This validator-user model is final trustworthy version of uptime monitoring platform.

Paper 18. Croptalk- AI Driven Crop Disease Prediction and Management System

Aparna Torade[1], Apurv Deshmukh[2], Harshad Jadhav[3] , Prasad Deshmukh[4] ,Monali Tingane[5],Chinmay Koli[6]

1,2,3,4,5 School of Computing, MIT Art Design and Technology University, Pune, Maharashtra,

6, Artificial Intelligence & Data Sci. Dr.D.Y.Patil Technical Campus, Talegaon, Pune.India.

Abstract:

With the recent technological advancements in agriculture, there is a vacuum of knowledge sharing platform that can be easily accessed by farmers. We have created a twitter-like community web application to the farming community to correct this. The platform gives farmers the opportunity to share their success stories, to share knowledge and address the problems of each other in direct message (DMs). To further improve user control, the app is also interconnected with a real-time Weather API which helps in updating the user with important weather conditions that are vital in agriculture planning. We have also added a Machine Learning model that can identify any plant disease, using our knowledge and skills in Artificial Intelligence and Data Science. Agriculture happens to be one of the key industries in any given economy, and one of the last groups of people to receive timely access to information, expertise, and community support are farmers.

Paper 19. Blockchain-Enabled, AI-Driven Smart Health Record System for Secure, Interoperable, and Patient-Centric Data Management

Yukta Vishnoi, Archana Nanade
dept. Computer Engineering, NMIMS, Mumbai, Maharashtra

Abstract:

The complexity in managing patient records continues to build with the increasing expansion of the healthcare system and numerous new forms of data collection. Existing electronic health collections of records or healthcare systems tend to store data in silos, struggle to share data between different facilities, have limited to no predictive level indications, and lack stringent security to protect patient data.This is why the project of Smart Health Record System (SHRS) was established, establishing interaction among cloud computing, permissioned blockchain, artificial intelligence that can handle medical data secure and useful simultaneously. SHRS allows data sharing among patients, doctors, pharmacists, labs, and insurance companies under appropriate consent. A fine-grained role-based access control (RBAC) layer keeps health records confidential and not seen by those without consent, while a Hyperledger Fabric blockchain ensures an authority-log-like record of every transaction on a patient's record. Also incorporated within the design are machine learning models that detect chronic conditions in their infancy and suggest treatments for doctors, considering a patient's long-term health history. We tested the system based on 10,000 synthetic patient records, and the experimental results showed a lot of promise with high predictive accuracy, fast query responses, and strong protection against bypassing access.

Paper 20. Ruminix: AI-Based Pomodoro Study Platform

Khushi Shah[1], Dhanavi Shah[2], Sanika Gojare[3], Yukta Vishnoi[4]
[4]Mukesh Patel School of Technology Management and Engineering, NMIMS University, India

Abstract:

Student productivity and knowledge retention remain persistent challenges in self-directed learning environments, where prolonged study sessions, inadequate time management, and the absence of structured reinforcement mechanisms contribute to diminished academic performance. Here, Ruminix is an AI-based web application that integrates Pomodoro-based time management with adaptive game elements and AI, thereby managing a predictable integrated cycle of learning. The system uses the Gemini API for context extraction and thereby the generation of individualized study plans from the uploaded documents. The Pomodoro-break session involves various obstacles in 2D students navigate through the course and answer multiple-choice questions in between, practicing recollection from the session that they have just passed. Task management and analytics are provided, monitoring the learning trajectories that support, reward, and reinforce goal-oriented study behavior. The functionality of the system was appraised through functional and feature-level testing over five core modules, affirming that Ruminix is non-cumbersomely aiding in reducing cognitive load, keeping students engaged, and endorsing recollection on a unified platform.

Paper 21. Blockchain-Enabled Intelligent Pharmaceutical Supply Chain for Counterfeit Drug Detection Using Federated Machine Learning

Shamali A. Gupte[1] and Rajkumar Shende[2]
[1]Department of Computer Engineering, St. Francis Institute of Technology (SFIT), Mumbai, India [2]University of Mumbai, Maharashtra, India

Abstract:

Counterfeit drugs are a growing crisis that continues to cost lives, particularly across developing nations where regulatory oversight is uneven and supply chains are fragmented. WHO data puts the share of falsified or substandard medicines at up to 30% in such regions, with the human cost running into roughly a million deaths annually. The problem with existing safeguards — barcodes, QR codes, centralized logs — is that they only verify the packaging. A sophisticated counterfeiter can replicate a label far more easily than they can hide anomalous transaction behavior. This paper introduces BEIPSC, a framework built around Ethereum smart contracts and a federated Hybrid CNN-LSTM model that learns to detect fraud from behavioral transaction patterns rather than physical identifiers. Internally, a private chain handles verification using Zero-Knowledge Proofs and AES-256 encryption; externally, a public Proof-of-Stake chain keeps a permanent, auditable record. A DAG-based consensus layer pushes throughput to 55.6 TPS at under 17 ms latency. Federated learning lets each stakeholder node train locally and contribute only gradient updates — never raw records — under a differential privacy budget of $\varepsilon = 0.8$. When fraud probability crosses $\tau = 0.85$, smart contracts automatically freeze the implicated batch. On 90,000 synthetic transactions, the federated variant hits 95.8% accuracy, just 0.9 points behind the centralized ceiling. Attack detection ranges from 83% to 99% across five adversarial scenarios, and all results clear the $p < 0.001$ bar on ANOVA and paired t tests.

Paper 22. Wireless AI-Based Biomedical Parameter Monitoring System for Human Health and Fatigue Detection

Priyanka Pawar[1], Sunita Mane[2], Supriya Kadam[3]
[1]Karmaveer Bhaurao Patil College of Engineering, Satara , India , [2]Karmaveer Bhaurao Patil College of Engineering, Satara , India, [3]Karmaveer Bhaurao Patil College of Engineering, Satara , India

Abstract:

Continuous monitoring of physiological parameters is essential for improving healthcare outcomes and ensuring occupational safety in high-risk environments. Traditional monitoring methods rely on periodic clinical assessments, which are insufficient for detecting real-time physiological changes. This paper presents a wireless AI-based biomedical monitoring system that integrates wearable sensors, embedded processing, and intelligent analytics to enable real-time health monitoring and fatigue detection. The system collects physiological data such as heart rate, oxygen saturation, temperature, and stress indicators using wearable devices. These signals are processed through an embedded controller and analyzed using lightweight machine learning techniques. A vision-based module enhances fatigue detection by identifying behavioral indicators such as eye closure and yawning. The processed data is transmitted to a cloud-based dashboard, enabling remote monitoring and alert generation. The results indicate that the proposed system achieves improved accuracy, reduced latency, and efficient real-time performance, making it suitable for industrial safety and remote healthcare applications.

Paper 23. Wireless AI-Based Biomedical Parameter Monitoring System for Human Health and Fatigue Detection

Priyanka Pawar[1], Sunita Mane[2], Supriya Kadam[3]
[1]Karmaveer Bhaurao Patil College of Engineering, Satara , India, [2]Karmaveer Bhaurao Patil College of Engineering, Satara , India , [3]Karmaveer Bhaurao Patil College of Engineering, Satara , India

Abstract

Continuous monitoring of physiological parameters is essential for improving healthcare outcomes and ensuring occupational safety in high-risk environments. Traditional monitoring methods rely on periodic clinical assessments, which are insufficient for detecting real-time physiological changes. This paper presents a wireless AI-based biomedical monitoring system that integrates wearable sensors, embedded processing, and intelligent analytics to enable real-time health monitoring and fatigue detection. The system collects physiological data such as heart rate, oxygen saturation, temperature, and stress indicators using wearable devices. These signals are processed through an embedded controller and analyzed using lightweight machine learning techniques. A vision-based module enhances fatigue detection by identifying behavioral indicators such as eye closure and yawning. The processed data is transmitted to a cloud-based dashboard, enabling remote monitoring and alert generation.

The results indicate that the proposed system achieves improved accuracy, reduced latency, and efficient real-time performance, making it suitable for industrial safety and remote healthcare applications.

Paper 24. An Hybrid Crowdsourced Platform for Civic Problem Reporting and Resolution

Tejaswini Bhosale1, Vishal Hingmire2, Rajita Dixit3,, Vaidehi Nadge[4], Vaishnavi Jadhav [5], Jayashree Rajesh Prasad[6]
1 Assistant Professor MIT Art Design and Technology, Pune
2 Associate Professor Arvind Gavali College of engineering, Satara
3 Assistant Professor Bharati Vidyapeeth Deemed to be University ,Pune
[4],5,6 MIT Art Design and Technology, Pune

Abstract:

The urban civic management systems are usually faced with slow reporting, low openness, and poor co-ordination among citizens and authorities. The legacy complaint processes are based on manual processes, which leads to time-intensive processes. The slow response times and poor involvement of the people. This paper aims to deal with these challenges of urban civic management. The proposed a real-time civic issues reporting and solution system that is a crowd-sourced one which allows the citizens to be involved in finding and following civic issues among their local communities. The proposed system enables the users to report problems like damage along the roads, littering, water leaks and local infrastructure failures via a mobile or web based platform. Workers in the city receive a clean dashboard to take assignments, monitor progress, and submit fix-proof pics. Public maps show they have everything in real time, notifications make everyone up to date, and leaderboards make it rewarding. These reward badge or spot out top spotters, and make griping a game in the community. Finally, it is about quicker solutions, greater reliance on local authorities, and evidence-based knowledge to avoid problems.

Paper 25. Analysis of Spherical Void Infill Pattern to Improve Strength-to-Weight Ratio of Additively Manufactured Structures

[1,2,3,5]Mechanical and Aerospace Engineering Department, UAE University, UAE;
[4]Medicine & Health Sciences Department, UAE University, UAE

Abstract:

The high demand on orthopedic implants increased the need for lightweight structures with improved mechanical efficiency. One of the ways to create these implants is by using additive manufacturing (AM) technologies, as they give the ability to construct complex structures. The use of infill patterns in orthopedic implants has gained a large attraction in the years as it enables the creation of implants with a high strength-to-weight ratio. In this study, a numerical investigation on a Ti-6Al-4V structure with periodic sphere infill patterns under compression load was conducted. Finite Element Analysis (FEA) was used to investigate the effects of the cavity spherical diameter and repetition density in x, y, and z changes to evaluate their influence on the stress-strain curve and structural efficiency. The results show that an increase in the porosity will lead to a reduction in the compressive strength but enhanced weight efficiency. The solid structure shows the highest maximum strength at 1.24 GPa; however, the optimized infill pattern configuration has achieved better strength-to-weight ratios. Specifically, the 5D–13S configuration showed the largest efficiency, while the 3D–15S configuration yielded a balanced performance with higher load-bearing capacity. These findings indicate the importance of

internal geometry optimization and demonstrate that appropriately designed porous structures can outperform solid designs in terms of structural efficiency.

Paper 26. AI-Powered Attention Monitoring with Live Computer Vision Processing

Anurag Kawade, Prajwal Dalvi, Yash Dhumal, Dr. Kishor Wagh

Department of Computer Engineering, AISSMS Institute of Information Technology, Pune, India

1. Abstract

(a) Background and Motivation: Attention-recording technologies are becoming increasingly necessary due to their potential applications within multiple industries. Some of these industries include driver safety, telecommuting, educational environments with distance learning, and cognitive assessments. Unfortunately, the majority of current solutions utilize cloud API services or require specialized expensive hardware systems and software that require extensive resources and are not scalable.

(b) Solution Summary: We propose a new browser application that will allow the user to record and measure attention based on artificial intelligence methods using MediaPipe Face Landmarker and TensorFlow's JavaScript API. The attention-recording application runs completely on the client side with the use of JavaScript and Web APIs to obtain facial features, the Eye Aspect Ratio (EAR), head pose, and gaze estimation from the user's webcam and/or pre-recorded videos, as well as to generate an attention score and display the associated data to the user.

(c) Key Findings: The results of our testing indicate that the new application operates smoothly at between 25 to 30 frames-per-second (FPS) without needing to upload video files to any external server.

(d) Applications for Our Research: There are many potential use cases for our new application; some possible applications include monitoring of driving performance, use in online teaching platforms, evaluating worker productivity, and for cognitive assessments.

Paper 27. Integrating Advanced Imaging and AI-Based Models for Enhanced Osteoarthritis Detection and Prognosis

Pranjali P. Deshmukh[1], Dr. Pramod U. Chavan[2]
[1] *Research Scholar, VIIT, Pune.*
[2] *Professor, KJCOEMR, SP Pune University, Pune*

Abstract:

Due to global burden of Osteoarthritis, the development of advanced diagnostic frameworks capable of improving early detection and clinical decision making is necessitated. Rigorous comparative evaluation of traditional imaging modalities alongside emerging computational approaches, particularly within integrated diagnostic paradigms, is often lacks into current literature. A systematic and critical analysis of radiography, magnetic Resonance Imaging (MRI), Ultrasound (US) and machine learning based methodologies for OA diagnosis is presented with emphasis placed on their methodological foundation, diagnostic performance and clinical capability. Automated feature extraction, predictive modelling, and improved classification accuracy are enabled by recent advances in machine learning and deep learning through the analysis of large-scale imaging datasets. Empirical evidence is synthesized to comparatively evaluate these modalities and a multimodal diagnostic framework integrating imaging data with computational analytics is proposed to enhance sensitivity, specificity and predictive capability. In the proposed framework, complementary strengths across modalities are leveraged and synergistic data fusion is enabled to optimize early diagnosis. The development of next generation OA diagnostic system that combines imaging and artificial intelligence to improve clinical workflow and patient outcome is supported by the findings.

Paper 28. WeSee – A Helper for the Visually Impaired

Rutik Tupe, Prof. Shraddha Toney, Pooja Thorat , Sarthak Velapure ,
Department of Computer Engineering, AISSMS Institute of Information Technology, Pune, India

Abstract:

Navigating every day environments and spotting surrounding objects provides a major hurdle for people with visual impairments. popular mobility aids, like the white cane, provide basic obstacle avoidance but fail to supply contextual information about nearby objects. To bridge this gap, this paper introduces WeSee, an AI-driven assistive web utility engineered to elevate situational focus. built on a Flask framework, the device captures real-time environmental data and applies YOLO-based pc vision fashions for instant object reputation. This visible records is seamlessly translated into spoken auditory feedback through a text-to-speech engine. by using merging microservices-style AI modules with a strong SQLite backend, WeSee empowers users to navigate their surroundings with extra independence. initial checking out confirms the system's high precision in figuring out everyday indoor gadgets even as keeping low- latency audio responses The scope of this research covers smart assistance for mobility, wearables for support, and future incorporation with technology based on artificial intelligence in making such technologies accessible to visually challenged people.

Paper 29. AI-Based Agricultural Robot for Real-Time Crop Monitoring, Disease Detection and Smart Irrigation

Karishma Pimpale [1],Youraj Kanase[2], Sunita Mane[3]

[1]Karmaveer Bhaurao Patil College of Engineering, Satara , India , [2]Karmaveer Bhaurao Patil College of Engineering, Satara , India , [3]Karmaveer Bhaurao Patil College of Engineering, Satara , India

Abstract

The increasing demand for food production along with challenges such as water scarcity and labor shortages necessitates intelligent agricultural solutions. This paper presents a cost-effective AI-based agricultural robot for real-time crop monitoring, disease detection, and automated irrigation. The system integrates IoT-based sensors, embedded processing using ESP32, and a convolutional neural network (CNN) model for plant disease detection. Experimental results show significant improvements in detection time, water efficiency, and labor reduction. The system achieves approximately 90% accuracy in disease detection and provides a scalable solution for precision agriculture.

Paper 30. An Explainable Deep Learning-Based Intrusion Detection System Using SHAP and LIME for Enhanced Transparency

Prasad A. Lahare[1], Babasaheb A. Abhale[2],Jagdish Kapadnis[3],Smita Thakare[4] ,Rupali Purkar[5], Rupali Rahinj[6]

[1,3,4,5,6]Pune Vidyarthi Griha's College of Engineering & SSD IOM, Nashik; [2] SND College of Engineering & Research Center, Yeola.

Abstract:

Intrusion Detection System using Deep learning have demonstrated high detection in identifying highly complex cyber threats but as it uses black-box nature have limited transparency, interpretability and trust in critical cyber-security applications or domain. So this paper focus on the challenge of improving model interpretability of Intrusion Detection System based on Deep Learning Techniques without affecting their predictive performance and effectiveness. We propose an interpretable delivered by Intrusion Detection System framework that enhance with deep learning models with SHAP and LIME which are model-agnostic explanation techniques. This model is evaluated on the datasets which include NSL-KDD and CICIDS2017. Both global and local explanation are generated for intrusion detection using deep learning classifier in which overall feature importance is identified by SHAP and individual prediction is done by LIME .The experimental result of proposed approach maintains high intrusion detection accuracy and also significant improvement in interpretability. The key features that are reveal by this models include better understanding, enhanced model decision, better validation and high system trust. This proposed model in useful in real world application which support in decision making, developing a trustworthy and transparent AI based cyber-security solution for different application like network security monitoring, Security Operation Centers, anomaly detection.

Paper 31. HbA1c-Integrated Multimodal Deep Learning for Diabetic Retinopathy Severity Classification and Short-Term Progression Risk Stratification

Ananya V S [1], Jasmine Selvakumari Jeya I[2], Aldrin Joan Pandian W[3], Kannaiya Raja N[4], Indirani M[5], Saravanan S[6]

[1,3]School of Computing Science Engineering and Artificial Intelligence, VIT Bhopal University, Sehore, Madhya Pradesh, India; [2,4] School of Computing Science and Engineering, VIT Bhopal University, Sehore, Madhya Pradesh, India; [5]Department of Computer Science and Business Systems, Vel Tech Multi Tech Dr. Rangarajan Dr. Sakunthala Engineering College, Avadi, Chennai, India; [6]School of Computing, SRM Institute of Science and Technology, Tiruchirappalli, Tamil Nadu, India

Abstract:

Diabetic retinopathy (DR) is a leading cause of preventable blindness among adults with diabetes, yet conventional fundus image screening provides only static severity grading and lacks quantitative estimation of progression risk or integration of key biomarkers such as glycated hemoglobin (HbA1c). This study presents a Multimodal DR-HbA1c framework, a lightweight deep learning architecture that performs five class DR severity classification from retinal fundus images while generating patient specific 6 and 12 month progression risk probabilities by combining predicted DR grade with a VTDR inspired rule based risk calculator calibrated from literature distributions. The model uses a pretrained DenseNet121 backbone producing 256 dimensional image features, a compact clinical branch encoding HbA1c into 16 dimensional features, and late fusion to form a 272 dimensional joint representation. The model attains 79.93% validation accuracy on 1,096 unseen APTOS 2019 images, enhancing 6.39% over the image only baseline with macro AUC 0.9185. Sensitivity evaluation proves glycemic responsiveness, revealing risk escalation with increasing HbA1c. Transparency using LIME highlights clinically related retinal regions. This prototype demonstrates the feasibility of HbA1c driven personalized risk stratification in DR screening for resource limited settings and supports adaptive screening intervals for improved early intervention and management outcomes.

Paper 32. MessCook: An AI-Powered Platform Connecting Home-Based Cooks

Prof P.L. Rahinj1, Girija Shriram Malunjkar2, Durgesh Sharad Chavan3, Narendra Sanjay Kamble4 ,
Bidwe Saurabh Bhausaheb5
1 Guide, Department of Computer Engineering, RGCOE, Parner, Maharashtra, India.;
2,3,4,5Department Of Computer Engineering, RGCOE, Parner, Maharashtra, India.;

Abstract:

The home-cooked independent food lack digital visibility and a standardized model of verification of quality. We introduce MessCook: An AI-powered platform designed to empower home-based cooks and Food Quality Based On Deep Learning. Unlike commercial-scale, the platform has a rigorous limit on 15 tiffins on production scale per supplier to help differentiate. We take a special AI suite that includes CNN based freshness detection model, calorie prediction engine and automated diet planner instead of generic speech interfaces. Key discoveries include incorporating a 10,000-image dataset for verifying freshness

Paper 33. Ambiguity-Aware Deepfake Image Detection Using StyleGAN2-ADA and CNN with Memory-Guided Recall

Ashrita Joshi[1], Raviraj Bhakare[2], Aakanksha Bodke[3], Chaitali Bonde[4], Neha Chaudhari[5]
[1]Assistant Professor, Department of Computer Engineering, PVGCOE & SSDIOM, Nashik, India; [2345]Department of Computer Engineering, PVGCOE & SSDIOM, Nashik, India

Abstract:

With deepfakes being generated using GANs, highly realistic fake images have been successfully created with the help of which one cannot differentiate between the real images and generated ones. The use of StyleGAN2-ADA models further reduces these differences making it difficult to detect the fake images. While CNNs prove effective at deepfake detection, they tend to fail to provide reliable results due to the minimal difference. In this paper, we address this problem through a novel ambiguity aware detection model that makes use of CNN classifiers along with memory guided recall technique. In case of uncertainty in predictions, the previously learned features are recalled to aid in decision making. The method aims at enhancing consistency rather than maximizing accuracy.
This will make the proposed model useful for practical applications such as verification of media and analysis in forensics.

Paper 34. AgriSense: An AI-Based Smart Agriculture Web Platform for Crop Disease Analysis and Decision Support

Sagar Rajebhosale∗, Suraj Ghule†, Rohan Gadhave‡, Shubham Gaikwad§, Avneet Kaur¶, Swati Paneri
∗Keystone School of Engineering, Pune, India

Abstract:

Farming has always been faces challenges, and things like sudden weather changes and quickly spreading crop diseases just make it worse and make farmer loss . These problems directly affect how much farmers are able to produce. This paper talks about AgriSense, a web platform that helps in detecting crop diseases and supports better farming decisions.At the center
,the system uses a deep learning model that looks at images of plant leaves to find diseases. It uses IOT Data instead of real sensors and hardware. The platform is built using Java and is kept simple, so farmers can check crop conditions easily and get useful suggestions which makes our user friendly.During the testing, the model performed well in to identifying diseases under controlled conditions. Along with detection, AgriSense also provides suggestions for irrigation and pesticide use, which helps in reducing waste and time and using resources more effectively.This platform is made for smart farming where cost is low and scaling up matters. In the future, the real-time IoT hardware can be added to improve automation.

Paper 35. Research Compass: An LLM-Orchestrated Multi-Source Framework for Intelligent Scholarly Paper Retrieval

Author 1 Satish D. Kale1, Author 2 Anay Joshi2, Author 3 Anurag Mahalpure3, Author 4 Abhishek Marwade4
1,2,3,4Department of AI&DS, AISSSMS Institute of Information Technology, Pune, India;

Abstract:

This has been due to the exponential increase of academic publications that has made it more challenging to discover relevant research easily. Search systems that retrieve based on key words do not represent semantic intent and thus the search results are usually irrelevant. This paper describes Research Compass, a smart scholarly search engine that is based on a LangGraph state machine design. It combines multi-source retrieval through Springer, Elsevier, and OpenAlex APIs, hybrid BM25-semantic scoring, LLM-based reranking, and Retrieval-Augmented Generation (RAG) to analyze PDFs into a single unified pipeline. When tested on a corpus of 700 papers, it achieves Precision@10 of 0.79, Recall@10 of 0.74, NDCG@10 of 0.82 and MRR of 0.78, which is better than BM25 and semantic-only baselines. The time of repeated queries is decreased by 91.3 percent using Redis-based caching, which proves the viability in real-time.

Paper 36. Smart Study Session Optimizer: An AI-Based Approach to Personalized Productivity Enhancement

Monali Tingane1, Viren Lahane2, Sejal Behera3, Sachin Thanekar4, Dnyaneshwari Pati5
1,2,3,4,5 School of Computing, MIT Art, Design and Technology University, Pune, Maharashtra, 412201,

Abstract:

The ability to remain focused throughout the study sessions is a major problem among students since their minds become tired and they are distracted with poor time management techniques. Traditional productivity tools like Pomodoro timers and traditional scheduling apps adhere to a set study schedule which does not adjust to their own learning behavior. The paper suggests a Smart Study Session Optimizer (SSO), an artificial intelligence-based model that will optimize the study session by comparing behavioral patterns and forecasting the level of cognitive fatigue. The suggested system will combine machine learning methods to dynamically modify the time of study and break periods depending on the productivity trends of learners. The behavioral monitoring module gathers interaction data of the study and feeds it to a predictive model which advises the best study sessions via a productivity dashboard. Experimental results have shown that adaptive scheduling is more effective than traditional ways of scheduling in terms of duration of focus and productivity. The findings indicate that the suggested system can be used to improve the effectiveness of personalized learning and decrease the burnout of studying. The advancements in the future might involve the incorporation of wearable sensors and real-time monitoring of cognitive load to make it more personalized.

Paper 37. IoT-Based Underwater Robotic System for Object Detection and Navigation

Sheetal Ingawale[1], Pooja. Gore[2], Amol Bhosale[3], Pratibha Chavan[4], Mamata Pawar[5]
[1]Karmaveer Bhaurao Patil Polytechnic, Satara, India, [2]Karmaveer Bhaurao Patil Polytechnic, Satara, India
[3]Trinity College of Engineering and Research, Pune, India, [4]Trinity College of Engineering and Research, Pune, India , [5]Karmaveer Bhaurao Patil Polytechnic, Satara, India

Abstract

This paper presents the design and testing of a low-cost underwater robot used for monitoring applications. The system is built using an ESP32-CAM module , which allows real-time video streaming and wireless control through a mobile application. A camera captures underwater visuals, and the frames are implemented using basic techniques like grayscale , conversion, edge detection and contour detection to identify objects such as pipes and debris. Along with this , proximity and depth sensors are used to improve navigation and detect obstacles. The robot moves using thrusters controlled through a motor driver circuit. The setup was tested in a small

water tank under different conditions. During testing , it showed stable movement and was able to detect objects with reasonable accuracy. From the testing, it can be seen that the system is suitable for small-scale underwater tasks. The underwater robot is designed with focus on simplicity, cost-effectiveness,and ease of operation , the designed robot can be extended for practical real-world applications.

Paper 38. Rheological Characteristics of Limestone water Suspension

Mukesh Kumar Singh1, Satish Kumar1, Shalendra Kumar1,Shivam kumar1, Nihaal Sahay1,Asisha Ranjan Pradhan2
1Department of Mechanical Engineering, National Institute of Technology, Jamshedpur, Jharkhand, India2Department of Mechanical and Aerospace Engineering, Indian Institute of Technology, Hyderabad, Telangana, India

Abstract:

This research examines the rheological behavior of water-based slurries with high limestone concentration, focusing on the impact of bimodal particle size distributions. This research demonstrates that the intentional mixing of coarse and fine particle size may significantly alter the flow characteristics of unimodal suspensions. When there are more solids in suspension, they tend to be very viscous. This work studied the rheological behaviour of bi-modal limestone suspensions by blending fine (less than 53 µm) and coarse (75-106 µm) particles at limestone concentrations ranging from 35 - 65% by wt. Rheological behaviour studied at shear rates of 50 – 500 s^{-1}demonstrated that the flow resistance was significantly influenced by the size of the particulates. A blending concentration of 35% coarse particles was found to be best amount for lowering apparent viscosity for the fine limestone slurry. The results establish that controlled bimodal particle distribution is an effective strategy for improving the rheological performance of concentrated limestone suspensions.

Paper 39. A Review of Lightweight and Explainable AI for Clinical Edge Deployment

Shital Dumbre[1], Dr. Vinodpuri Gosavi[2], Dr. Sagar Tambe[3], Dr. Nilima Kulkarni[4], Dr. Arati Kale[5]
12345 School of Computing, MIT Art, Design and Technology University, Pune -412201, Maharashtra, India

Abstract:

Clinical artificial intelligence models are highly accurate in their diagnostic outcomes, but have difficulty in their practical application because of the high computing resources and non-interpretable nature. The paper will solve this issue of empowering effective and reliable AI towards clinical edge conditions using limited resources.
To address this, a systematic comparative study of lightweight AI methods such as pruning, quantization, knowledge distillation and sparse architectures is discussed and explainable AI approaches such as SHAP, LIME and Grad-Cam. Performance, efficiency, and interpretability are evaluated using a single evaluation framework.

It is analyzed that lightweight models can reach a reduction of up to 80-95 percent in model size and enormous latency cuts and still ensure a high level of performance within a narrow performance error. Competitive performance or or better performance is also shown through sparse architectures in comparison to large baseline models. These results justify the implementation of AI models to edge images like microcontrollers, smartphones, and embedded health care frameworks to the application of diagnostics and remote monitoring and clinical decision support.

Paper 40. Toward a Quantum Internet for Healthcare: A Tiered Hybrid Network Topology with Post Quantum Fallback

Aadesh Lawande1, Stavan Shere2, Kashyap Kamble3, Saurabh Salunkhe4, Dr. Manju Pawar5
1,2,3,4,5 Zeal College of Engineering and Research, Pune, Maharashtra, India

Abstract:

Healthcare networks today face a growing threat where encrypted medical records can be intercepted and stored by adversaries, only to be decrypted once quantum computers become powerful enough. Since health records in India and the EU are legally retained for 10 to 25 years, the "Harvest Now, Decrypt Later" threat makes current cryptographic methods insufficient for ensuring long term data security. To address this, a tiered hybrid Quantum Key Distribution architecture is proposed that assigns different QKD protocols based on the infrastructure level of each facility. Smaller clinics use BB84, district hospitals employ MDI-QKD to counter detector side channel attacks and backbone links spanning beyond 300 km use Twin-Field QKD. A satellite assisted central node supports interregional connectivity while night window key pooling maximises quantum channel efficiency. When quantum channels are not operational, ML-KEM Kyber 1024 serves as a post quantum fallback to ensure uninterrupted encryption.
Simulations carried out using SeQUeNCe show that adapting protocols to infrastructure constraints leads to better key generation performance within feasible cost limits. Separating DICOM patient identifiers before encryption was also found to ease compliance with ABHA and GDPR requirements. The framework suits large scale healthcare systems requiring secure data exchange across regions.

Paper 41. LearnCraft VR: A Gamified Virtual Reality and AI-Driven Approach for Inclusive Education

Dr. S. P. Khedkar[1], Abhishek Borate[2], Anuj Jadhav[3], Priyanshu Shende[4], Rahul Patil[5]
[12345] Department of Computer Engineering, Modern Education Society's Wadia College of Engineering, Pune, India

Abstract—

Children with learning disabilities such as dyslexia, dysgraphia, and dyscalculia tend to encounter difficulties when exposed to conventional learning environments where no adaptive feedback is provided. However, technological innovations such as VR and AI can now offer unique ways for establishing immersive educational systems for supporting individuals with learning disabilities. This research reviews the available studies that have addressed the effectiveness of various VR applications for learning, AI-based diagnosis and personalized feedback, and gamification. The literature review covers various applications of VR technologies for improving phonemic awareness, developing hand-writing skills, teaching numerical logic and reasoning, and enhancing students' overall engagement. Moreover, the effectiveness of AI-based speech recognition software, handwriting evaluation programs, and adaptive learning algorithms are discussed in relation to providing learners with automatic feedback and assessment of performance metrics. Finally, based on the identified weaknesses of contemporary VR and AI systems, an overview of the proposed framework named LearnCraft VR for creating a unified system that incorporates VR interaction, game-based learning components, and AI for assessing learners' performance is presented.

Paper 42. YOLOv8m-Based Object Detection for Autonomous Vehicles in Indian Road Scenarios.

[1]Riya Parab, [2]Rushikesh Gajbe, [3]Sujal Ghadge, [4]Sarvesh Vengurlekar, [5]Milind Shah, [6]Pranali Choudhari
Department of Electronics and Telecommunication Engineering
Fr. Conceicao Rodrigues Institute of Technology, Navi Mumbai, India (400703)

Abstract:

Autonomous vehicles require reliable perception systems to detect surrounding objects and move safely on the road. However, traffic on Indian roads is challenging because it includes rickshaws, pedestrians, animals, potholes, etc., apart from other routine vehicles. The drivers do not follow lane discipline strictly. This work presents an optimisation-based object detection method based on the YOLOv8m model for the images acquired for the Indian traffic environments. The contribution of this work includes the generation of a custom dataset of 12,913 images for 16 traffic-related object classes under day and night conditions, annotation of images in YOLO format, and optimization of model parameters using a genetic algorithm for enhanced detection performance. After training the model for 20 epochs, it achieved 71.03% mAP@50 and 51.70% mAP@50–95, indicating better performance compared to models trained on commonly available datasets representing a foreign traffic scenario.

Paper 43. An Enhanced 3D CNN for Brain Tumor Segmentation and Grading

Dr. Y. Ambica[1], M. Abhiram Seshu[2], J. Nandini[3]
[123]CSM, CMR College of Engineering & Technology, Medchal, Telangana, India

Abstract:

Magnetic Resonance Imaging (MRI) is a difficult method to diagnose brain tumor due to complicated tumor morphology, appearance variability, and expert interpretation requirement. The process of manual analysis of large MRI data is lengthy and restricts clinical productivity. This paper presents a machine learning-based system that is automated, brain tumor segmentation, grading, and volumetric analysis of multimodal MRI. The system uses a 3D U-Net model trained on Whole Tumor (WT), Tumor Core (TC), and Enhancing Tumor (ET) segmentation of T1, T1ce, T2 and FLAIR images of the BraTS 2020 dataset using MONAI. Tumor grading has a rule-based module, and the estimation of tumor volume is done by voxel-wise computation. The experimental analysis of the Dice Similarity Coefficient, Sensitivity and Specificity indicated that WT segmentation was well performing with a Dice score of 0.77 and 0.10, whereas TC and ET were not easy to evaluate due to the imbalance of classes and the complexity of the structure. The suggested framework proves the possibility of combining various analysis tasks within one pipeline and can assist radiologists with diagnosis, planning of treatment, and monitoring of a disease.

Paper 44. Trip Genie: Dynamic Travel Itinerary Generator With AI Integration

Prof. Dr. Priyanka Kadam, Gayatri Gursale, Swarali Gurav, Shruti Hanegaonkar, Shravani Jawale
Vishwakarma Institute of technology Pune

Abstract

Travel planning is a complicated process with multiple dimensions including destination choice, budgetary limitation, lodging, climate and individual preferences. Existing travel services tend to offer generic guidance with limited personalization and dynamicity. This paper proposes a dynamic travel itinerary generator, called Trip Genie, that utilizes Artificial Intelligence (AI) and Machine Learning (ML) techniques in conjunction with real-time data to produce a personalized, day-wise itinerary. The system takes inputs including travel dates, destination, budget and user mood and generates the optimized itineraries by considering relevance and feasibility. It offers customized recommendations on attractions, accommodation, a weather sensitive packing list, etc., along with the inclusion of local emergency medical centers for stronger safety assurance. The backend is written in Node.js/Express.js and the data is handled with MongoDB. Real time context data is fed using external APIs (e.g. Google Maps, OpenWeatherMap). Trip Genie delivers an improved travel planning experience by introducing mood-based planning, weather-aware scheduling and feedback based refinement to travel planning, while mitigating the limitations of conventional travel planning applications.

Paper 45. Obstacle Detection Using LiDAR Distance Thresholding

Adrian Christopher [1], Abhimanyu Chavan [2], Pratik Zope [2], Vinay Desai [2], Milind Shah [2]
[1]Dept. of Mechanical Engineering, Fr. C. Rodrigues Institute of Technology, Vashi, India;
[2] Dept. of Electronics and Telecommunication, Fr. C. Rodrigues Institute of Technology, Vashi, India;

Abstract:

For autonomous and semi-autonomous robotic systems operating in indoor environments, accurate obstacle detection using inexpensive 2D LiDAR sensors is crucial. However, sensor noise, fleeting reflections, and sparse outliers frequently have an impact on raw LiDAR measurements, which may result in inconsistent detection outcomes. This paper offers a lightweight, real-time obstacle detection method based on angular sectorization and distance thresholding, enhanced with temporal debouncing via a five-frame sliding buffer to increase robustness and overcome these difficulties. Quantitative testing demonstrated that integrating the temporal buffer improved detection precision to 96.4% and reduced the false positive rate to just 3.6% compared to raw single-scan thresholding. Furthermore, the proposed method achieved reliable short-range perception with an extremely low average computational overhead of only 1.8 milliseconds per scan. Having been experimentally validated in a lab setting with the RPLIDAR A1M8, this computationally efficient method is well-suited for embedded robotic platforms.

Paper 46. Leveraging Seaborn and XGBoost for Customer Analysis and Early Dissatisfaction Detection

Prof. Sayali Belhe, Siddhesh Kulthe
Department of AI & DS, Vishwakarma Institute of Technology , Pune.

ABSTRACT
Customer dissatisfaction has been a great deal regarding a business' survival. Numerous components play a vital role when potential customers must make a purchase decision. These components range from how the business operates, its history, the value of its products, target market, cost, social presence, collaboration with other businesses, and much more. However, due to various advancements in the technical and marketing industry, manipulating purchase decisions can be achieved if done correctly. Quantitative surveys have been the industry standard for understanding customer satisfaction for years. Questions like, "On a scale of 0 to 10, how likely are you to refer this product to your friend?" are used to capture what customers think of the products that they use. However, the problem with such product surveys is that they fail to capture the emotional and mental picture of the customer and whether they care about the product they use. This research paper aims to connect various components that have the potential to affect a purchase decision and analyze, with the help of the Python libraries called Seaborn (for analysis) and XGBoost (for model training), if early dissatisfaction could be identified and perhaps solved.

Paper 47. AIRGUARD-MICRO DOPPLER BASED TARGET CLASSIFICATION USING EDGE AI

Dattatray Waghole1, Smita Wagh2 , Arya Dongare3 , Anjum Maner4, Kirti Chandratike5
Department of Computer Engineering ,
JSPM's Jayawantrao Sawant College of Engineering Pune, India

Abstract:

In the existing works of research, identifying the difference drones and birds was becoming increasingly difficult in low-altitude airspace monitoring systems. Therefore, the study was proposed as a micro-Doppler-based approach was combined with deep learning techniques in order to address these challenges. Here the radar signals have been transformed into the time-frequency representations by using the Short-Time Fourier Transform (STFT), which is used to capture unique motion characteristics like rotor movement and wing flapping. These spectrograms are used then to train a YOLOv11-based model to support real-time classification process. Then to enhance robustness the data augmentation methods are applied. The proposed system was observed to achieve approximately 96% accuracy while also maintaining low latency parameter and later making it suitable for the deployment purpose on edge devices. Overall, these approaches are seen to provide an efficient and scalable solution supporting real-time aerial object classification.

Paper 48. AI-Driven Placement Prediction and Recommendation System for Enhancing College Student Career Readiness

Adesh Gajare, Chetan Bochare, Shailesh Patil, Prof. Manish Khodaskar
Department of Information Technology
Pune Institute of Computer Technology, Pune, Maharashtra, India

Abstract:

The college placement process for many engineering students seems to be a risky game rather than a well-organized professional path to success. The reason behind this may be a huge discrepancy between the conventional criteria for assessing academic performance—CGPA, aptitude scores, or other standardized tests—and real-world engineering knowledge and skills. Without proper tools to analyze and make sense out of the collected information, students do not have any insight into how ready they are for their professional career. Therefore, we introduced a hybrid architecture to turn numbers into valuable career insights. Our solution consists of two major components: an analytics system based on Gradient Boosting to evaluate student's profile and a recommendation engine that provides personalized interview guidance and study materials using the Gemini API. Instead of presenting a straightforward grade to students, the platform categorizes their level of preparedness as "Low," "Average," or "Strong." Moreover, our algorithm is able to offer context-sensitive interview coaching and useful educational resources. The system can easily be integrated into the existing institution's website or other platforms via our user-friendly web dashboard.

Paper 49. Speak My Scan: An Assistive Image-to-Speech System for Visually Impaired Users

Supriya Jagtap1, Riddhi Bhutada2, Pranali Bangar3, Rohan Bhusare4, Kartik Akolkar5, Ritesh Biradar6
1,2,3,4,5,6 Department of Information Technology Engineering, Vishwakarma Institute of Technology, Pune, India

Abstract:

The printing of information has been a major problem to the visually impaired since the traditional screen readers cannot read any printed text in an image or printed document. To overcome this shortcoming, this paper describes Speak My Scan, a lightweight assistive system, which converts the text of images into speech through the use of Optical Character Recognition (OCR) and Text-to-Speech (TTS) technologies. The system being proposed makes use of OpenCV to do pre-processing to an image, then Tesseract OCR to extract text out of it and finally there was the use of pyttsx3 to be able to synthesize speech even when offline. Users are able to post images, PDFs or even take live images with a camera. Experimental solutions prove successful work with printed materials due to moderate lighting conditions, with the possibility of accurate identification of the text and clear articulated speech. The system runs fully offline in regular computers without any need to have a specialized equipment or be connected to the internet. Practical uses of the solution include assistive technology to allow visually impaired users to view printed books, documents and notices independently.

Paper 50. SMARTCRY: IDENTIFYING ABNORMAL INFANT CRY PATTERNS USING MFCC AND MACHINE LEARNING MODELS

Dattatray Waghole1, Smita Wagh2, Pranav Badole3, Shrutam Hinge4, Tanesh Devhare5, Virendra Godse6
Computer Engineering Department, Jayawantrao Sawant College of Engineering, Pune, India, JSPM

Abstract:

Infant cry analysis can be considered as an important approach for understanding the various needs and health conditions of newborns. This paper present SmartCry, a system for classifying infant cry patterns into normal and abnormal categories, with the main focus on detecting a genetic disorder named Cri Du Chat syndrome. Audio signals are processed using machine learning techniques, and Mel Frequency Cepstral Coefficients (MFCC), which are used to extract various sound features. Various preprocessing steps are carried out like noise reduction, normalization and segmentation which helps to improve the sound quality. As compared to traditional methods, SmartCry gives more faster and constant classification on infant cry analysis. Models such as Random Forest, CNN-LSTM are used to capture statistical as well as

acoustic sound features. This system is designed to assist caregivers in early identification of potential health issues. However the current implementation is limited to controlled and limited dataset and environment, it demonstrates the innovation of intelligent healthcare monitoring system.

Paper 51. AI BASED SMART AND SUSTAINABLE BIOGAS SYSTEM FOR RURAL EMPOWERMENT.

Dattatray Waghole1,Shreetej Korde2,Joel Chandanshiv3,Shreyas Aher4, Smita Wagh5
Department of Computer Engineering JSPM's Jayawantrao Sawant College of Engineering Pune, India

Abstract:

Unlike the traditional ones, the automated method is used for turning the organic waste into the nutrient-rich biofertilizer and renewable biogas, hence called the AI-Based Smart Biogas System. While the Artificial Intelligence algorithms perform and optimize the digesting process, the micro-controllers and the sensors have been used to thereby monitor temperature, pH, and nutrient levels in the system. When it is compared to the traditional approaches, it is observed that the device increases biogas yield about by ~30%. For the cleaner energy consumption, a scrubbing procedure has been used to purify the produced biogas. Further more to increase its utility as a biofertilizer the leftover slurry which is oxygenated and cleaned in the process is used. To enable real-time monitoring and control, we have used an IoT-based dashboard. Considering the rural areas, the system will encourage the cleaner form of energy along with sustainable agriculture and increased efficiency.

Paper 52. MedVerify: A Severity-Aware System for Verification of Medical Claims Generated by Conversational AI Systems

Aditi Londhe1, Aarya Badhe2, Tanish Charthankar3, Shrujan Kundgulwar4, Sachin Shelke5
1234Student, Department of Information Technology, SCTR's Pune Institute of Computer Technology, 5Assistant Professor, SCTR's Pune Institute of Computer Technology, (IT), Pune,

Abstract:

Large Language Models (LLMs) are being utilized increasingly to respond to questions regarding health, but LLMs often generate hallucinated responses or statements that have no basis in fact, lack any support, and are inconsistent with known medical facts. Such errors create a particularly dangerous environment in healthcare, where incorrect dosage calculations or treatment recommendations could expose patients to serious harm. This paper describes MedVerify: a severity-aware verification tool that retrieves and verifies medical claims generated by conversational AI and compares these claims with trusted biomedical databases. MedVerify employs several strategies to extract medical claims from AI output, prioritize medical claims based on risk of patient harm, retrieve supporting evidence for each claim from trusted biomedical databases, and verify each of the claims using a two-part verification process that includes both structured validation of drug fact using FDA drug label data and evidence-based validation of the claims using natural language inference models based on biomedical text training. MedVerify is an implemented browser extension that applies to output from

conversational AI chatbots. The information returned to the user will include verification results on a claim level, an indication of how severe the claim is, and references for the supporting evidence.

Paper 53. SensAI: Intelligent Career Coaching for Resume Optimization and Employability

Girish Navale, Mayur Sapate, Shreyash Trimale, Saumya Soni
Department of Computer Engineering, AISSMS Institute of Information Technology, Pune, India

Abstract:

Most recruitment software rejects qualified candidates because of the absence of appropriate resume structuring and contextual alignment. In this paper, we propose SensAI – a career coaching system that uses NLP, ML, and large language models to increase employment potential. The system optimizes the resumes, conducts semantic matching of resumes with job posts, predicts a candidate's career trajectory, and evaluates their interviewing skills. TF-IDF and cosine similarity were used to calculate the degree of alignment between the resume and job post descriptions. In turn, the Random Forest algorithm predicted suitable career options by analyzing the extracted features. In addition, the semantic similarity and sentiment analysis techniques were used to evaluate the quality of the candi- date's responses during the interview. The training and validation of the model were performed using a diverse dataset of resumes and job descriptions gathered from publicly available sources. According to the experiments, the accuracy in predicting matching resumes was 91.5%. In addition, the system demonstrated high efficiency in performing the recommendation and evaluation tasks.

Paper 54. An Agentic AI Framework for Adaptive and Inclusive Tax Filing in India

Jay Raju Nagose, Soniya Satish Mate, Prajakta Gorakshanath Kale, Dakshit Ramesh Vardekar, Shantanu Kishor Bhavsar, Snehal Niranjan Hon, Yogesh Sureshrao Deshmukh
Sanjivani College of Engineering, Kopargaon

Abstract:

The existing Indian tax preparation systems have not effectively address the technological diversity of the 90 millions tax payers and are associated with 34% filing errorsrate, and not accommodat, along with the decreasing digital literacy, and differently, abled population. The paper offers an Adaptive Agentic AI solution, that will mainly based on Tax Act 196 along with, reconsidered form-based filing as a dynamic human AIdialogues. A agent have four elements Tax Logic Agent which applies rules, the given User Profiling Agent which will personalizes, Interaction Agent that definitely adapts dialogue and Agent which provides audit-ready validation. These work together through knowledge graph retrieval to streamline processes without compromising the statutory accuracy. The interface will change the complexity of navigation, typography, depth of explanation, and modalities in response to real-time user behavior and cognitive load. It is implemented with Vue.js frontend and FastAPI backend and QloRA fine, tuned LLM on more than 3200 tax sections, focusing on privacy

through tokenization and secure computation. The assessment of 60 participants shows that, vulnerable user makes 67% lower errors so that, achieve significant usability improvement, indicating ground-breaking prospects of inclusive tax regimes.

Paper 55. Energy-Aware Network Coding AOMDV for IoT-Enabled MANETs

Vishal Bogam1, Ashwini Shahapurkar2, Aarti Pimpalkar3, Nitin Alzende4, Vaibhav Sawalkar5, Anuja Gaikwad6
123456Department of CSE, MIT ADT University, Pune, India

Abstract:

The high rate of spread of the IoT devices in mobile ad hoc network (MANET) systems poses great challenges in terms of energy efficiency, route stability, and the reliable data provision. Although traditional multipath routing protocols are better in enhancing fault tolerance, they consume more energy since some paths are redundant and routes are frequently rediscovered. The routing methods based on network coding lack energy-awareness and can be hardly used with resource-constrained IoT devices. The paper suggests an Energy-Aware Network Coding AOMDV (EA-NC-AOMDV) protocol that combines path selection based on residual energy with adaptive network coding on intermediate nodes. A hybrid routing cost model adds residual energy and the hop count is implemented to balance the distribution of loads and prolong the network life. The coding operations can be dynamically activated upon node energy limits to ensure it`s not exhausted. The simulations are applied to the proposed protocol and compared to AOMDV and NC-AOMDV based on the simulation of IoT-oriented traffic. The findings show a maximum of 18 per cent decrease in overall energy usage, 12 per cent increase in the ratio of packet delivery and an important increase in network life. This strategy works with energy-limited IoT-enabled MANETs.

Paper 56. MapMates: An AI-Powered, Gamified City Exploration and Social Networking Platform

[1]Dr.Priyanka Kadam, [2]Raviraj Raibagkar, [3]Radhika Kawadkar, [4]Rishika Raj, [5]Satyam Rahane
[1,2,3,4,5]Department of Computer Engineering, Vishwakarma Institute of Technology, Pune, India

Abstract:

The main challenge for social networking platforms which use location data needs to find methods that allow users to gather in real-world locations while they maintain safe practices and continuous user activity. The current systems implement insufficient protection measures which result in users departing after they complete their first registration. The web-based platform developed by MapMates solves this problem by using location-based matching together with its puzzle-based communication system and game-like user interactions. The system uses the Haversine method for calculating distances which can be adjusted dynamically and cosine similarity to match user interests. The system includes a user incentive system named Mapos which motivates users to discover fresh materials and system functions. The research team performed controlled experiments to test performance which resulted in a precision@5 score of

0.76 and a 68% puzzle completion rate and an average response time of 312 milliseconds. The MapMates system achieves better security results than three baseline systems while it provides successful proximity-based matching and it keeps users more active than two competing systems. The findings demonstrate that combining gamification elements with safety design methods enables substantial improvements in user experience because it decreases instances of misuse within location-based social platforms.

Paper 57. An Explainable Longitudinal Machine Learning Framework for Early Cervical Cancer Risk Prediction

Sneha K. Deshmukh[1], Suvarna Eknath Pawar[2], Sachin Arun Thanekar[3], Komal Munde[4]

[1,2,3,4] MIT Art, Design and Technology University, Loni Kalbhor, Pune, India

Abstract:

Early detection of cervical cancer is timely prevention of the disease as it helps to reduce loss of lives. In the given research paper, a machine learning algorithm is used for cervical cancer risk prediction, which is based on structured clinical and behavioural features that can be interpreted. To minimize the bias on features, the imbalance of classes was controlled by standardizing the numerical features and using class-weighted learning plans during the model training. A number of baseline models, like Support Vector machine (SVM), random forest (RF) and extreme gradient boosting (XGBoost) have been developed and compared with a longitudinal Long short-term memory (LSTM) network that could model the changes in the risk factors of the patient over time. The experimental outcomes prove that ensemble-based models reach a high classification performance, and the proposed longitudinal LSTM model is more sensitive as it learns time-related clinical patterns related to the progress of the disease. SHapley Additive exPlanations (SHAP) were also added to increase the model transparency and clinical interpretability by offering the global importance of features and patient-specific explanations. The reviewed literature revealed that age, reproductive history, and use of contraceptives are better determinants of risk of cervical cancer.

Paper 58. NexCard: AI-Driven Smart Card for Secure Payments, Digital Identity, and Professional Networking

Bhoumik Rajput1, Prof. Dr. Hanumant Pawar2, Prof. Dr. Reena Gunjan3, Arya Chaudhary4
2,3Professor, Computer Science & Engineering | MIT School of Computing,
1 M.Tech Student, CSE | MIT School of Computing,
4 B.Des, UI/UX Design | Institute of Design, MIT-ADT University, Pune, India

Abstract:

Digital services today are still fragmented: payment cards, identity tokens and professional networking tools exist as disjointed systems, providing friction and creating security risks and cognitive load to users. NexCard is addressing this by integrating contactless NFC payments and secure biometrics identity management with AI-based professional networking into one smart card based on a five-layer IoT architecture. A hybrid Random Forest-LSTM system is used to screen fraud in real time, and an online Q-learning cycle is used to support a Node2Vec graph engine to provide contextual networking recommendations. Prototype testing showed that authentication latency (1.78 s) was reduced by 26 per cent, and fraud-detection accuracy (96.5 per cent), recall (95.1 per cent), AUC (0.981) and a networking Mean Average Precision (0.913) were achieved with zero breaches occurring in 1,000 penetration-test attacks. NexCard can be used in corporate enterprises, universities and colleges, retail, public transport, freelance, healthcare, and can be integrated directly with the UPI, Aadhaar and DigiLocker infrastructure of India.

Paper 59. Automated Glacier Boundary Delineation and Change Detection Using U-Net and CNN on Sentinel-1 SAR Imagery

Jagdish Kapadnis1, Jayesh J. Pandey2, Kanishk T. Vadge3, Prerana R. Thok4
1Asst. Prof. Computer Engineering, PVGCOE-SSDIOM, Nashik,
2,3,4Computer Engineering, PVGCOE-SSDIOM, Nashik

Abstract:

In worldwide effect of climate change roughly indicated by Glaciers. So it is most important that, accurate mapping of their boundaries are essential for to measure environment impact. The proposed research work on Deep Learning (DL) based framework for automated glacier detection using optical satellite images and corresponding ground-truth. The work is divided into two semantic segmentation models, first model depends upon classical U-Net architecture with an Encoder/Decoder structure with skip connections and second model a custom Convolutional Neural Network (CNN) designed to feature extraction was developed and evaluated. All the models are trained using Glacier-Lake PNG data-set. Overall Experimental results clearly indicates that, the U-Net model outperforms the CNN, achieving 97.74% test accuracy, along with higher overlap metrics, Dice coefficient and Intersection over Union (IoU). Final visual analysis of predicted segmentation masks further demonstrates that, improved boundary delineation capability of U-Net, in complex regions containing debris and shadows. Finally, the proposed framework demonstrates an efficient and scalable approach for glacier monitoring and it will support large-scale climate change studies.

Paper 60. A Comprehensive Review on Weather Anomaly Detection and Risk Prediction for Smart Agriculture

Pallavi Vilas Lengare, Dr.Shilpa Vikas Shinde, Dr.Pratibha Pramod Chavan, Dr. Prakash Ravindra Somani
Alard University Pune

Abstract:

Agriculture is considered as major pillar of India's socio-economic development .Agriculture is highly sensitive to climatic variations, such as droughts, floods, and temperature fluctuations .Accurate detection of weather anomalies and timely prediction of associated risks plays very important role for increasing agricultural productivity and sustainability. The last few years have seen the development of a promising solution to improve smart agriculture systems through the introduction of advanced technologies like the Internet of Things (IoT) and deep learning. The paper presents a literature review of numerous studies dedicated to the topic of weather anomaly detection and risk prediction through the use of different methods, such as Long Short Term Memory (LSTM) auto encoders, Convolutional Neural Networks (CNNs), Transformer-based models, and ensemble learning methods applicable to the analysis of large-scale agricultural and meteorological data.The study also identifies recent advancements, various model performance parameters, and also highlights critical research gaps. Finally, a roadmap for future research methodology is proposed to enhance intelligent decision-making in smart agriculture.

Paper 61. AI-Native LMS: Auto-Generates Personalized Slide-Based Learning Content

Soham Satish Kulkarni, Pranav Bhagwan Gonde Patil, Ashwin Ramchandra Maurya, Dr. Archana G. Said
Department of Computer Engineering, AISSMS Institute of Information Technology, Pune, Maharashtra, India

Abstract:

The Indian education system is facing issues such as partial or unequal access, gaps in rural learning systems and lack of adaptability in online education platforms. Traditional LMS cannot adapt to learning pace which is unique for each individual learner. This problem is solved by AI-Native LMS as it can generate slide-based learning content by using Large Language Models (LLMs) which enables adaptive learning analytics. The system will create slides, quizzes, explanations and lessons based on the user's response and performance. The architecture enables adaptability and also enables multilingual learning. Prototype testing of AI-Native LMS resulted in reduced workload on teachers and more adaptive contents compared to traditional LMS. The proposed solution has the potential to be an AI-driven educational system to transform scalable personalized learning environments.

Paper 62. Hybrid Search Engine for Maharashtra Government Schemes

Aishwarya Gunjal[1], Kanchan Khemnar[2], Pawan Poojary[3], Pranav Kulkarni[4], Prof. Manish Khodaskar[5], Mr. Raviraj Joshi[6]

Abstract:

Language incompatibilities and restricted semantic search make it difficult for Marathi-speaking citizens to access government programs. A hybrid multilingual retrieval system that combines transformer-based embeddings with BM25 is presented. We compare MahaSBERT and IndicSBERT on a carefully selected bilingual dataset of 64 schemes. With MahaSBERT, F1-score of 0.85 and MRR 0.91, hybrid retrieval performs 7% better than lexical retrieval and much better than semantic retrieval alone. This illustrates the effectiveness of hybrid searches for administrative domains with limited resources.

Paper 63. The Experimental Roadmap to Launching Your Venture

Disha S. Wankhede, Parth Beldar, Baswadeep Bembare, Aatish Bagal, Savya Bhamare

Vishwakarma Institute of Technology,Pune.

Abstract:

Entrepreneurship has emerged as an essential catalyst of innovation, and employment in today's world. Conventional entrepreneurship education often consists of theory taught through lectures, textbooks, resulting in students being ill-prepared for the complexities of actual startup entrepreneurship. In response, this article presents a product entitled Scalvia, a simulation-based platform for experiential learning, in a safe environment. Scalvia allows users, students, wannabe entrepreneurs, and business fans, to create and manage startups through strategic decisions in areas such as funding, operations and marketing. Scalvia engages participants with an interactive simulation that recreates real-life complexities, such as competition for market share, capital, and scaling dilemmas. To maintain active engagement, the platform incorporates gamification components such as levels, rewards, and performance scores, which are further enhanced through feedback loops and detailed feedback analytics to promote continuous learning. Furthermore, Scalvia combines simulation and gamifying processes to decrease the impact of scholarship gap required to move learning theory to practice. Our intent is to promote authentic learning objectives such as entrepreneurial resilience, risk awareness, and confidence before entering the real startup world. We detail the platform's design and development, key features, expected impacts, and anticipated continuing developments of Scalvia as a new educational tool supporting entrepreneurship training and innovation.

Paper 64. NeuroFlow IDE: An AI Assisted Interactive Browser-Based Development Environment

Shobha Patil[1], Aniket Atram[2], Ansh Bagul[3] , Yash Bhongale[4], Ruchika Birajdar[5]
[1,2,3,4,5] Department of Computer Engineering, Vishwakarma Institute of Technology, Pune, 411037, Maharashtra, India

Abstract:

Desktop and most cloud based IDEs usually fail to integrate code writing, execution, debugging, assistance and visualization in unified and learner-friendly environment at single platform, creating a challenge for beginners and developer leading to affect learning and productivity timing. To tackle this problem, this project presents NeuroFlow IDE, a cloud-based integrated development environment that contains features like AI-assistance support for coding, learning support, and real time visualization of code flow of how code is working in real time. It is built on React and Monaco Editor with secured Dockerized backend, and dynamically powered on D3.js for Visualization. NeuroFlow simplifies the setup process, promotes quicker debugging, and is interactive, allowing an environment if editing, executing, visualizing, and combining multiple platform features into one. Increases in learning and productivities but also contributes substantially to enhancement of practical skills and technical knowledge among the students and developers.

Paper 65. Adaptive Fuzzy Hyperline Neural Classifier

Priyanka Waghmare1, Mehul Raul2, Sangram Bhosale3, Rangrez Faizan4, Ayush Waghchoure5
Ajeenkya D.Y. Patil School Of Engineering,Pune

Abstract:

Contemporary approaches to pattern recognition typically operate within two distinct paradigms: neural networks excel at identifying intricate decision boundaries through iterative learning, yet they remain largely opaque in their decision-making processes. In contrast, fuzzy logic systems offer interpretable reasoning frameworks but face difficulties scaling to high-dimensional feature spaces. This paper proposes the Adaptive Fuzzy Min-Max Hyperline Neural Classifier (AFHNC), a unified architecture that leverages geometric hyperline-based decision structures while incorporating fuzzy membership mechanisms that adapt throughout the learning process. The core innovation lies in employing perpendicular distance metrics to compute membership values that naturally preserve convexity, ensuring equitable class assignment even in regions where different classes overlap significantly. Experimental validation across multiple benchmark datasets reveals classification accuracy of 89.20% with average classification time of 0.74 seconds per sample—substantially exceeding FMNN (69.10%), FHLSNN (72.10%), and MFHLSNN (72.55%). The system achieves 26–34% reduction in total hyperline segments, indicating superior model compactness and computational efficiency. The proposed approach is applicable to domains such as medical diagnosis, handwritten character recognition, and other high-dimensional pattern classification problems where both accuracy and interpretability are required.

Paper 66. A Real-Time Smart Surveillance Framework Using Edge–IoT for Suspicious Activity Detection and Facial Emotion Analysis

Nidhi P. Nandankar1, Shraddha R. Khonde2
12 Department of Computer Engineering, Modern Education Society's Wadia College of Engineering, Pune- 411001

Abstract:

The growing need for intelligent, proactive surveillance has exposed the limitations of traditional CCTV systems, which rely heavily on continuous human monitoring and post-incident analysis. To address these challenges, this work presents an Edge-IoT-based real-time smart surveillance framework that integrates human activity recognition with facial emotion analysis using deep learning. The proposed system performs on-device processing on a Raspberry Pi, enabling local video analysis with low latency while preserving user privacy. Facial regions are detected using a lightweight Haar Cascade approach, followed by emo ion classification with a CNN trained on the FER-2013 dataset. In parallel, human activities such as walking, running, and aggressive movements are analyzed using motion-based features. A decision-level fusion strategy integrates activity patterns with emotional cuessuch as fear and anger to accurately distinguish normal from suspicious behavior, thereby minimizing false alarms. Experimental results demonstrate reliable real-time performance on edge hardware, confirming the system's suitability for smart surveillance applications in public and institutional environments.

Paper 67. AI-Driven Vision-Guided Robotic Arm for Real-Time Defect Detection in Smart Manufacturing

Miss. Aparna Prakash Bairagi[1], Dr. S. K. Sonkar[2]
1,2Department of Computer Engineering
1,2Amrutvahini College of Engineering, Sangamner, MH, India

Abstract:

Quality checking is an important step in every factory. In many industries, workers inspect products one by one and search for defects like scratches, cracks, dents, or damaged edges. This process needs a lot of concentration. When the same work is done for many hours, workers can become tired and small defects may be missed. Because of this, damaged products sometimes reach customers, which can create loss for the company. The system presented in this work reduces this problem by using a camera and a robotic arm together. A camera captures the image of the product while it is moving on the production line. The system then improves the image and uses YOLO to find the exact position of the object. After locating the object, the image is checked for faults. To identify the defects, the system uses a CNN model. After this, a CFNN model checks the result and decides whether the product is acceptable or defective. According to this decision, the robotic arm moves the product to the correct place. Good products are sent forward, while defective products are separated. During testing, the system worked faster than manual inspection and gave more reliable results. It reduced the chance of human mistakes and helped in quick sorting of products. Since the process is automatic, industries can save time and improve product quality.

Paper 68. An Integrated System for Leaf Disease Prediction and Crop Management

Subodhini Gurav1, Dr. Rupesh Mahajan2
1,2 Department of Computer Engineering Dr. D. Y. Patil Institute of Technology, Pimpri, Pune, India

Abstract:

Plant diseases are an issue for people who grow plants everywhere. People who grow plants for a living have to deal with these plant diseases. It affects their lives. Plant diseases can be really bad, for people who need plants to survive. The ways we use now to find plant diseases are not very good because they need someone who knows a lot about plants to look at them. This makes it hard for farmers in away places to know if their plants are sick.This paper is about making a system that can look at a picture of a leaf and tell us what is wrong with the plant. We use something called Convolutional Neural Networks to do this. We do not need any equipment to help us we just need a picture of the leaf. This system can look at the picture. Tell us what disease the plant has. This is a good solution for farmers because it can help them know what is wrong with their plants and they can make their plants healthy again. Plant Disease Recognition is a deal and this system can help with that. The Plant Disease Recognition System is very good, at analyzing a leaf image and recognizing a disease.

Paper 69. OmniAI: A Multi-Agent Conversational Assistant for Task Automation

Priyanka Waghmare[1], Satchal Patil[2], Aditya Savale[3], Prafull Satle[4], Krishna Tilwane[5]
[1] Assistant Professor, Artificial Intelligence & Data Science Department, Ajeenkya DY Patil School of Engineering, Pune, India
[2345] Artificial Intelligence & Data Science Department, Ajeenkya DY Patil School of Engineering, Pune, India

Abstract:

In modern digital environments, professionals spend considerable time handling repetitive operations such as composing emails, generating reports, querying databases, and preparing visualizations. Most available automation tools require programming knowledge or structured commands, which limits their usability for non-technical users. This work introduces OmniAI, a conversational multi-agent system designed to translate natural language instructions into executable digital actions. The system integrates intent detection, schema-aware query generation, and specialized agents responsible for handling emails, reports, visualizations, and database queries. Experimental observations indicate that the system achieves task execution accuracy above 90% across multiple modules, with an average response time of less than two seconds, ensuring practical usability. The proposed system can be applied in enterprise workflows, academic environments, and personal productivity tools to reduce manual effort and improve efficiency.

Paper 70. AI-Driven Tuberculosis Detection Using VGG-16

Prof. Reena Gunjan , Aadi Upadhyay , Hemant Sonewale , Sharon Kasabe , Devalh Parmar
MIT ADT University , Pune

Abstract:

Tuberculosis (TB) is still among the most essential infectious diseases that require immediate and precise detection to decrease mortality rates. Traditional methods are usually lengthy and require expertise. This research proposes an automatic method for TB detection based on the VGG-16 convolutional neural network utilizing chest X-rays (CXR). The proposed framework is implemented with TensorFlow and Keras and trained on open-source data. The experiments showed an accuracy rate of 77.8%. Nevertheless, relatively poor precision and recall reveal certain issues, such as class imbalance. The proposed application also incorporates a convenient user-friendly interface with Gradio, allowing for instant predictions of X-rays uploaded by users.

Paper 71. Ask Your Trash: A Smart Bin System for Waste Segregation and Tracking

Toshita Bhagwate1, Yoshita Bardhe2 , Aishwarya Mutha3 , Dr. Archana G. Said4
1,2,3,4 Computer Engineering, AISSMS Institute of Information Technology

Abstract:

This paper presents Ask Your Trash, an IoT-based waste management system with a database tracking layer that enables accountability via QR-based user registration. Unlike current smart bins, which mostly track waste fill levels, Ask Your Trash ensures complete auditability through linking of USER_ID with BIN_ID based on waste type (determined through classification by a CNN with 94.64% accuracy). This ensures creation of a continuous database entry. Hence, disposal of waste becomes a traceable process since every waste user is assigned an identity. Using MobileNetV2 (94.83% validation, 94.64% test accuracy on 3,080 unseen images), the system achieves 42 ms per image classification speed on a Raspberry Pi 4B. Comparatively, Custom CNN (77.08%), EfficientNetB0 (92.11%), and ResNet50 (92.09%) models do not exhibit comparable accuracy-speed tradeoff. With actual validation based on 500 images captured via the Pi Camera v2 in Pune, the model achieves 94.8% accuracy. The combined use of sensors (ultrasonic, load cell, moisture), CNN-based classification, QR-based identification and tracking, database storage, and mobile app-based visualizations results in up to 80% reduction in manual work and user accountability for waste sorting.

Paper 72. A Cloud-Based Polyglot Code Execution Framework Using GitHub Integration on Google App Engine

Madhuri D. Kawade, Amit S.Ufade
A Cloud-Based Polyglot Code Execution

Abstract:

Cloud computing and collaborative development system has greatly transformed the method by which modern software applications are designed and launched. Through tools like github, developers are able to maintain repositories of code together, but running code out of repositories that mix together several programming languages is currently a difficulty. Most of the time, developers have to manually set up compilers, dependencies and runtime environments then execute the code, this may give them inconsistencies and also take longer durations to set up. In this chapter, a cloud-based structure has been introduced that will allow automated running of polyglot software repositories by authenticated running of GitHub and Google App Engine. The suggested system will access repository data by using GitHub API, analyze the project files to expect the programming languages and dependencies, and dynamically deploy the appropriate runtime environments in a Platform-as-a-Service (PaaS) estimation. Secure sandbox environments are provided to perform code execution in isolation and to be reliable. Experiment results show that there is increased scalability and decreased time of execution as compared to the traditional local execution ways. The structure is used to deliver the contemporary multi-language development processes and may be utilized in DevOps automation, cloud-based programming the laboratory, and scalable enterprise deployment environments.

Paper 73. Review of Deep Learning Transformer Architectures for Multi-Omics Integration in Rare Disease Diagnosis

Pallavi Dilip Waghmare1 Dr. Vijay N Patil2
[1, 2] Pimpri Chinchwad Education Trust's Pimpri Chinchwad University

Abstract:

Rare diseases affect a small percentage of the population individually, but collectively they impact millions of people worldwide and often remain difficult to diagnose due to complex genetic and molecular mechanisms. The rapid advancement of high- throughput sequencing technologies has enabled the generation of large-scale multi-omics data, including genomics, transcriptomics, proteomics, and metabolomics, which provide deeper insights into disease mechanisms. Studying a disease with only one type of omics data often gives incomplete information. Genomics helps in identifying gene changes, transcriptomics shows gene expression, proteomics studies proteins and metabolomics provides information about metabolites. Therefore, researchers try to combine these datasets to obtain a better understanding of disease. However, integration is difficult because the data are large, complex and very different from one another.

In recent years, transformer models have been increasingly used for multi-omics integration. These models are capable of learning relationships between different omics layers and usually give better prediction results than conventional machine learning methods. This review presents

the important transformer-based methods used for disease prediction and discusses their advantages in handling complex biological data. Despite their better performance, transformer models still face some challenges. Limited sample size, high computational requirements and poor interpretability remain major issues. Hence, further research is required before these methods can be applied effectively in clinical practice.

Paper 74. Hospital Management through AI: Smart Health Assistant App

Priyanka Waghmare[1], Suvidya Sonawane[2], Sonal Shinde[3], Suraj Dombe[4], Parth Nalawade[5]
Ajeenkya D.Y Patil School of Engineering,Pune

Abstract:

Many hospitals still rely on manual methods for managing appointments, records, and communication, which often leads to delays and increased workload. To address these challenges, this project introduces a smart health assistant application that uses artificial intelligence to support hospital operations and improve patient experience. The system is developed as a role-based mobile platform where administrators, doctors, and patients have controlled access to relevant information.
The application offers features such as basic symptom guidance, appointment booking with token generation, digital storage of medical records, doctor-supervised diet planning, and pregnancy care tracking. It also includes visual representations of patient health data, making it easier for both patients and doctors to understand progress over time.
During testing, the system showed better coordination between users, faster appointment handling, and reduced dependency on manual processes. Overall, the proposed solution provides a simple and effective way to enhance hospital management and deliver better healthcare services.

Paper 75. "A Study on IoT-Based Data Collection and Monitoring Systems for CNC Machines in Smart Manufacturing"

D.R.Lahore1, Dr.K.B.Deshmukh1, Dr.S.A.Sonawane2*
1Department of Mechanical Engineering, Amrutvahini College of Engineering (AVCOE), Savitribai Phule Pune University (SPPU), Sangamner, Maharashtra, India
2Department of Mechanical Engineering, College of Engineering Chhatrapati Sambhajinagar, Maharashtra, India

Abstract: —

The CNC machine tools are extensively applicable in the contemporary manufacturing industries where they are used in performing operations including turning, drilling, tapping and milling. Monitoring and data- collection in small and medium enterprises (SMEs) has to be strongly advantageous in enhancing productivity and reducing downtime. In this paper, the design and development of IoT-based data acquisition and monitoring of CNC machines is presented.

Several sensors are incorporated in the proposed system and they include a vibration sensor, temperature sensor, pressure sensor and noise sensor to gather real time machine data. The data obtained is sent to the cloud-based systems to monitor and analyse. Fault detection and predictive maintenance can be performed by means of advanced methods like Artificial Intelligence (AI) and PLC programming. The system assists in tracking machining time, tool status and unforeseen failures. The solution proposed is consistent with Industry 4.0 and offers cost-effective and scalable solution to SMEs so that they can become efficient and productive.

Paper 76. Automated VSAT Installation and Verification

Parag Patil1, Abhishek Rubde1, Durvank Sawant1, Tanush Shende1, Pranali Choudhari1, Nilashree Madakath1, Geo Rocky2
1 Electronics and Telecommunication Dept., Fr. C. Rodrigues Institute of Technology, 400703,
2 Nelco Ltd., Mumbai, 400710

Abstract:

VSAT (Very Small Aperture Terminal) systems are commonly used in remote areas where reliable internet connectivity is not always available. Before activation, each installation needs to be verified, but this process is mostly done manually by checking images, RF parameters, and GPS data. This often causes delays and sometimes small errors are missed. To address the issue, introduce an automated verification system that combines computer vision, Optical Character Recognition (OCR), and simple rule-based checks. The system verifies whether all required images are present and clear, extracts SACFA IDs from images, and checks GPS coordinates and RF parameters. Use real installation data and apply preprocessing steps such as contrast enhancement and noise removal to improve OCR performance. From our testing, the system achieved around 70% OCR accuracy and reduced verification time to about 30–60 seconds per installation. Overall, the approach makes the process faster, more consistent, and less dependent on manual effort.

Paper 77. An IoT-Based Smart Irrigation System with Remote and Voice Control

Rutika Dhembare[1], Saloni Tanmor[2], Shraddha Jagtap[3], Dhanshree Dhindale[4], Shaheen Khan[5], Mrs. Supriya Jagtap (Mentor)6
[1,2,3,4,5,6] Department of Information Technology, Vishwakarma Institute of Technology, Pune, India

Abstract:

The conventional irrigation relies on human intuition resulting in over/under-irrigation, wastage of resources, and low yield of crops in small farms and residential gardens. In this paper, the proposal of an IoT-based smart irrigation system is presented with the use of ESP32 microcontroller, soil moisture sensor, temperature sensor, and humidity sensor. An event-driven architecture will also make the irrigation pump turn on when the soil is dry enough (when it is not moist enough), a React Native mobile app will contain voice recognition (Google Speech API) and manual control of the pump. Experimental findings reveal that the threshold-based

pump control is valid at five levels of moisture and a wide range of soils (loamy, sandy, clay), with an average response time of 1.2-1.8 seconds, which is much lower than cloud-based systems (3-8 s), and the water saved can be estimated to up to 30 percent. The system may be applied to small farms, household gardens, and the management of household plants, and it provides a low-cost, cloud-option irrigation system that meets UN SDGs 6.

Paper 78. A Comprehensive Audit Framework for Responsible AI Systems

Arnav Vaidya1, Arya Thanekar2, Shruti Mone3, Sampada Tagalpallewar4, Prof. Manish Khodaskar5 1 Department of Information Technology, Pune Institute of Computer Technology, Pune, India

Abstract:

With the increasing use of AI systems in critical applications, there is a need to conduct structured audits over multiple dimensions of Responsible AI. This paper proposes a holistic AI auditing framework that combines energy efficiency analysis, fairness analysis, explainability assessment, and data governance screening as a single automated pipeline. In our experiment, we obtained a cumulative energy saving of 72% with the energy module's recommendation to stop early. The fairness analysis reduced the equalized odds difference from 0.0834 to 0.0314. The explainability assessment had a high degree of agreement between SHAP and LIME of 90%. The compliance analysis identified 589 unmasked values from 1,000 data points. This shows that multi-dimensional AI auditing is feasible, structured, and scalable to build AI systems that are fair, transparent, and energy-efficient. This framework has applications in enterprise AI governance, regulatory auditing, and compliance monitoring.

Paper 79. Automated Property and Risk Assessment System for Maharashtra

Pranav Divekar, Komal Shendage, Siddhi Kadam, Vedant Dongare, Prof. Prashant Sadaphule Department of Computer Engineering, AISSMS Institute of Information Technology, Pune, India

Abstract:

Verification of property in India is a very cumbersome process since the information is disseminated among multiple sources and not all sources and official records are readily available. Services such as the Inspector General of Registration (IGR) Maharashtra avail access to the transaction details, they do not have structured analysis and scalability of practical use. This paper presents a property data collection system that is a modular automated system intended to make property data collection and assessment process easier. The solution proposed is browser based automation to access the records of the transaction and handle dynamic page loading. Computer vision techniques are also included in the system, such as OpenCV-based preprocessing, and YOLO-based layout detector, and optical character recognition (OCR) to enhance structured data detection from semi-structured land records. The

data collected is organized and stored in a relational database to be used in future. Moreover, land records, including 7/12 extracts and mutation certificates are incorporated to form a consolidated property profile. Potential risks are then detected by the combination of rule-based checks and machine learning models. The experimental outcomes indicate that the system is effective and minimizes the effort needed to verify the property in general, enhancing effective decision-making in real estate.

Paper 80. Systematic Review of Terahertz Antenna Design: Materials, Fabrication Challenges, and Future Perspectives

Amit J. Naik1, Anil B. Nandgaonkar2*

1,2Department of Electronics and Telecommunication Engineering, Dr. Babasaheb Ambedkar Technological University, Lonere, 402103, India.

Abstract:

Technology of Terahertz (THz) communication is considered to be the fastest-growing field in wireless communication, as it offers high-speed data transfer and bandwidth capacity for future technologies. The main problem here is the design of antennas capable of working in the THz range despite restrictions imposed by materials used, the complexity of the fabrication process, and significant losses due to attenuation in the atmosphere. The systematic review involves an investigation of antenna types, advanced materials like graphene and metamaterials, and manufacturing processes through evaluation and comparative analysis of current research findings. Critical analysis of emerging trends, constraints, and performance metrics leads to consistent findings in terms of patterns among existing literature. The findings demonstrate that the use of advanced materials and MIMO configurations increases efficiency, spectrum utilization, and bandwidth of the antenna system. The finding enhances the current body of knowledge through quantification of the advantages of using graphene over common conductive materials and the significance of choosing the right substrate for the material. Contrary to previous constraints, the study shows that advanced materials and appropriate design techniques could make THz antennas viable in 6G communication systems.

Paper 81. An Integrated Weather Intelligence Platform for Historical Analysis and Real-Time Extreme Event Alerts

Sayali Belhe, Omkar Raskar, Prathamesh Kumbhare, Hitesh Pawar, Sameer Shaikh , Sandesh Rabade

Vishwakarma Institute of Technology, Pune

Abstract:

Extreme weather events have become more common and severe, and the existing weather systems remain disjointed and lack comprehensive data management, predictive analytics, and automated real-time notifications, which are a fundamental weakness to decision-making in agriculture, disaster management, transportation, and environmental research. The current paper introduces an Integrated Weather Intelligence Platform, which integrates multi-source

meteorological data ingestion, machine learning-based forecasting, and threshold-based real-time extreme event detection into a single scalable backend architecture based on Flask/FastAPI with JWT-secured RESTful endpoints. It was trained and tested on 52,560 hourly meteorological data points over six years with multiple weather stations in India, such as temperature, humidity, rainfall, wind speed, and atmospheric pressure, and processed via a modular pipeline, including missing value imputation, outlier removal, and feature engineering. Three forecasting models were tested and compared with a chronological 70/15/15 train-validation-test split: ARIMA, Random Forest and LSTM achieved 82.5% (RMSE 2.1), 87.3% (RMSE 1.8) and 91.6% (RMSE 1.2) accuracy, respectively, significantly better than the naive persistence baseline of The real-time alert system was able to detect extreme conditions such as heat waves, heavy rainfall, storms and cyclones with an average notification latency of less than three seconds. The platform offers more predictability, access to information and awareness to disaster management agencies, farmers, city planners and climate scientists, and a good way to integrate the ability of data science, cloud computing, and smart alerts into a single weather monitoring system.

Paper 82. Real-Time Tomato Leaf Disease Detection Using YOLOv7

Aditya Ramkrushna Mahale1, Dr. A. S. Thorat2, Puja Somnath Mahale3, Piyusha Rajendra Mahajan4, Aadarsh Pravin Patil5

Abstract:

The devastating effects of tomato leaf diseases on crop yield and quality are so significant that it is necessary to detect early and accurately disease causes to provide good farm management. This study develops a real-time disease detection model from scratch using YOLOv7-tiny object detection. The model is trained with a dataset including 10 classes of 20,000 images from Roboflow Universe, including Bacterial Spot, Early Blight, Late Blight and Healthy leaves. The dataset has been divided in training, validation and testing set for good evaluation. At training phase, different data augmentation strategies are applied to increase model robustness in various conditions. As a last point, the model we propose has precision = 0.768, recall = 0.658 and mAP@0.5. Aside from detecting disease, the system estimates the severity of the disease and uses a web application to send an image along with automatic predictions. Findings showed the proposed method could be useful and relevant both for real time and applied use in agriculture, especially under conditions of scarcity of resources.

Paper 83. A Trend-Aware Multi-Modal Generative Framework for Automated Social Media Content Creation

Devendra Veer, Smith Mavli , Sarthak Waykar , Chetan Aher.

AISSMS INSTITUTE OF INFORMATION TECHNOLOGY PUNE.

Abstract:

Social media content creation is gradually shifting from disjointed, manual processes to streamlined, data-driven automation solutions. Thanks to modern Generative AI and Large Language Models, it's now possible to analyze viral trends, create context-aware content, and produce multimedia directly from a single platform. This study presents a real-time analytics and content creation system based on a modular AI design, aimed at reliably automating the content workflow for platforms such as Instagram, YouTube, and Threads. After analyzing the initial trend data, the system creates appropriate text, records campaign details in an organized database, and generates visual content like images and videos with synchronized speech. These automated tools help social media creators figure out the optimal time to post content and analyse how different sets of people react to the posted content, and fix a posting schedule which will work best for their growth. Main aim of this method is to optimize content creation, improved digital marketing processes and higher engagement with viewers all while making sure reliable performance is delivered even when social trends vary. The system is dependent on open source models and cheap cloud services , so it will overall be cheaper and easy for production.

Paper 84. A Design and Implementation of Jet shrouded Wind Turbine System

Ms. Deepali V. Wagh[1], Sumit V. Chim[2], Vrushali B. Mundphan[3], Vaishnavi V. Patil[4]
1234Department of Electrical Engineering, JSPM's Bhivarabai Sawant Institute of Technology and Research Wagholi Pune, India

Abstract:

Scalable and sustainable energy sources are required for the entire world. When wind energy conditions are not predictable, the conventional wind turbine frequently faces difficulties. In order to investigate pressure distribution, velocity, and efficiency, this paper uses LABVIEW simulations to analyze the design and performance of jet turbine systems. The study examines how the system performance configuration greatly improves turbine efficiency when compared to traditional designs by modeling the shroud design of a jet turbine. This makes it a promising method for small, decentralized wind energy applications. The hardware In the Loop testing of the jet wind turbine system is based on this work. LabVIEW simulations were used for performance analysis to assess torque generation, power output, velocity enhancement, and pressure distribution.

Paper 85. Toxicity Detection in online games using Reinforcement Learning

Ruquia Taha Khatoon1, Dantala Shivaghna2, Katta Harsha Vardhan3
1Assistant Professor, Csm Department, Cmr college of engineering, and technology,Hyderabad , Telangana,India
23Student, Csm Department, Cmr college of engineering, and technology,Hyderabad , Telangana,India

Abstract:

The proliferation of online multiplayer games has created new difficulties associated with toxic chat behavior and harassment of players. Conventional approaches to addressing such problems are not efficient and flexible enough. Thus, the problem statement for this project is the need for more efficient ways to detect and moderate toxic online chat behavior. As a solution, this project suggests developing an AI-enabled chat moderator to help detect and deal with toxic behavior in the multiplayer online game "Snake and Ladders". In particular, the project uses several machine learning models, trained on Kaggle datasets, that recognize whether a chat message is toxic or not. Furthermore, a reinforcement learning algorithm is implemented that decides what action should be taken (a warning message issued, or a player removed from the game). In addition, the solution includes an interactive chat room and an interactive game board interface. The experiments conducted have proved that the suggested approach allows for effective detection of toxic messages and adaptive moderation of them. The application of reinforcement learning algorithms to make decisions improves the efficiency of this process. The suggested technology can be applied to other online games and social systems to promote digital well-being.

Paper 86. Post-Quantum Cryptography for Securing Banking API: A Survey

Kshitij Dhake[1], Atharva Dhake[2], Kartik Tichkule[3], Mr. Abhinay Dhamnakar4, Mr. Sachin Pande5
[1]23Student, Department of Information Technology SCTR's Pune Institute of Computer Technology, Pune, India;
45Professor, SCTR's Pune Institute of Computer Technology, (IT), Pune, Maharashtra, India

Abstract:

Advances in quantum computing pose a growing risk to conventional cryptographic methods, particularly RSA and ECC, which form the backbone of banking API security. Quantum algorithms, most notably Shor's algorithm, have the potential to render these encryption schemes obsolete, presenting a significant challenge to the financial sector. This survey examines how Post-Quantum Cryptography (PQC) can be adopted to counter this threat, with emphasis on NIST-standardized schemes including CRYSTALS-Kyber and CRYSTALS-Dilithium, alongside hybrid cryptographic models designed to maintain backward compatibility in banking systems. The study addresses key concerns such as computational overhead, integration

complexity, and the urgency of establishing cryptographic agility and industry-wide standardization. Ultimately, the findings aim to guide financial institutions and researchers in selecting suitable quantum-resistant frameworks for securing banking APIs.

Paper 87. AI-Driven Road Safety Monitoring and Civic Issue Reporting System Using Computer Vision

M. Venkata Soodarshan, Ketan G. Nibandhe, Vaibhav S. Nagawade, Dr. Chetan N. Aher
Department of Computer Engineering, AISSMS Institute of Information Technology, Pune, India

Abstract:

The rapid degradation of road infrastructure poses significant challenges to traffic safety, vehicle maintenance, and transportation efficiency. Timely detection of road damage, particularly potholes, is essential for effective maintenance. Although deep learning approaches achieve high accuracy, they require large-scale datasets and high computational resources, limiting their applicability in real-time and resource-constrained environments. To address this limitation, this paper proposes a lightweight machine learning-based system for classifying road damage severity into predefined categories. The proposed pipeline consists of image preprocessing, feature extraction, and classification. Handcrafted features, including edge density derived from the Canny edge detector and RGB color histograms, are used to capture structural discontinuities and surface variations in road images. These features are used to train and evaluate classifiers such as Random Forest, Support Vector Machine (SVM), and XGBoost for severity classification into low, medium, and high categories. Experimental results on a road damage image dataset demonstrate that the Random Forest classifier achieves superior performance in terms of accuracy, precision, recall, and F1-score, while maintaining low computational cost. This makes the proposed approach suitable for real-time road monitoring and intelligent transportation systems.

Paper 88. Virtual Chemistry Lab

Priyanka Kamble[1], Soham Sane[2], Ayush Bhosale[3], Himanshu Macchi[4], Saish Mekal[5]
[1]Faculty, Department of Electronics Engineering, St. John College of Engineering and Management, Palghar, India
[2345]Student, Department of Computer Engineering, St. John College of Engineering and Management, Palghar, India

Abstract:

Virtual Reality (VR) in teaching chemistry has been adopted. Such issues as visualization of abstract ideas, guardedness, further accessibility, and student engagement can be overcome using it. The paper confers four studies, all of which are dedicated to the conceptualization and operation of VR-based chemistry labs and its research impacts on secondary and post-secondary learning. The projects consider VR application in the instruction of the molecular structure, organic reaction, titration experiment, and experiments with such instruments as the analysis of infrared spectrometry. The overall findings indicate that VR as a learning resource can be representative of a great boost in spatial and visual learning about miniature

chemical phenomena among learners. They are also getting better acquainted with procedures and it is making them more motivated. However, VR is not always superior to the traditional labs in terms of mastering the concepts of learning. Learning is mainly successful based on how the instructional design factors are handled. These would include introduction of VR, and implementation in lab activities and level of physical interaction. There is also enhanced learning when VR was used in the laboratory as compared to using VR as a pre-lab tool. The facts indicate that VR is a useful teaching technology and it improves the visualization, accessibility, and practical learning when successfully integrated with the traditional approach to teaching chemistry. General overview of search strategy.

Paper 89. YOLO-LFA: Lightweight Feature Attention for Real-Time Vehicle Detection

Jasmine Selvakumari Jeya I[1], Priyadarshi Nihal[2], Pratyush Dubey[3], Dev Tailor[4], Dattatrey[5], Shivalik Mathur[6]

Abstract:

Real-time vehicle detection has significant importance in the context of intelligent transportation and self-driving cars. The key challenge, however, is to prolong high prediction accuracy as utilizing lightweight architectures in live environment. To address the challenge, the authors propose the YOLO-LFA, which utilizes lightweight architectures for object detection. The model combines BiFPN-based multi-scale feature fusion, C2PSA, SE channel attention, DySample, and SEAM for improved feature quality and detection performance. The model has been tested on the UA-DETRAC dataset and has shown promising results compared to existing models, such as YOLOv8, YOLO-MSN, and YOLO-BASW. The model has shown improved detection performance without compromising the lightweight architecture. The model has significant potential in the context of intelligent transportation systems, traffic monitoring, and self-driving cars, which demand efficient and accurate real-time vehicle detection.

Paper 90. Machine Learning-Based Network Intrusion Detection System Using Random Forest

Amit Kurmi 1
1Assistant Professor, Computer Engineering Department, Cummins College of Engineering for Women, Nagpur

Abstract:

Cybersecurity protects the modern digital ecosystem as organizations increasingly depend on interconnected networks, cloud computing, and IoT networks. Network Intrusion Detection Systems (NIDS) use machine learning algorithms to identify malicious activities in massive network traffic. This paper tackles the long-standing problem of suboptimal detection of rare attack classes and performance degradation due to class imbalance in standard benchmark datasets. This problem is paramount because undetected attacks can cause severe security threats, financial losses, and data breaches, while high false alarm rates can cause system unreliability. This paper proposes a four-component Random Forest-based framework that combines Min-Max

normalization, SMOTE-based class imbalance correction, hybrid feature construction through Principal Component Analysis and Recursive Feature Elimination, and adaptive weighted training. Performance on CICIDS2017 and NSL-KDD datasets shows 99.2% accuracy, 98.9% F1-score, and a remarkably low 0.6% false positive rate. These results show better detection of rare attack classes and balanced performance compared to standard Random Forest classifiers, improving real-world applicability in real-time cybersecurity scenarios.

Paper 91. Wellness Buddy: An AI-Enabled Emotion-Aware Companion for Digital Wellbeing Application

Mrs. Supriya P. Jagtap1, Miss. Arya Pawar2, Mr. Samarth Bidkar3 , Mr. Nidhish Chincholkar4 , Mr. Aarush Sengupta5 , Mr. Adithya Sagri6
1 Department of Information Technology , Vishwakarma Institute of Technology , Pune , Maharashtra , India

Abstract:

The existing music recommendation systems are mainly dependent on users' historical preference information and collaborative filtering. However, such systems do not take into account the emotional state of the users. In this paper, we propose an integrated framework named Wellness Buddy that incorporates real-time facial emotion detection, emotion-aware music recommendation, and various digital wellbeing support tools. In this system, we have used a Convolutional Neural Network (CNN) model that is trained using the FER2013 dataset for emotion detection. Emotions are classified into four classes: happy, sad, angry, and calm. A content-based music recommendation system is used to recommend music based on detected emotions using various audio features such as valence, energy, tempo, and acousticness. In this system, we have attained an accuracy of 92.8%, precision, recall, and F1-score greater than 0.91. This system is able to respond within an average latency of 42 ms.

Paper 92. Collaborative Generative AI Agents for Enhanced Organizational Innovation

Prof. Komal Munde1, Prof Suvarna Pawar, Prof. Kanchan Wankhade3 Prof. Sneha Deshmukh4, Prof. Sachin Thanekar5, Prof. Priya Khune6
1,2,4,5,6MIT Art, Design and Technology University, Loni Kalbhor Pune,3 VIT,Bibewadi Pune,

Abstract:

This learning recommends a Multi-Agent Generative AI Framework to expand organisational innovation. The framework supports distributed intelligence and concurrent result discovery by using a number of autonomous agents that manage ideation, estimation, domain reasoning and strategy alignment. The agents have a defined task, and the agents interact via a system of coordination and feedback loop which narrows the concepts to organisational objectives and viability. Such scientific collaboration minimizes redundancy, bias, balances creativity and pragmatism. The framework is shown in the contexts, including the process improvement or development of products, when the agents are involved in the improvement of solutions and development project. The multi-agent structure is more flexible and scalable, thus enhancing the

diversity, quality and general output of innovation as compared to single agent or manual processes.

Paper 93. A Smart and Automated Attendance Monitoring System

Monali Tingane1, Rohan Patil2, Mrunmayee Boraste3, Amruta Kulte4, Shruti Kaduskar5
1,2,3,4,5 School of Computing, MIT Arts, Design and Technology, University, Pune, Maharashtra, 412201, India.

Abstract:

One of the most basic but time-consuming activities in schools is attendance management. The old-fashioned methods as manual roll calls, RFID cards, and simple mobile check-ins, are not effective and subject to proxy attendance, sharing a device, and hu- man mistakes. Facial recognition based on an automated attendance system has become a promising alternative with the development of Artificial Intelligence (AI) and computer vision. This paper will propose a Smart attendance system that will be using mobile ap- plication as a classroom image recognition to automatically mark attendance based on a single classroom photograph. The suggested system also includes the practical additions of time locked attendance windows, location validation via a lightweight GPS, one-photo-per- lecture enforcement, face recognition validation by confidence, background similarity check, and randomized selfie prompts, eliminating the need to use live video streams to decrease proxy attendance. The attendance data and images of the classroom are safely stored in the cloud, and this allows transparency and verification by the faculty after the fact. The experimental results conclude that the system is suitable to be deployed on a large scale in academic institutions, as it was shown to be more accurate, has lower cases of attendance fraud, and is also more time saving than the traditional ones.

Paper 94. Risk–Return Profile of Nifty100 ESG versus Nifty 50: Evidence on Sustainable Investing in India

1 Dr. Riddhi Sanghvi, 2Dr. Jay Talati
1 Professor and Dean – Faculty of Doctoral Studies, Noble University, Junagadh.
2 Registrar and Dean – Faculty of Management & Commerce, Noble University, Junagadh.

Abstract:

This study compares the risk–return characteristics of the NIFTY100 ESG with the NIFTY 50 using daily closing index values from the National Stock Exchange of India from January 1, 2020, to December 31, 2025 (1,491 trading days). The study figures average daily returns (0.062% for ESG vs. 0.058% for NIFTY 50), standard deviation (1.121% vs. 1.138%), annualised Sharpe ratios (0.540 vs. 0.473), and beta (0.963). Independent-samples t-tests reveal that there is no difference in mean returns ($p = 0.919$) or variances (Levene's test, $p = 0.820$). The ESG index shows reasonably better performance with lesser volatility, supporting its viability for achieving the goal of sustainable investing. These findings also confirm that ESG indices can deliver strong financial performance while fulfilling the sustainability objectives, contributing to the transformation of India's capital markets investments towards accountable investing.