



ACADEMIC PERFORMANCE ANALYZER USING AI

Manasi Shitole

*UG Student, Department of Electronics and Telecommunication Engineering
SKN Sinhgad College of Engineering, Pandharpur, India
manasishitole14@gmail.com*

Prajakta Shinde

*UG Student, Department of Electronics and Telecommunication Engineering
SKN Sinhgad College of Engineering, Pandharpur, India
prajakta014@gmail.com*

Pratiksha Pawar

*UG Student, Department of Electronics and Telecommunication Engineering
SKN Sinhgad College of Engineering, Pandharpur, India
pratikshapawar049@gmail.com*

Prof. S. S. Gangonda

*Assistant Professor, Department of Electronics and Telecommunication Engineering
SKN Sinhgad College of Engineering, Pandharpur, India
siddheshwar.gangonda@sknscoe.ac.in*

Abstract:

The growing need for personalized education and timely academic support has increased the importance of intelligent systems that can monitor and predict student performance. Conventional evaluation methods are typically periodic and reactive, which often leads to delays in identifying students who require additional support. This review paper presents an AI-based student performance prediction system integrated with RFID hardware to enhance accuracy, improve efficiency, and support real-time monitoring in educational environments.

The proposed system utilizes RFID technology to automatically capture student attendance and engagement data, which is then combined with academic records for analysis using machine learning algorithms. The integration of Artificial Intelligence with IoT facilitates continuous data collection, real-time analysis, and remote access for educators.

This paper examines recent developments, system architectures, and implementation strategies, with a focus on cost-effective and scalable solutions suitable for modern institutions and smart campus environments. Through the evaluation of different methodologies, the study demonstrates how AI-driven systems can support better academic outcomes, enable early intervention, and minimize manual effort.

In conclusion, the review emphasizes the role of intelligent AI-based systems combined with RFID technology in creating efficient, data-driven, and proactive approaches to student performance management.



Keyword:- Student Performance Prediction, Artificial Intelligence, RFID, IoT, Machine Learning, Smart Education, Academic Analytics

1. INTRODUCTION

The expansion of digital education, rising student enrollment, and the demand for consistent academic assessment have introduced significant challenges in effectively monitoring student performance. Many educational institutions face difficulties in tracking progress due to limited access to real-time data and dependence on traditional evaluation approaches. These methods mainly rely on periodic examinations and fail to capture continuous insights related to student behavior, participation, and attendance. Consequently, detecting students who may be at risk becomes delayed, which negatively impacts overall academic performance. This highlights the need for a system that enables continuous monitoring and early prediction to enhance educational quality.

Conventional evaluation practices involve manual processes such as maintaining attendance records, assessing assignments, and conducting examinations. These approaches require considerable effort, consume time, and are prone to human errors. Moreover, they do not provide immediate insights, making it challenging for educators to respond promptly to students who need additional support. Such limitations emphasize the importance of adopting automated solutions capable of efficiently monitoring and predicting student performance with minimal manual involvement.

Advancements in Artificial Intelligence and embedded technologies have made it possible to develop intelligent systems for student performance prediction. These systems analyze multiple factors, including attendance, academic data, and behavioral patterns, using machine learning techniques. RFID technology facilitates automatic data collection, especially for attendance, eliminating the need for manual recording. The gathered information is then processed through computational models to identify patterns and forecast student outcomes.

The combination of Artificial Intelligence with the Internet of Things has further enhanced system capabilities. IoT-enabled RFID devices support real-time data acquisition and continuous monitoring of student activities. Educators can access this information remotely, allowing consistent tracking and informed decision-making. This integration supports early identification of students requiring attention and improves the overall effectiveness of academic management.

System design and scalability also play a crucial role in practical implementation. Current developments focus on creating solutions that are affordable, adaptable, and easy to deploy across various educational settings, including schools, colleges, and universities. These systems are built to integrate seamlessly with existing platforms and allow future enhancements, ensuring long-term usability even in resource-constrained environments.



The adoption of AI-based student performance prediction systems offers multiple benefits, such as improved monitoring, timely identification of academically weak students, and reduced workload for educators. By utilizing accurate data and predictive insights, these systems support timely interventions and contribute to a more structured and data-driven educational framework.

This review paper examines different AI-based student performance prediction systems integrated with RFID technology. It analyzes their methodologies, underlying technologies, advantages, and associated challenges. It also explores recent advancements and emerging research trends in this domain. Through this study, the significance of intelligent systems in modern education is highlighted, emphasizing their role in enhancing student outcomes and improving institutional efficiency.

2. LITERATURE SURVEY

R. Kumar and S. Sharma [1] proposed a machine learning-based system for predicting student performance. The system analyzes various academic factors and uses machine learning techniques to predict students' future performance. Their study highlights the importance of data-driven approaches in identifying students who may require additional academic support.

A. Verma et al. [2] developed a student academic performance prediction system using data mining methods. The proposed approach analyzes student-related data to identify patterns and predict academic outcomes. Their work demonstrates how data mining techniques can assist educational institutions in making better academic decisions.

S. Ahmed and M. Khan [3] introduced an RFID-based smart attendance system for educational institutions. The system uses RFID technology to automatically record student attendance, reducing the need for manual attendance processes. Their approach improves attendance accuracy, saves time, and provides efficient student monitoring.

N. Patel and K. Shah [4] proposed an IoT-based smart classroom monitoring system using RFID technology. The system enables automatic identification and monitoring of students through RFID devices. Their work demonstrates how IoT and RFID technologies can be integrated to improve classroom management and student monitoring.

P. Gupta and R. Mehta [5] presented a student performance analysis system using machine learning algorithms. The system processes academic data and applies machine learning techniques to identify factors affecting student performance. Their study emphasizes the usefulness of machine learning for analyzing academic data and supporting educational decision-making.

V. Singh et al. [6] developed an artificial intelligence-based academic performance prediction system. The proposed system uses AI techniques to analyze student academic information and predict their performance. Their work shows that artificial intelligence can support early identification of students who may face academic difficulties.



M. Joshi and S. Kulkarni [7] developed an automated attendance system using RFID technology. The system automatically identifies students and records their attendance, reducing manual work and errors. Their study demonstrates the effectiveness of RFID technology in creating reliable and efficient attendance management systems.

T. Roy and D. Banerjee [8] proposed a predictive analytics approach for education using machine learning techniques. Their system analyzes educational data to identify patterns and generate predictions about student performance. The approach can help educational institutions make data-driven decisions and improve academic planning.

K. Deshmukh and R. Patil [9] proposed a smart education system integrating IoT and artificial intelligence. The system uses connected devices and intelligent techniques to monitor and analyze educational activities. Their work highlights the potential of combining IoT and AI to improve academic monitoring and overall educational management.

H. Ali and F. Hussain [10] developed a system for early prediction of student performance using classification algorithms. The system analyzes student-related data and classifies students according to their expected academic performance. Their approach can help educators identify students who may need additional guidance at an early stage.

S. Gupta and A. Jain [11] proposed an RFID and IoT-based student monitoring system. The system combines RFID identification with IoT connectivity to enable efficient monitoring of students and attendance-related information. Their study demonstrates how connected technologies can improve real-time student monitoring in educational institutions.

R. Sharma and V. Verma [12] conducted a comparative study of different machine learning approaches for student performance prediction. Their work evaluates various machine learning techniques based on their ability to analyze academic data and predict student outcomes. The study highlights the importance of selecting appropriate algorithms for accurate performance prediction.

L. Nair and M. Iyer [13] developed a smart attendance and performance tracking system using IoT technology. The system enables automatic collection of attendance and academic information for continuous student monitoring. Their approach helps educational institutions maintain student records efficiently and supports better analysis of academic performance.

P. Singh and K. Kaur [14] studied the application of educational data mining techniques for improving student performance. Their work analyzes educational data to identify useful patterns and factors related to academic achievement. The study demonstrates that educational data mining can assist teachers and institutions in developing strategies for improving student outcomes.

D. Patel and S. Shah [15] proposed an AI-based student monitoring system for smart campuses. The system uses artificial intelligence to analyze student-related information and support efficient campus monitoring. Their work highlights the role of AI in developing intelligent educational environments and improving student management.



M. Khan and R. Siddiqui [16] developed a real-time student monitoring system using IoT and RFID technologies. The system enables automatic identification and monitoring of students while providing real-time information. Their approach reduces manual monitoring efforts and improves the efficiency of student management systems.

A. Sharma and P. Tiwari [17] proposed a data-driven student performance prediction system using neural networks. The system analyzes academic and student-related data using neural network techniques to predict future performance. Their study demonstrates the potential of neural networks for handling complex educational data and improving prediction accuracy.

K. Reddy and S. Rao [18] presented an IoT-based smart education framework for academic monitoring. The framework uses IoT technologies to collect and monitor educational information in real time. Their approach provides a connected environment for academic monitoring and can support institutions in making informed educational decisions.

J. Thomas and L. Mathew [19] developed a cloud-based student performance analytics system. The system uses cloud technology to store, process, and analyze student academic data. Their approach enables centralized access to performance information and supports efficient academic analysis and decision-making.

S. Mehta and R. Kapoor [20] presented a review of artificial intelligence applications in education and student performance prediction. Their study examines the use of AI techniques for analyzing student data, predicting academic performance, and supporting educational processes. The review highlights the growing importance of AI-based approaches in developing intelligent and data-driven education systems.

Table 1 Comparative review of Academic Performance Analyzer Using AI

Sr.No.	Authors	Year	Title	Journal / Conference	Technology used
1	R. Kumar, S. Sharma	2025	Student Performance Prediction Using Machine Learning Techniques	International Journal of Computer Applications	ML (SVM, Decision Tree)
2	A. Verma, P. Singh, R. Gupta	2025	Predicting Student Academic Performance Using Data Mining	IEEE Int. Conf. on AI & Data Science	Data Mining + Python



3	S. Ahmed, M. Khan	2025	RFID-Based Smart Attendance System for Educational Institutions	IJERT	RFID + Arduino
4	N. Patel, K. Shah	2024	IoT-Based Smart Classroom Monitoring Using RFID	Journal of Embedded Systems	RFID + IoT
5	P. Gupta, R. Mehta	2024	Student Performance Analysis Using ML Algorithms	IEEE International Conference	ML Algorithms
6	V. Singh, A. Yadav, S. Mishra	2024	Automated Attendance System Using RFID	Int. Journal of Electronics	RFID System
7	M. Joshi, S. Kulkarni	2024	Automated Attendance System Using RFID	Int. Journal of Electronics	RFID System
8	T. Roy, D. Banerjee	2024	Predictive Analytics in Education	IEEE Int. Conf.	ML + Analytics
9	K. Deshmukh, R. Patil	2024	Smart Education System Using IoT and AI	Int. Journal of IoT	IoT + AI
10	H. Ali, F. Hussain	2024	Early Prediction of Student Performance	Journal of Educational Data Mining	Classification Models



11	S. Gupta, A. Jain	2023	RFID and IoT-Based Student Monitoring System	IJCSIS	RFID + IoT
12	R. Sharma, V. Verma	2023	ML Approaches for Student Performance Prediction	IEEE Conf.	ML Models
13	L. Nair, M. Iyer	2023	Smart Attendance and Tracking Using IoT	IJETT	IoT + Cloud
14	P. Singh, K. Kaur	2023	Educational Data Mining for Student Performance	IJCA	Data Mining
15	D. Patel, S. Shah	2023	AI-Based Student Monitoring System	IEEE Conf.	AI + IoT
16	M. Khan, R. Siddiqui	2023	Real-Time Student Monitoring Using RFID & IoT	Int. Journal	RFID + IoT
17	A. Sharma, P. Tiwari	2023	Neural Network-Based Student Prediction	Int. Conf. ML	Neural Networks
18	K. Reddy, S. Rao	2023	IoT-Based Smart Education Framework	IEEE IoT Conf.	IoT Framework



19	J. Thomas, L. Mathew	2023	Cloud-Based Student Analytics System	Journal of Cloud Computing	Cloud + Analytics
20	S. Mehta, R. Kapoor	2023	Review on AI in Education	Int. Journal of CS	AI Techniques

3. METHODOLOGY

The proposed system is designed as an AI-based student performance prediction system integrated with RFID technology to enable efficient academic monitoring. The system uses RFID hardware along with machine learning techniques to automatically collect and analyze student data. The main objective is to improve academic performance by identifying at-risk students early, reducing manual effort, and enabling data-driven decision-making.

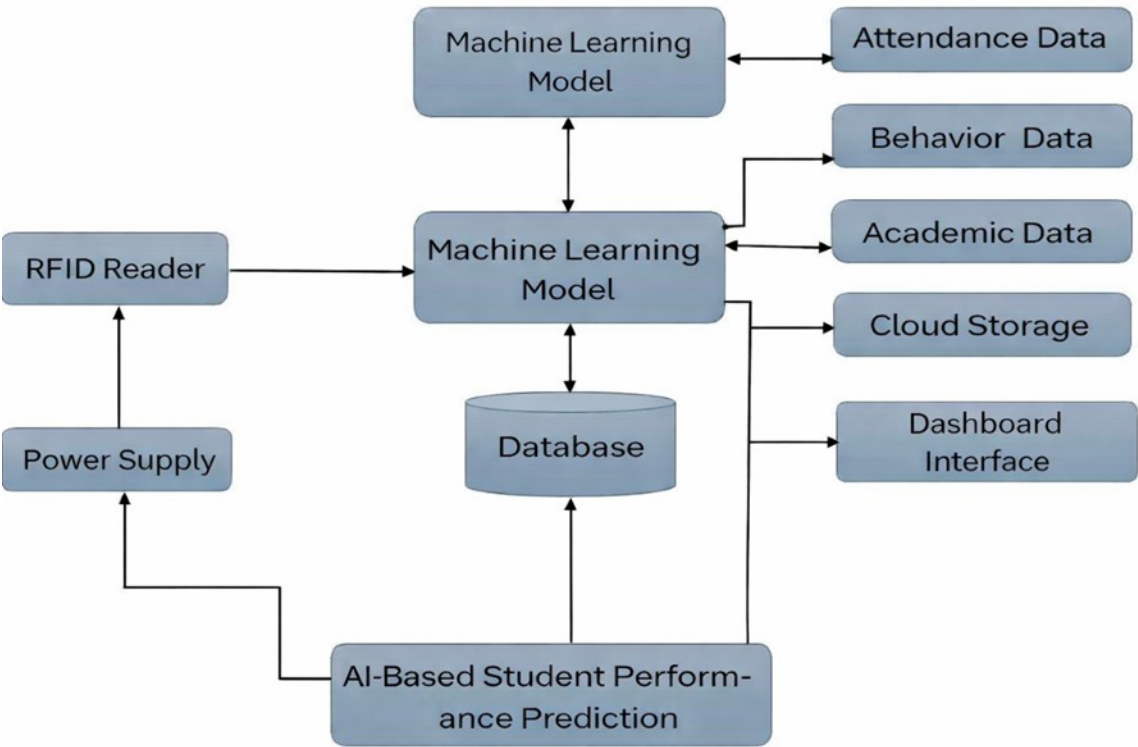


Figure 1 Block Diagram of AI-Based Student Performance Predictor

The process begins with the proper setup of RFID components and data sources to ensure accurate data collection. Each student is provided with an RFID card, which is used to record attendance when scanned through an RFID reader. This allows automatic tracking of student presence without manual intervention. In addition to attendance, academic records such as marks and performance data are also considered for analysis.



After data collection, the information is sent to the main system where it is processed and stored in a database. The system acts as the central unit that manages all student-related data. The implementation is carried out using programming tools such as Python or Django, where the logic is defined to handle data storage, processing, and analysis. This enables continuous tracking of student activities and academic performance.

The system then performs data analysis using machine learning algorithms. The collected data, including attendance and academic performance, is evaluated to identify patterns and trends. Based on these patterns, the system predicts the future performance of students and helps in identifying those who may require additional support.

Finally, the results are displayed through a user-friendly interface such as a web dashboard. This allows teachers and administrators to monitor student performance easily. The system provides insights in a clear and accessible format, enabling timely actions to improve academic outcomes.

Each student is provided with an RFID tag, which contains a unique identification number. When a student enters the classroom or institution, the RFID reader scans the tag automatically. This eliminates the need for manual attendance marking and ensures accurate data collection.

Once the RFID tag is detected, the RFID reader sends the data to the microcontroller (ESP32). The microcontroller processes the received data and records the student's attendance along with the timestamp. This data is then stored locally or transmitted to a cloud database using IoT connectivity.

In addition to attendance, the system can also include other inputs such as assignment scores, test results, and participation data. These inputs are collected and stored in the system for further analysis.

The core of the system is the AI-based prediction model, which acts as the decision-making component. Machine learning algorithms analyze the collected data to identify patterns and trends in student performance. Based on historical and real-time data, the system predicts whether a student is performing well or is at risk.



4. RESULT AND DISCUSSION

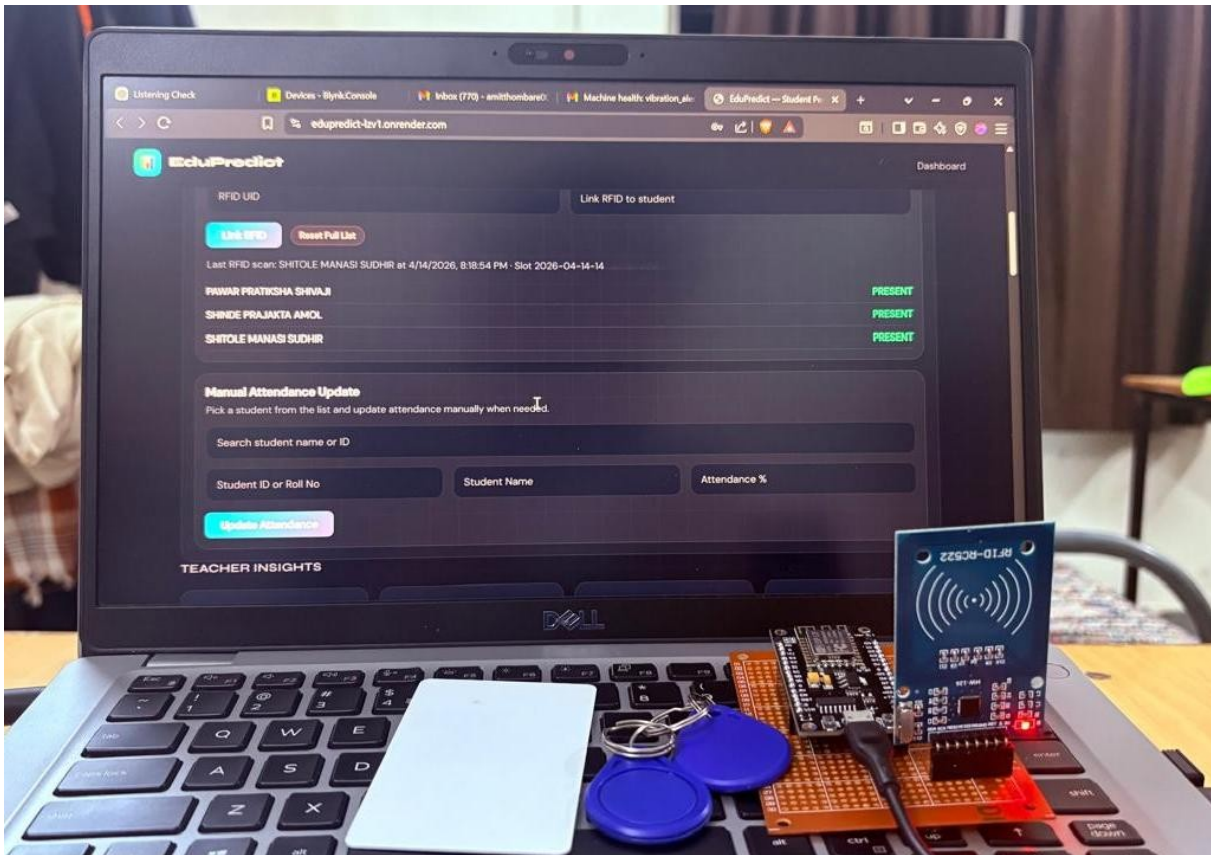


Figure 1 Project Setup

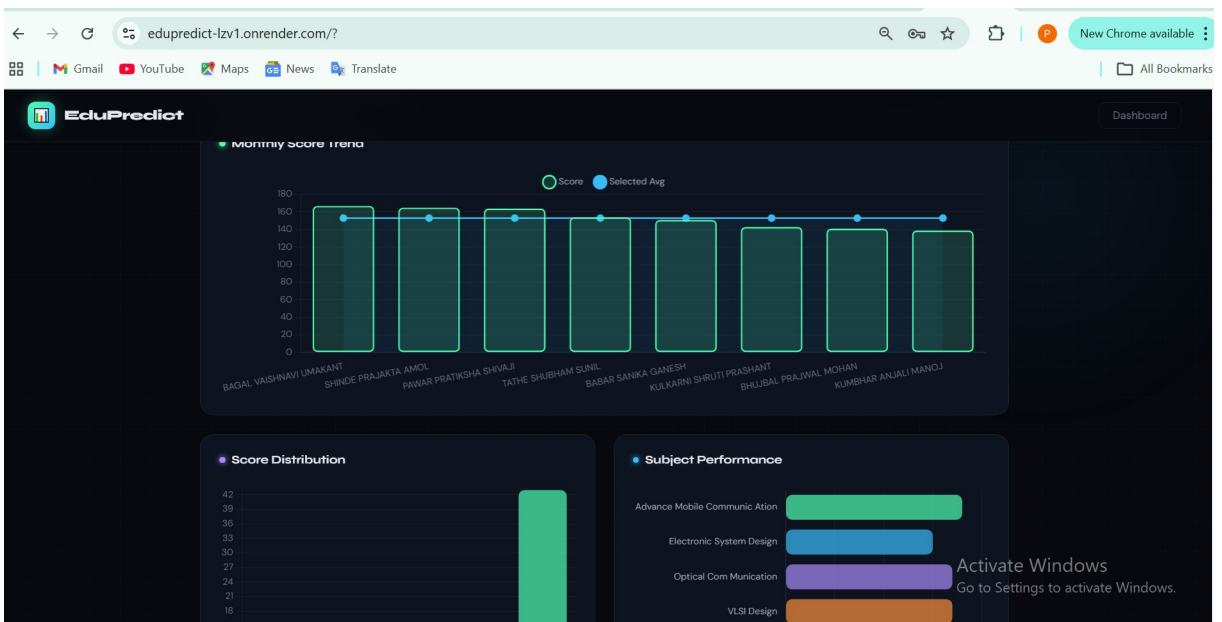


Figure 2 Project Result

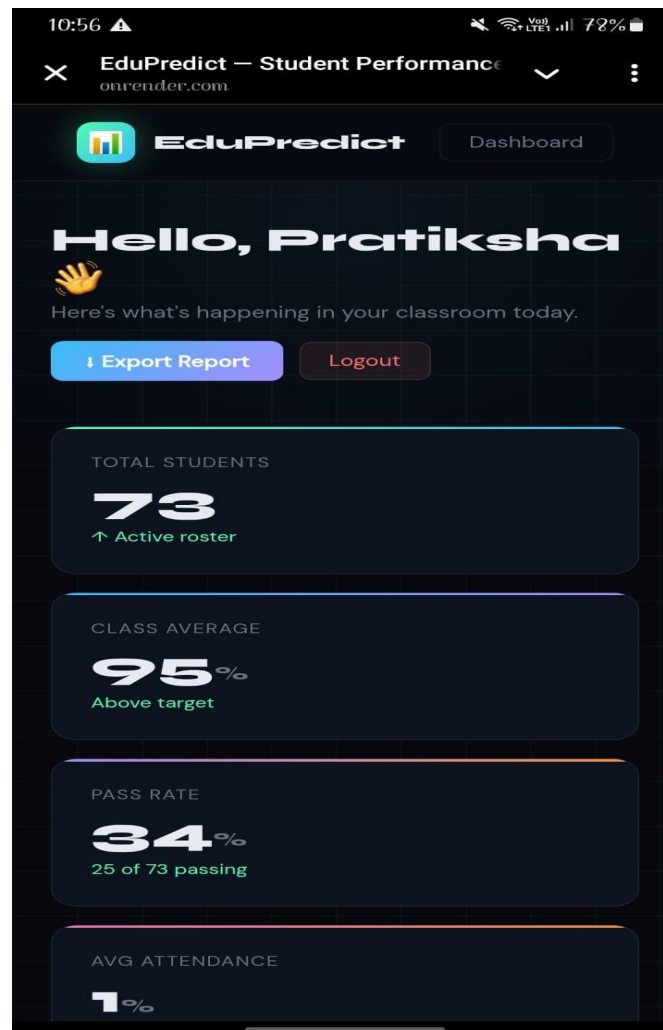


Figure 3 Mobile Interface

The proposed system was implemented to continuously monitor and evaluate student performance in real time. It utilizes RFID technology along with machine learning algorithms to collect and analyze student data. Attendance is automatically recorded using RFID cards, while academic records are processed by the system for further analysis.

The collected information is stored in a database and displayed through a web-based interface, allowing teachers to easily access and track student performance. This setup reduces manual effort, improves accuracy, and provides better control over academic monitoring.

The system enables early identification of students who may be at risk, helping educators take timely actions to improve their performance. Overall, it contributes to a more efficient, reliable, and data-driven approach to managing student progress in educational institution

One of the major advantages of this system is its capability to identify students who are at risk at an early stage. This allows teachers and academic staff to take timely actions such as providing



personalized guidance, extra support, or mentoring. As a result, student performance can be improved, and the chances of failure can be reduced. The system also assists educators in refining their teaching methods by analyzing which factors have the greatest impact on student performance.

However, the system also faces certain challenges. The accuracy of the predictions largely depends on the availability and quality of the input data. If the data is incomplete, inconsistent, or biased, it may lead to incorrect or unreliable predictions. Moreover, issues related to data privacy and security must be carefully managed while handling sensitive student information.

Overall, the system serves as an effective solution for data-driven education. It supports better decision-making, enhances student performance, and contributes to the development of a smarter and more efficient learning environment.

5. CONCLUSION

The proposed AI-based Student Performance Prediction System provides an effective solution for monitoring and analyzing student progress in real time. By integrating RFID technology for automatic attendance tracking with machine learning algorithms for data analysis, the system ensures accurate and continuous evaluation of student performance. The collected data is processed and presented through a user-friendly interface, enabling educators to easily access insights and make informed decisions.

This system helps in early identification of students who may require additional academic support, thereby improving overall learning outcomes. It also reduces manual effort and minimizes errors associated with traditional evaluation methods. The solution is cost-effective, scalable, and suitable for modern educational environments, making it a reliable approach toward smart and data-driven education systems.

REFERENCES

- [1] 1. Badage, R. N., & Karande, K. J. (2016). Use of Information and Communication Technologies (ICT) in career planning of rural youth of India. Proc. the Annual International Conference on Intelligent Computing, Computer.
- [2] 2. Bhushan, S., & Karande, K. J. (2021). Advancing Social Media Analytics: A Robust Multi-Criteria Decision-Making Model-Based Framework. Webology 18 (6), 9339-9343.
- [3] 3. Bhushan, S., & Karande, K. J. (2023). ENHANCING RESEARCH IN SOCIAL MEDIA ANALYTICS WITH AN ADVANCED ROBUST MULTI-CRITERIA DECISION MAKING MODEL. Webology.
- [4] 4. Bokefode, J. D., Swapnaja A, U., Subhash V, P., Kailash J, K., & Sulabha S, A. (2015). Developing secure cloud storage system by applying AES and RSA cryptography algorithms with role based access control model. International Journal of Computer Applications 118 (12),



46-52.

- [5] 5. Burje, P. R., Karande, K. J., & Jagadale, A. B. (2014). Embedded on-board diagnostics system using CAN network. 2014 IEEE Global Conference on Wireless Computing & Networking (GCWCN), 31-35.
- [6] 6. Burje, P. R., Karande, K. J., & Jagadale, A. B. (2014). Embedded on-board diagnostics system using CAN protocol. 2014 International Conference on Communication and Signal Processing, 734-737.
- [7] 7. Daithankar, M. V., & Karande, K. J. (2014). Analysis and integration of skin color models used for human face detection. 2014 IEEE Global Conference on Wireless Computing & Networking (GCWCN), 70-74.
- [8] 8. Deepika, S., & Karande, K. J. (2021). Distance Log Mar Visual Acuity Comparison With Severity Of Diabetic Retinopathy. Webology (ISSN: 1735-188X) 18 (6).
- [9] 9. Deshmukh, S. G., Karande, K. J., Ogura, K., Kheraj, V., & Deshmukh, R. S. (2022). Post-Annealing Influence on Structural, Surface and Optical Properties of Cu₃BiS₃ Thin Films for Photovoltaic Solar Cells. Artificial Intelligence, Internet of Things (IoT) and Smart Materials for.
- [10] 10. Deshmukh, S. G., Kheraj, V., Karande, K. J., & Kulkarni, S. G. (2024). Thin Film Nanomaterials: Synthesis, Properties and Innovative Energy Applications. Bentham science publishers.
- [11] 11. Deshmukh, S. G., Kheraj, V., Karande, K. J., Panchal, A. K., & Deshmukh, R. S. (2019). Hierarchical flower-like Cu₃BiS₃ thin film synthesis with non-vacuum chemical bath deposition technique. Materials Research Express 6 (8), 084013.
- [12] 12. Deshpande, H. S., & Karande, K. J. (2016). A planar microstrip RF energy harvester 3D cube antenna for multiple frequencies reception. 2016 Conference on Advances in Signal Processing (CASP), 327-331.
- [13] 13. Deshpande, H., & Karande, K. (2016). Integrated CMOS 3D Microstrip Patch Antenna Prototype for Wireless Energy Harvesting. International Conference on Communication and Signal Processing 2016 (ICCASP).
- [14] 14. Deshpande, H., & Karande, K. J. (2018). Energy Optimal Radio Harvester for Multi Sensory System. 2018 IEEE Global Conference on Wireless Computing and Networking (GCWCN), 44-48.
- [15] 15. Deshpande, H., Karande, K. J., & Deshmukh, S. G. (2022). RF energy harvesting multi-frequency receptor model for micropower applications. AIP Conference Proceedings 2494 (1), 060002.
- [16] 16. Dhotre, V., & Karande, K. (2014). Refinement of data streams using Minimum Variance principle. 2014 International Conference on Contemporary Computing and Informatics.
- [17] 17. Gade, A. A., Karande, K. J., & Jagadale, A. B. (2015). Space vector modulation based



- feed control using three phase induction motor. International Journal of Modern Trends in Engineering and Research 2 (7), 44-46.
- [18] 18. Gaikwad, D. S., & Karande, K. J. (2016). Image processing approach for grading and identification of diseases on pomegranate fruit: An overview. International Journal of Computer Science and Information Technologies 7 (2).
- [19] 19. Gaikwad, D., Karande, K., & Deshpande, H. (2016). Pomegranate fruit diseases identification and grading. International Conference on Communication and Signal Processing 2016 (ICCASP).
- [20] 20. Gidde, N. D., Karande, K. A., Jadhav, S. S., Mistry, R., Mhetre, P., & Joshi, S. (2021). Microsponge: An Overview. Journal of University of Shanghai for Science and Technology 23, 671-682.
- [21] 21. Hofree, G., Ruvolo, P., Reinert, C., Bartlett, M. S., & Winkielman, P. (2012). Why are you smiling? In a strategic context, people's affective responses reflect the meaning of android's facial expressions. 2012 IEEE International Conference on Development and Learning and.
- [22] 22. Ingole, A. L., & Karande, K. J. (2018). Automatic age estimation from face images using facial features. 2018 IEEE Global Conference on Wireless Computing and Networking (GCWCN).
- [23] 23. Iyer, B., Nalbalwar, S. L., & Pathak, N. P. (2019). Computing, Communication and Signal Processing: Proceedings of ICCASP 2018. Springer.
- [24] 24. Jadhav, G. R., & Karande, K. J. (2014). Automatic vehicle number plate recognition for vehicle parking management system. Computer Engineering and Intelligent Systems, ISSN, 2222-1719.
- [25] 25. Jadhav, G. R., & Karande, K. J. (2015). Extraction of Vehicle Number Plate. International Journal of Innovations in Engineering and Techonology 6 (2).
- [26] 26. Joshi, A., & Karande, K. (2023). Comprehensive survey on analysis and modelling of femur bone fracture for an operative planning. Computer Methods in Biomechanics and Biomedical Engineering: Imaging.
- [27] 27. Joshi, A., & Karande, K. (2023). Comprehensive Way for Modeling of Femur Bone Fracture from CT Images. International Conference on Emerging Trends in Artificial Intelligence, Data.
- [28] 28. Joshi, A., Karande, K., & Gunaki, R. (2025). FEA-based Virtual Operation and Stress Distribution Analysis of DHS Screws in Proximal Femoral Bone Fractures: A Strategic Guide for Orthopedic Surgeons in Operational Planning. Journal of Pharmacology and Pharmacotherapeutics 16 (2), 202-213.
- [29] 29. Kailash J Karande, N. V. I. (2021). Multimodal Image Fusion Technique for Automated Correlation Identification in Medical Images. AU Patent 2,021,105,871.



- [30] 30. Kailash J, K. (2012). Modified Modular Independent Component Analysis (ICA) Approach for Face Recognition. INTERNATIONAL CONFERENCE ON INFORMATION TECHNOLOGY, ELECTRONICS AND.
- [31] 31. Kailash, K., Raza, A., Mahalingham, S., & Talwalkar, S. (2012). Outcome of universal-2 total wrist arthroplasty for rheumatoid arthritis: our experience at Wrightington. Orthopaedic Proceedings 94 (SUPP_XXXIX), 143-143.
- [32] 32. Kale, K. V. (2008). Advances in computer vision and information technology. IK International Publishing House.
- [33] 33. Karande, J. K., Talbar, N. S., & Inamdar, S. S. (2012). Face recognition using Oriented Laplacian of Gaussian (OLOG) and Independent Component Analysis (ICA). Digital Information and Communication Technology and it's Applications.
- [34] 34. Karande, K. J. (2012). Multiscale wavelet based edge detection and Independent Component Analysis (ICA) for Face Recognition. 2012 International Conference on Communication, Information & Computing.
- [35] 35. Karande, K. J. (2013). Localized spatiotemporal modular ICA for face recognition. 2013 IEEE Symposium on Computational Intelligence in Biometrics and Identity.
- [36] 36. Karande, K. J. (2020). Preface. IOP Conf.series.materail science and engg 814, 011001.
- [37] 37. Karande, K. J. (2022). Feed Dispense Monitoring Machine for Accurate Feeding of Hens in Poultry House. IN Patent 202,221,010,527 A.
- [38] 38. Karande, K. J., & Badage, R. N. (2016). Facial feature extraction using independent component analysis. Proceedings of the Annual International Conference on Intelligent Computing.
- [39] 39. Karande, K. J., & Prasad, P. S. (2020). Model Driven Methodology for JAVA. Unpublished.
- [40] 40. Karande, K. J., & Talbar, S. N. (2007). Simplified and modified approach for face recognition using PCA. 2007 IET-UK International Conference on Information and Communication.
- [41] 41. Karande, K. J., & Talbar, S. N. (2008). Face recognition under variation of pose and illumination using independent component analysis. ICGST-GVIP, ISSN.
- [42] 42. Karande, K. J., & Talbar, S. N. (2009). Independent component analysis of edge information for face recognition. International Journal of Image Processing IJIP 3 (3), 120-130.
- [43] 43. Karande, K. J., Katti, V. S., Sambhoji, S. S., Patil, K., Killedar, S., & Chavan, S. (2026). Secure Image Steganography: Comparing LSB, AES-LSB, and Steghide. 2026 IEEE International Conference on Industry 4.0, Artificial Intelligence.
- [44] 44. Kasture, A. M., Karande, K. J., & Nawale, S. D. (2024). Optimization of Harmonic Generation in Frequency Multiplying Circuit for Wireless Application. 2024 3rd Edition of IEEE



Delhi Section Flagship Conference (DELCON), 1-5.

- [45] 45. Kasture, A., Karande, K., & Nawale, S. (2024). Performance Analysis of Various Nonlinear Elements in Frequency Multiplying Circuits for Wireless Applications. INTERNATIONAL JOURNAL 12 (4), 1332-1336.
- [46] 46. Katti, V. S., & Karande, K. J. (2025). Emerging Trends and Innovations in Sentiment Analysis: A Comprehensive Review. International Conference on ICT for Sustainable Development, 158-166.
- [47] 47. Katti, V., & Karande, K. J. (2025). Personalized depression management system using llms and reinforcement learning: A survey. International Conference on Recent Trends in Machine Learning, IOT, Smart.
- [48] 48. Kawathekar, P. P., & Karande, K. J. (2014). 2014 International Conference on Signal propagation and computer technology (ICSPCT 2014). IEEE.
- [49] 49. Kawathekar, P. P., & Karande, K. J. (2014). Severity analysis of Osteoarthritis of knee joint from X-ray images: A Literature review. 2014 International Conference on Signal propagation and computer technology.
- [50] 50. Kawathekar, P. P., & Karande, K. J. (2015). Use of textural and statistical features for analyzing severity of radio-graphic osteoarthritis of knee joint. 2015 International Conference on Information Processing (ICIP), 1-4.
- [51] 51. Kendule, J. A., & Karande, K. (2024). A Survey of Internet of Things Frameworks for Crowd Management System. Modern Approaches in Machine Learning and Cognitive Science: A Walkthrough.
- [52] 52. Kendule, J. A., & Karande, K. J. (2023). Variable Synergic Squeeze Convolutional Equilibrium Network Enabled Crowd Management in IoT. International Journal of Image, Graphics and Signal Processing 15 (4), 69.
- [53] 53. Lale, D. P., & Karande, K. J. (2016). Gender classification using facial features. Int. J. Adv. Res. Electron. Commun. Eng.(IJARECE) 5 (9), 2227-2231.
- [54] 54. Mahajan, A. S. B., & Karande, K. J. (2015). PCA and DWT based multimodal biometric recognition system. 2015 International Conference on Pervasive Computing (ICPC), 1-4.
- [55] 55. Mahesh, K. K., Kishore, P., & Kailash, J. K. (2017). Survey on iris image analysis. Indian J. Sci. Technol 10 (9), 1-15.
- [56] 56. Mulay, A. V., & Karande, K. J. (2016). Water quality monitoring system based on wireless sensor network. International Journal of Innovations in Engineering Research and Technology, 1-4.
- [57] 57. Mulik, S., Dhobale, N., Pujari, K., & Karande, K. (2022). The Use of Artificial Intelligence-Based Models for Biomedical. Artificial Intelligence, Internet of Things (IoT) and Smart Materials for.



- [58] 58. Nagaswarupa, H. P., Sillanpää, M. E. T., Murthy, H. C. A., & Naik, R. (2024). Multifunctional inorganic nanomaterials for energy applications. CRC Press.
- [59] 59. Nandgaonkar, V. N., & Karande, K. J. (2021). Significance Of Artificial Intelligence and Machine Learning Algorithms in Brain Tumor Diagnosis. Solid State Technology 64 (2), 7125-7131.
- [60] 60. Patil, P. G., & Karande, K. J. (2016). Brain tumor detection techniques: a survey. Int Res J Eng Technol (IRJET) 3 (10).
- [61] 61. Patil, P. G., Karande, K. J., & Surwase, S. V. (2022). Detection of brain tumor using optimized fuzzy C-means and SVM classifier. AIP Conference Proceedings 2494 (1), 020007.
- [62] 62. Shaikh, K. M., Karande, K. J., & Surwase, S. V. (2018). Nested slot suspended patch antenna using CST microwave studio. 2018 International Conference on Information, Communication, Engineering and.
- [63] 63. Surwase, S. V., & Karande, K. J. (2014). Technical aspects in development of Marathi calculator using text to speech synthesizer. 2014 IEEE Global Conference on Wireless Computing & Networking (GCWCN), 92-96.
- [64] 64. Unnikrishnan, S., Surve, S., & Bhoir, D. (2011). Advances in Computing, Communication and Control: International Conference, ICAC3 2011, Mumbai, India, January 28-29, 2011. Proceedings. Springer Science & Business Media.
- [65] 65. Unnikrishnan, S., Surve, S., & Bhoir, D. (2013). Advances in Computing, Communication, and Control: Third International Conference, ICAC3 2013, Mumbai, India, January 18-19, 2013, Proceedings. Springer.
- [66] 66. Aasawari Boxey, D. A. O. M., Jadhav, A., Gade, P., & Ghanti, P. (2022). Face Recognition using Raspberry Pi. Journal of Image Processing and Intelligent Remote Sensing 2 (4), 15-23.
- [67] 67. ABHANGRAO, M. R., JADHAV, M. S., GHODKE, M. P., & Mulani, A. (2017). Design And Implementation Of 8-bit Vedic Multiplier. International Journal of Research Publications in Engineering and Technology.
- [68] 68. Aiwale, S., Kolte, M. T., Harpale, V., Bendre, V., Khurge, D., & Bhandari, S., et al. (2024). Non-invasive anemia detection and prediagnosis. Journal of Pharmacology and Pharmacotherapeutics 15 (4), 408-416.
- [69] 69. Altaf O. Mulani, M. S., & Jadhav, M. M. (2022). Painless Machine Learning approach to estimate blood glucose level of non-invasive device. Artificial Intelligence, Internet of Things (IoT) and Smart Materials for.
- [70] 70. Altaf O. Mulani, P. G. F., Sardey, M. P., Kinage, K., & Sadanand, S., et al. (2024). ML-powered Internet of Medical Things (MLIoMT) Structure for Heart Disease Prediction. Journal of Pharmacology and Pharmacotherapeutics 16 (1), 1-8.



- [71] 71. Anil, D., & A. O., M. (2024). Smart farming using IOT based Agri BOT. *Naturalista Campano* 28 (1), 723-729.
- [72] 72. AnnaSaheb S Dandage, A. O. M., Rupnar, V. R., & Pise, T. A. (2025). IoT-Powered Weather Monitoring and Irrigation Automation: Transforming Modern Farming Practices. *International Journal of Telecommunications & Emerging Technologies* 11 (1).
- [73] 73. Aryan Ganesh Nagtilak, A. O. M., Ulegaddi, S. N., & Mane, M. (2023). Automatic Solar Powered Pesticide Sprayer for Farming. *International Journal of Microwave Engineering and Technology* 9 (2).
- [74] 74. Babaladi, S. S., & Mulani, A. O. (2026). An Overview on Timely Detection of Plant Leaf Disorder Using Deep Learning and Machine Learning Models. *2026 Contemporary Computing Innovations Conference (CCIC)*, 1-6.
- [75] 75. Basawaraj Birajadar, G., Osman Mulani, A., Ibrahim Khalaf, O., & Farhah, N., et al. (2024). Epilepsy identification using hybrid CoPrO-DCNN classifier. *University of Bahrain*.
- [76] 76. Bhanvase, T. M., Mulani, A. O., & Pise, A. C. (2025). Guava Disease Detection Using Deep Convolutional Neural Networks. *2025 IEEE 7th International Conference on Cybernetics, Cognition and Machine*.
- [77] 77. Chaudhari, K. R., Mulani, A. O., Gajare, M. P., Jadhav, V., Yawle, P., & Bang, A. V. (2026). Bit error rate analysis of various error correction codes with concatenated RS-convolutional codes. *Journal of Discrete Mathematical Sciences and Cryptography* 29 (1), 199-214.
- [78] 78. Deshmukh, A. B., Deshmukh, M. T., Chincholkar, Y. D., Patil, A. S., & Mulani, A. O. (2026). Predictive modeling of drug release kinetics using supervised machine learning algorithms. *Int. J. Drug Deliv. Technol* 16, 978-986.
- [79] 79. Gadade, B., & Mulani, A. (2022). Automatic system for car health monitoring. *International Journal of Innovations in Engineering Research and Technology*.
- [80] 80. Gadade, B., Mulani, A. O., & Harale, A. D. (2024). Iot based smart school bus and student monitoring system. *Naturalista Campano* 28 (1), 730-737.
- [81] 81. Gadade, B., Mulani, A. O., & Harale, A. D. (2024). IoT Based Smart School Bus and Student Tracking System. *IoT Based Smart School Bus and Student Tracking System*.
- [82] 82. Ghodake, R. G., & Mulani, A. O. (2016). Microcontroller based automatic drip irrigation system. *Techno-societal 2016, international conference on advanced technologies for*.
- [83] 83. Ghodke, R. G., Birajdar, G. B., Mulani, A. O., Shinde, G. N., & Pawar, R. B. (2024). Design and Development of an Efficient and Cost-Effective surveillance Quadcopter using Arduino. *Sanshodhak*.
- [84] 84. Ghodke, R. G., Birajdar, G. B., Mulani, A. O., Shinde, G. N., & Pawar, R. B. (2024). Design and Development of Wireless Controlled ROBOT using Bluetooth Technology.



Sanshodhak.

- [85] 85. Jadhav, D. V. S., Salunke, G. D., Chaudhari, K. R., Mulani, D. A. O., & Thigale, D. S. P., et al. (2024). Deep Learning-Based Face Mask Recognition in Real-Time Photos and Videos, Afr. J. Biomed. Res 27.
- [86] 86. Jadhav, D. V. S., Salunkhe, D. S. S., Salunkhe, D. G., Yawle, P. R., & Pol, D. R. S., et al. (2024). Iot Based Health Monitoring System for Human, Afr. J. Biomed. Res 27.
- [87] 87. Jadhav, H. M., Mulani, A., & Jadhav, M. M. (2022). Design and development of chatbot based on reinforcement learning. Machine learning algorithms for signal and image processing, 219-229.
- [88] 88. Jadhav, K. P., Pawar, A., Shinde, A., Salunkhe, R., Sarade, V., & Mulani, A. O. (2024). IOT Based Industrial Power Loss Reducer Using Power Compensation. International Conference on Data Science, Machine Learning and Applications.
- [89] 89. Jadhav, V. S., Salunkhe, S. S., Salunkhe, G., Yawle, P. R., Pol, R. S., & Mulani, A. O., et al. (2024). IOT based health monitoring system for Human. African Journal of Biomedical Research, 1309-1315.
- [90] 90. Kalyankar, P. A., Mulani, A. O., Thigale, S. P., Chavhan, P. G., & Jadhav, M. M. (2022). Scalable face image retrieval using AESC technique. Journal Of Algebraic Statistics 13 (3), 173.
- [91] 91. Kambale, K. S., Sawant, N. M., Mulani, A. O., More, V. P., & Zambare, S. A. (2024). RNN-LSTM Based Model for Automatic Heart Disease Prediction Using the UCI Heart Disease Dataset. International Conference on Data Science, Machine Learning and Applications.
- [92] 92. Kamble, A., & Mulani, A. O. (2022). Google assistant-based device control. Int. J. of Aquatic Science 13 (1), 550-555.
- [93] 93. Kapase, P., Shrikhande, P., & Lokhande, S. (2022). IOT based plant monitoring system.
- [94] 94. Karche, S. N., & Mulani, A. O. (2023). AESC Technique for Scalable Face Image Retrieval. International Journal of Innovative Research in Computer and Communication ... 52* Electric vehicle parameters estimation using Web portal AO Mulani Recent Trends in Electronics and Communication Systems 10 (3).
- [95] 95. Kedar, M. S., & Mulani, A. (2021). IoT based soil, water and air quality monitoring system for pomegranate farming. Journal of Electronics, Computer Networking and Applied Mathematics (JECNAM).
- [96] 96. Kolekar, S. D., Walekar, V. B., Patil, P. S., Mulani, A. O., & Harale, A. D. (2022). Password Based Door Lock System. Int. J. of Aquatic Science 13 (1), 494-501.
- [97] 97. Kolhe, V. A., Pawar, S. Y., Gohery, S., Mulani, A. O., Sundari, M. S., & Kiradoo, G., et al. (2024). Computational and experimental analyses of pressure drop in curved tube structural sections of Coriolis mass flow metre for laminar flow region. Ships and Offshore Structures 19 (11), 1974-1983.



- [98] 98. Kulkarni, P. R., Mulani, A. O., & Mane, P. B. (2016). Robust invisible watermarking for image authentication. *Emerging Trends in Electrical, Communications and Information Technologies*.
- [99] 99. Kulkarni, T. M., Mulani, A. O., & Madan, T. (2024). Deep Learning Based Face-Mask Detection: An Approach to Reduce Pandemic Spreads in Human Healthcare. *African Journal of Biological Sciences* 6 (6).
- [100] 100. Kutubuddin Sayyad Liyakat, K., O Mulani, A., Ibrahim Khalaf, O., & Algburi, S., et al. (2024). IoT Devices for Monitoring Health Status and Vital Signs in Patients with Cancer. *International Journal of Computing and Digital Systems* 16 (1), 1-12.
- [101] 101. Liyakat, K. K. S., Warhade, N. S., Pol, R. S., Jadhav, H. M., & Mulani, A. O. (2022). Yarn quality detection for textile industries using image processing. *Journal Of Algebraic Statistics* 13 (3), 3465-3472.
- [102] 102. M., C. J. M. (2021). Machine Learning based Autonomous Fire Combat Turret. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)* 12 (2).
- [103] 103. Mandwale, A. J., & Mulani, A. O. (2015). Different Approaches For Implementation of Viterbi decoder on reconfigurable platform. *2015 International Conference on Pervasive Computing (ICPC)*, 1-4.
- [104] 104. Mandwale, A. J., & Mulani, A. O. (2016). Implementation of High Speed Viterbi Decoder using FPGA. *International Journal of Engineering Research & Technology (IJERT)* 5 (2).
- [105] 105. Mandwale, A., & Mulani, A. O. (2014). Implementation of convolutional encoder & different approaches for viterbi decoder. *IEEE International Conference on Communications, Signal Processing Computing*.
- [106] 106. Mane, A. (2015). Area Efficient Technique for implementation of Discrete Wavelet Transform on FPGA. *IEEE Conference on Engineering & Technology (ICETECH)*.
- [107] 107. Mane, A. (2017). An Efficient implementation of DWT for image compression on reconfigurable platform. *International Journal of Control Theory and Applications* 10 (15), 7.
- [108] 108. Mane, A. (2018). High-Speed Area-Efficient Implementation of AES Algorithm on Reconfigurable Platform. *Computer and Network Security*.
- [109] 109. Modi, S., Misal, V., Kulkarni, S., & Mulani, A. O. (2025). Plant Health AI Analyzer Using Supervised Learning. *Plant Health* 5 (4).
- [110] 110. More, S. S., & Mulani, A. O. (2024). Deep Learning Assisted Analysis of Ocular Multi Diseases-A Review. *International Conference on Data Science, Machine Learning and Applications*.
- [111] 111. More, S. S., & Mulani¹, A. O. (2026). Deep Learning Assisted Analysis of Ocular. *Proceedings of the 6th International Conference on Data Science, Machine*.



- [112] 112. Mulani, A. O. (2016). Optical Communication. Electrotech Publications, Satara.
- [113] 113. Mulani, A. O. (2025). A Robust Image Watermarking Framework Integrated with AES Encryption for Secure Digital Media Protection. Journal of Advancement in Electronics Signal Processing 2 (3), 47-56.
- [114] 114. Mulani, A. O. (2025). Electric Vehicle Parameters Estimation Using Web Portal, Recent Trends in Electronics & Communication Systems, Volume 10, Issue 3, 2023. International Open-Access, Double-Blind Multidisciplinary Online 5 (4).
- [115] 115. Mulani, A. O., & Kulkarni, T. M. (2023). Face mask detection system using deep learning: a comprehensive survey. International Conference on Emerging Trends in Artificial Intelligence, Data.
- [116] 116. Mulani, A. O., & Mane, P. (2018). Secure and area efficient implementation of digital image watermarking on reconfigurable platform. International Journal of Innovative Technology and Exploring Engineering 8.
- [117] 117. Mulani, A. O., & Mane, P. B. (2014). Area optimization of cryptographic algorithm on less dense reconfigurable platform. 2014 International Conference on Smart Structures and Systems (ICSSS), 86-89.
- [118] 118. Mulani, A. O., & Mane, P. B. (2016). Area efficient high speed FPGA based invisible watermarking for image authentication. Indian journal of Science and Technology 9 (39), 1-6.
- [119] 119. Mulani, A. O., & Mane, P. B. (2017). Fast and Efficient VLSI implementation of DWT for image compression. International Journal for Research in Applied Science and Engineering.
- [120] 120. Mulani, A. O., & Shinde, G. N. (2021). An approach for robust digital image watermarking using DWT-PCA. Journal of Science and Technology 6 (1).
- [121] 121. Mulani, A. O., Bang, A. V., Birajadar, G. B., Deshmukh, A. B., & Jadhav, H. M., et al. (2024). IoT based air, water and soil monitoring system for pomegranate farming.
- [122] 122. Mulani, A. O., Birajadar, G., Ivković, N., Salah, B., & Darlis, A. R. (2023). Deep learning based detection of dermatological diseases using convolutional neural networks and decision trees. Traitement du Signal 40 (6), 2819.
- [123] 123. Mulani, A. O., Deshmukh, M., Jadhav, V., Chaudhari, K., & Mathew, A. A., et al. (2025). Transforming drug therapy with deep learning: the future of personalized medicine. Drug Research 75 (08), 326-333.
- [124] 124. Mulani, A. O., Jadhav, M. M., & Seth, M. (2022). Painless Non-invasive blood glucose concentration level estimation using PCA and machine learning. The CRC Book entitled Artificial intelligence, Internet of Things (IoT) and.



- [125] 125. Mulani, A. O., Liyakat, K. K. S., Warade, N. S., Patil, A., Kolte, M. T., Kinage, K., & Rana, M., et al. (2026). Iot sensors in a wireless environment for healthcare monitoring: A framework for fault detection. *Journal of Pharmacology and Pharmacotherapeutics* 17 (1), 94-100.
- [126] 126. Mulani, A. O., Modi, S. P., Misal, V. M., & Kulkarni, S. R. (2026). Development of an Eco-Efficient Pesticide Spraying Rover for Sustainable Farming. 2026 IEEE International Conference on Emerging Computing and Intelligent.
- [127] 127. Mulani, A. O., Patil, R. M., & Liyakat, K. K. S. (2023). DISCRIMINATIVE APPEARANCE MODEL FOR ROBUST ONLINE MULTIPLE TARGET TRACKING.
- [128] 128. Mulani, A. O., Patil, R. M., & Liyakat, K. K. S. (2023). Modelo de apariencia discriminatorio para un sólido seguimiento en línea de múltiples objetivos. *Télématique: Revista Electrónica de Estudios Telemáticos* 22 (1), 24-43.
- [129] 129. Mulani, A. O., Warade, N. S., Khalaf, O. I., Bsoul, Q., Waghole, D., & Jadhav, M., et al. (2025). Resource management optimisation of OFDM-IDMA system for 5G multi-tier backhaul networks. *Egyptian Informatics Journal* 31, 100756.
- [130] 130. Mulani, A., & Mane, P. B. (2016). DWT based robust invisible watermarking. Scholars' Press.
- [131] 131. Mulani, D. (2016). Design of Computer/Laptop independent data transfer system from one USB flash drive to another using ARM 11 processor. *International Journal of Science, Engineering and Technology Research* 5 (12).
- [132] 132. Mulani, D. A. (2025). Design and Implementation of 256-bit Vedic Multiplier on Reconfigurable Platform. *Journal of Materials & Metallurgical Engineering* 15 (3).
- [133] 133. Mulani, D. A. O. (2019). Effect of rotation and projection on real time hand gesture recognition system for human computer interaction. *Journal of The Gujrat Research Society* 21 (16), 3710-3718.
- [134] 134. Mulani, D. A. O. (2024). A comprehensive survey on semi-automatic solar-powered pesticide sprayers for farming. *Journal of Energy Engineering and Thermodynamics (JEET)* ISSN, 2815-0945.
- [135] 135. Mulani, P. (2018). High Speed Area Efficient FPGA Implementation of AES Algorithm. *Institute of Advanced Engineering and Science* 7 (3), 157-165.
- [136] 136. Mulani, P. (2019). High throughput and area efficient FPGA Implementation of AES algorithm. *International Journal of Engineering and Advanced Technology* 8 (4), 519-523.
- [137] 137. Mulani, P. K. (2015). Application of MATLAB for Second Level Discrete Wavelet Transform through Filter Bank. *International Conference on Engineering and Technology (ICETECH)*, 4.
- [138] 138. Mulani, P. K. (2015). Robust invisible Watermarking for image authentication.



ICECIT 2015, 4.

- [139] 139. Mulani, P. R. K. (2015). Robust Invisible Digital Image Watermarking using Discrete Wavelet Transform. International Journal of Engineering Research & Technology (IJERT) 4 (01), 3.
- [140] 140. Mulani, R. (2015). Analysis of Biomedical image using wavelet transformation. International Journal of Innovations in Engineering Research and Technology.
- [141] 141. Mulani, R. A. O., Ganjewar, S. P., Kadu, P. S., & Khadke, R., et al. (2020). Smart Ration Automated Teller Machine For Pandemic Situations. IN Patent App. 202,021,048,830.
- [142] 142. Mulani, R. G. A. O. (2016). Sensor based Automatic Drip Irrigation System. Journal for Research 2 (2), 53-56.
- [143] 143. Mulani, R. K. A. O. (2017). Raspberry pi based voice operated Robot. International Journal of Recent Engineering Research and Development 2 (12).
- [144] 144. Mulani, T. (2024). Face Mask Detection on Real Time Images and Videos using Deep Learning. International Journal of Electrical Machine Analysis and Design (IJEMAD) 2.
- [145] 145. Nagane, U. P., & Mulani, A. O. (2021). Moving Object Detection and Tracking Using Matlab. Journal of Science and Technology 6 (Special Issue 1).
- [146] 146. Nagrale, M., Pol, R. S., Birajadar, G. B., Mulani, A. O., Kutubuddin, K., & Liyakat, S. (2024). Internet of robotic things in cardiac surgery: an innovative approach. Afr J Biol Sci 6 (6), 709-725.
- [147] 147. Nagtilak, M. A. G., Ulegaddi, M. S. N., Adat, M. A. S., & Mulani, A. O. (2021). Breast Cancer Prediction using Machine Learning. International Journal of Research in Science and Engineering 1 (2).
- [148] 148. Pathan, A. N., Shejal, S. A., Salgar, S. A., Harale, A. D., & Mulani, A. O. (2022). Hand gesture controlled robotic system. Int. J. of Aquatic Science 13 (1), 487-493.
- [149] 149. Pol, D. R. S., Deshmukh, A. B., Jadhav, M. M., Liyakat, K. K. S., & Mulani, A. O. (2022). I Button Based Physical Access Grid Based Realistic Optimal Path Planning. Journal of Algebraic Statistics, 11987-12002.
- [150] 150. Pol, R. S., Bhalerao, M. V., & Mulani, A. O. (2022). A real time IoT based System Prediction and Monitoring of Landslides. International Journal of Food and Nutritional Sciences 11 (7).
- [151] 151. Rahul, G. G., & Mulani, A. O. (2025). Microcontroller Based Drip Irrigation System. International Open-Access, Double-Blind, Peer-Reviewed, Refereed. Multidisciplinary Online 5 (4).
- [152] 152. S.Pol, D. D. R. (2021). Cloud Based Memory Efficient Biometric Attendance System Using Face Recognition. Stochastic Modeling & Applications 25 (2), 403-416.



- [153] 153. Sawant, N. M., Mulani, A. O., Kondooru, S., Linge, S. G., Gawande, P. G., & Koli, M. S. (2024). AgriRent: Renting the Farm Equipment. International Conference on Data Science, Machine Learning and Applications.
- [154] 154. Shinde, G., & Mulani, A. (2019). A ROBUST DIGITAL IMAGE WATERMARKING USING DWT -PCA. International Journal of Innovations in Engineering Research and Technology.
- [155] 155. Shinde, M., & Mulani, A. (2021). Effects Of Foot Reflexology On Lactation In Postnatal Mothers At A Tertiary Care Hospital In Karad. International Journal Of Current Research And Review 13 (16), 225-229.
- [156] 156. Shinde, R., & Mulani, A. O. (2015). Analysis of Biomedical Imagell. International Journal on Recent & Innovative trend in technology (IJRITT).
- [157] 157. Shinde, R., & Mulani, A. O. (2015). Biomedical Image fusion using Wavelet transform. International Conference On Current Advances in Electronics, Electrical and.
- [158] 158. Singh, S., Arya, K. V., Rodriguez, C. R., & Mulani, A. O. (2025). Emerging Trends in Artificial Intelligence, Data Science and Signal Processing.
- [159] 159. Swami, S. S., & Mulani, A. O. (2017). An efficient FPGA implementation of discrete wavelet transform for image compression. 2017 International Conference on Energy, Communication, Data Analytics and.
- [160] 160. Takale, D. A. M. S. (2023). A video watermarking technique with video and image as watermark using DWT and PCA. Journal of Northeastern University 25.
- [161] 161. Takale, S., & Mulani, A. (2022). DWT-PCA based video watermarking. Journal of Electronics, Computer Networking and Applied Mathematics (JECNAM).
- [162] 162. Takale, S., & Mulani, A. (2022). Video Watermarking System. International Journal for Research in Applied Science and Engineering.
- [163] 163. Thigale, S. P., Jadhav, H. M., Mulani, A. O., Birajadar, G. B., Nagrale, M., & Sardey, M. P. (2024). Internet of things and robotics in transforming healthcare services. Afr J Biol Sci (S Afr) 6 (6), 1567-1575.
- [164] 164. Ughade, U. R., Gikwad, S. M., Yeole, A. N., & Mulani, D. A. O. (2023). Automatic attendance system using face recognition. Journal of Image Processing and Intelligent Remote Sensing 3 (4), 11-18.
- [165] 165. Anjali Pise, K. K. (2025). A Genetic Algorithm-Driven Energy-Efficient Routing Strategy for Optimizing Performance in VANETs. Engineering, Technology & Applied Science Research 15 (No. 5, 2025), 27273-27278.
- [166] 166. Pise, A. C., & Karande, D. K. J. (2021). An exploratory study of cluster based routing protocol in VANET: a review. International Journal of Advanced Research in Engineering and Technology.



- [167] 167. Pise, A. C., & Karande, K. J. (2023). Energy-Efficient Optimal Routing Protocols in VANETs. 66th Annual IETE Convention, AIC-2023 September16-17.
- [168] 168. Pise, A. C., & Karande, K. J. (2024). Investigating Energy-Efficient Optimal Routing Protocols for VANETs: A Comprehensive Study. International Conference on Information and Communication Technology for.
- [169] 169. Pise, A. C., & Karande, K. J. (2024). K-mean energy efficient optimal cluster based routing protocol in vehicular ad-hoc networks. Modern Approaches in Machine Learning and Cognitive Science: A Walkthrough.
- [170] 170. Pise, A. C., & Karande, K. J. (2025). Architecture, Characteristics, Applications and Challenges in Vehicular Ad Hoc Networks. 27th IEEE International Symposium on Wireless Personal Multimedia.
- [171] 171. Pise, A. C., & Karande, K. J. (2025). Cluster head selection based on ACO in vehicular ad-hoc networks. Machine Learning for Environmental Monitoring in Wireless Sensor Networks.
- [172] 172. Pise, A., & Karande, K. (2025). Hybrid Remora Optimization Algorithm for Energy Efficient Optimal Routing Scheme in VANETs. International Journal of Intelligent Engineering & Systems 18 (9), 584.
- [173] 173. Shejwal, V., Karande, K. J., & Pise, A. C. (2025). Automated Pomegranate Disease Detection and Classification Using Vision Transformer. International Conference on Recent Trends in Machine Learning, IOT, Smart.
- [174] 174. Dhanawadel, A., Mulani, A. O., & Pise, A. C. (2024). IOT based Smart farming using Agri BOT. Sanshodhak.
- [175] 175. Maske, Y., Jagadale, A. B., Mulani, A. O., & Pise, A. C. (2023). Development of BIOBOT system to assist COVID patient and caretakers. European Journal of Molecular & Clinical Medicine 10 (01), 2023.
- [176] 176. Nale, D., Pise, A. (2025). Web Based – Application for Result Analysis. In: Singh, S., Arya, K.V., Rodriguez, C.R., Mulani, A.O. (eds) Emerging Trends in Artificial Intelligence, Data Science and Signal Processing. AIDSP 2023. Communications in Computer and Information Science, vol 2439. Springer, Cham. https://doi.org/10.1007/978-3-031-88759-8_1D.
- [177] 177. D. Nale and A. C. Pise, Smart Result Analysis-pdf Extractor, 2024 IEEE International Students' Conference on Electrical, Electronics and Computer Science (SCEECS), Bhopal, India, 2024, pp. 1-6, doi: 10.1109/SCEECS61402.2024.10482279.
- [178] 178. C. Pise, Jadhav P., Detection of Cast Iron Composition by Cooling Curve Analysis using Thermocouple Temperature Sensor, 2nd International Conference on Engineering Technology, Science and Management Innovation (ICETSMI – 2018), 2nd September 2018.
- [179] 179. C. Pise, Facial Expression Recognition Using Facial Features, IEEE International



Conference on Communication and Electronics Systems (ICCES 2018), October 2018.

- [180] 180. C. Pise, Jadhav P, Estimating Parameters of Cast Iron Composition using Cooling Curve Analysis, IEEE International Conference on Communication and Electronics Systems (ICCES 2018), Coimbatore, October 2018.
- [181] 181. Pise, A. C. (2016, December). Android based Portable Health Support System. In International Conference on Innovations in Engineering and Technology (CIET 2016), SKN Sinhgad College of Engineering (pp. 30-31).
- [182] 182. A Pise, A. C. (2016, December). Baysian Classifier & FCM Segmentation for Lung Cancer Detection in early stage. In International Conference on Innovations in Engineering and Technology (CIET 2016), SKN Sinhgad College of Engineering (pp. 30-31).
- [183] 183. Pise, A. C. (2016, December). Cast Iron Composition Measurement by Coding Curve Analysis. In International Conference on Innovations in Engineering and Technology (CIET 2016), SKN Sinhgad College of Engineering (pp. 30-31).
- [184] 184. Pise, A. C. (2016, December). War field Intelligence Defence Flaging Vehicle. In International Conference on Innovations in Engineering and Technology (CIET 2016), SKN Sinhgad College of Engineering (pp. 30-31).
- [185] 185. C. Pise, [Segmentation of Optic](#) Disk and Optic Cup from retinal Images, ICEECMPE – Chennai, June 2015
- [186] 186. Pise, A. C. (2015, April). Diseases Detection of Pomegranate Plant. In IEEE sponsored International Conference on Computation of Power, Energy, Information and Communication (pp. 22-23).
- [187] 187. P. V. Bankar and A. C. Pise, Face recognition by using Gabor and LBP, 2015 International Conference on Communications and Signal Processing (ICCSP), Melmaruvathur, India, 2015, pp. 0045-0048, doi: 10.1109/ICCSP.2015.7322425.
- [188] 188. Lole, A. C. Pise and S. V. Surwase, Efficient implementation of UTAMF Algorithm for edge preservation on FPGA, 2015 International Conference on Green Computing and Internet of Things (ICGCIoT), Greater Noida, India, 2015, pp. 667-670, doi: 10.1109/ICGCIoT.2015.7380547.
- [189] 189. Pise, A. C. (2014). Single Chip Solution For Multimode Robotic Control. Ist IEEE International Conference on Computing Communication and Automation, 26-27.
- [190] 190. S. A. Thite, A. C. Pise and A. B. Jagadale, Single Chip Solution for Multimode Robotic Control, 2015 International Conference on Computing Communication Control and Automation, Pune, India, 2015, pp. 555-557, doi: 10.1109/ICCUBEA.2015.114.
- [191] 191. Lole Bhagyashri A., Pise A.C and Surwase S. V., Area optimized implementation of unsymmetric trimmed adaptive Median Filter for edge preservation on FPGA, 2015 International Conference on Green Computing and Internet of Things (ICGCIoT), Greater Noida,



- India, 2015, pp. 86-89, doi: 10.1109/ICGCIoT.2015.7380434.
- [192] 192. Pise, A. C., & Katti, V. S. (2014), Efficient Design for Monitoring of Greenhouse Parameters using Zigbee Wireless Sensor Network. In fifth SARC international conference IRF, IEEE forum ISBN (pp. 978-93).
- [193] 193. Pise, A. C., & Bankar, P. (2014, April). Face Recognition using Color Local Texture Features. In International Conference on Electronics and Telecommunication, Electrical and Computer Engineering.
- [194] 194. Pise, A. C. (2014, April). Monitoring parameters of Greenhouse using Zigbee Wireless Sensor Network. In 1st International Conference on Electronics and Telecommunication, Electrical and Computer Engineering (pp. 5-6).
- [195] 195. Pise, A., & Deshmukh, A. (2010, April). Compensation schemes and performance Analysis of IQ Imbalances in Direct Conversion Receivers. In Proceedings of the 2009 International Conference on Signals, Systems and Automation (ICSSA 2009). Universal-Publishers.
- [196] 196. Pise A., Nale D. Web Based – Application for Result Analysis, Communications in Computer and Information Science 2439 CCIS 2025, Scopus Indexed
- [197] 197. Prof. A. C. Pise, Namrata Dabade, Sumitra Deshmane, Puja Gavade, AI Maze Escape Game Using Minmax Algorithm, International Journal of Advanced Research in Science, Communication and Technology, Volume 5, Issue 4, October 2025, ISSN: 2581-9429. [10.48175/IJARSCT-29506](https://doi.org/10.48175/IJARSCT-29506)
- [198] 198. Prof. Anjali Pise, Mr. Omkar Kumbhar, Mr. Sujal Mane, Mr. Ruturaj Patil, AI ChatBot Using Python, International Journal of Advanced Research in Science, Communication and Technology, Volume 5, Issue 4, October 2025, ISSN: 2581-9429. [10.48175/IJARSCT-29509](https://doi.org/10.48175/IJARSCT-29509)
- [199] 199. Prof. Anjali Pise, Mr. Omkar Kumbhar, Mr. Sujal Mane, Mr. Ruturaj Patil, AI ChatBot Using Python – A Systematic Review, International Journal of Advanced Research in Science, Communication and Technology, Volume 5, Issue 4, October 2025, ISSN: 2581-9429.
- [200] 200. Niharika Bodake, Akshata Gaurkar, Vaishnavi Chavan, Vaishnavi Bhosale, Prof. A. C. Pise, A Review on IoT Based Solid Waste Management System, International Journal of Advanced Research in Science, Communication and Technology, Volume 5, Issue 4, October 2025, ISSN: 2581-9429. [10.48175/IJARSCT-29434](https://doi.org/10.48175/IJARSCT-29434).
- [201] 201. Prof. A. C. Pise, Namrata Dabade, Sumitra Deshmane, Puja Gavade, Smart Wheelchair, International Journal of Advanced Research in Science, Communication and Technology, Volume 5, Issue 4, October 2025, ISSN: 2581-9429. [10.48175/IJARSCT-29437](https://doi.org/10.48175/IJARSCT-29437).
- [202] 202. Sanket Badave, Prajwal Bhujbal, Aaditya Aradhye, Vishant Bagewadikar, A. C. Pise (2025), “Drowsiness Detection System”, International Journal of Advanced Research in Science, Communication and Technology, Volume 5, Issue 4, October 2025, ISSN: 2581-9429.



[10.48175/IJARSCT-29405](#)

- [203] 203. Prof. A. C. Pise, Namrata Dabade, Sumitra Deshmane, Puja Gavade, AI Maze Escape Game Using Minmax Algorithm, International Journal of Advanced Research in Science, Communication and Technology, Volume 5, Issue 4, October 2025, ISSN: 2581-9429. [10.48175/IJARSCT-29505](#)
- [204] 204. Niharika Bodake, Akshata Gaurkar, Vaishnavi Chavan, Vaishnavi Bhosale, Prof. A. C. Pise, IoT Based Solid Waste Management System, International Journal of Advanced Research in Science, Communication and Technology, Volume 5, Issue 4, October 2025, ISSN: 2581-9429. [10.48175/IJARSCT-29415](#)
- [205] 205. Prof. A. C. Pise, Namrata Dabade, Sumitra Deshmane, Puja Gavade, Smart Wheelchair with Automated Breaking and GPS, International Journal of Advanced Research in Science, Communication and Technology, Volume 5, Issue 4, October 2025, ISSN: 2581-9429. [10.48175/IJARSCT-29435](#)
- [206] 206. Sanket Badave, Prajwal Bhujbal, Aaditya Aradhye, Vishant Bagewadikar, A. C. Pise (2025), A Review on Driver Drowsiness Detection Systems Using Image Processing and AI Techniques, International Journal of Advanced Research in Science, Communication and Technology, Volume 5, Issue 4, October 2025, ISSN: 2581-9429. [10.48175/IJARSCT-29403](#).
- [207] 207. A. C. Pise, Raut S., Smart Vehicle: A Systematic Review, International Journal of Research Publication and Reviews, ISSN 2582-7421, Vol 4, no 10, pp 2728-2731 October 2023.
- [208] 208. Sonali P. Raut, & A. C. Pise. (2023). Smart Vehicle. Journal of Electronics, Computer Networking and Applied Mathematics, 4(01), 38–47. <https://doi.org/10.55529/jecnam.41.38.47>
- [209] 209. Pise, A. C. IoT Based Landmine Detection Robot. International Journal of Research in Science & Engineering ISSN: 2394-8299 Vol: 03, No. 04, June-July 2023.
- [210] 210. Jayshri Prakash Patale, A. B. Jagadale, A. O. Mulani, & Anjali Pise (2022). A Systematic survey on Estimation of Electrical Vehicle. Journal of Electronics, Computer Networking and Applied Mathematics, (JECNAM) ISSN, 2799-1156. 3(01), 1–6. <https://doi.org/10.55529/jecnam.31.1.6>
- [211] 211. Pise, A. C. (2022). An IoT Based Real Time Monitoring of Agricultural and Micro irrigation system. International journal of scientific research in Engineering and management (IJSREM), VOLUME: 06 ISSUE: 04 | APRIL – 2022, ISSN: 2582-3930, 6(04).
- [212] 212. Harale, A. D., & Karande, K. J. (2026). Gabor-Augmented Two-Stream Framework With GoogLeNet-Based Temporal Attention for Semantic Dynamic Hand Gesture Recognition. Computer Animation and Virtual Worlds 37 (3), e70118.
- [213] 213. Gadade, B., Mulani, A. O., & Harale, A. D. (2024). Iot based smart school bus and student monitoring system. Naturalista Campano 28 (1), 730-737.



- [214] 214. Gadade, B., Mulani, A. O., & Harale, A. D. (2024). IoT Based Smart School Bus and Student Tracking System. IoT Based Smart School Bus and Student Tracking System.
- [215] 215. Kolekar, S. D., Walekar, V. B., Patil, P. S., Mulani, A. O., & Harale, A. D. (2022). Password Based Door Lock System. Int. J. of Aquatic Science 13 (1), 494-501.
- [216] 216. Avinash D. Harale and Kailash J. Karande , “Literature review on Dynamic Hand Gesture Recognition”,AIP Conference Proceeding ,31st Oct 2022, <https://doi.org/10.1063/5.0107577>
- [217] 217. A. D. Harale and K. J. Karande, “Gabor-Augmented Two-Stream Framework With GoogLeNet-Based Temporal Attention for Semantic Dynamic Hand Gesture Recognition,” Computer Animation and Virtual Worlds 37, no. 3 (2026): e70118, <https://doi.org/10.1002/cav.70118>.
- [218] 218. A. D. Harale , Amruta S. Bankar and K. J. Karande, “Gestures Controlled Home Automation using Deep Learning: A Review”, International Journal of Current Engineering and Technology, Vol.11, No.6.page no-617-621, Dec 2021
- [219] 219. D. Harale, Ms. Asma Hakim, Dr.K.J.Karande, “Hand gesture identification system for hearing and speech impairment”, TELEMATIQUE, Volume 23 Issue 1, 2024 page n- 497–501, April 2024
- [220] 220. A.D. Harale, Atik N. Pathan and A. O. Mulani, “Hand Gesture Controlled Robotic System” International Journal of Aquatic Science, ISSN: 2008-8019 Vol 13, Issue 01, Jan 2022
- [221] 221. D. Harale, K. J. Karande, Sagar S. Bhumkar, “Wireless Hand Geture Control Robot with Object Detection”, Journal of Image Processing and Intelligent Remote Sensing, ISSN 2815-0953, Vol. 3 No. 04 (2023), July 2023.
- [222] 222. A.D.Harale, Ms.Asma Hakim, Altaf Mulani, K.J.Karande, “Implementation of Human Gesture Recognition Using CNN”, June 2024 ,Journal of STM.
- [223] 223. Dheeraj Muttin and Avinash Harale, “IoT Based Personal Medical Assistant System”, “International Journal of Innovative Research in Technology (IJIRT)”, Volume 8 Issue 5 | ISSN: 2349-6002, October 2021.
- [224] 224. Vijay Waghmode and Avinash Harale, “Development of Alphanumeric Digital Fuel Gauge for Automotive Applications”, “International Conference on Communication and Signal Processing”, IEEE, April 4-6, 2019.
- [225] 225. Gorakhnath U. Waghmode and Avinash D. Harale, “A Cloud Computing Based WSNs for Agriculture Management”, Springer International Publishing, Conference: Techno-Societal DOI 10.1007/978-3-319-53556-2_107 December 2018.
- [226] 226. Sanaha S. Path and Avinash D. Harale, “Silkworm Eggs Counting System Using Image Processing Algorithm”, Springer International Publishing, Conference: Techno-Societal DOI:10.1007/978-3-319-53556-2_32_ December 2018.



- [227] 227. S. S. Kulkarni and A.D.Harale, “Image Processing for Driver’s Safety and Vehicle Control using Raspberry Pi and Webcam”, “IEEE International Conference on Power, Control, Signals and Instrumentation Engineering (ICPCSI)-IEEE,2017.
- [228] 228. Supriya A Salunke and Avinash D Harale, “Vehicle Tracking System for School Bus by Arduino”, International Research Journal of Engineering and Technology (IRJET), ISSN: 2395-0072, Volume: 04 Issue: 03, Mar -2017.
- [229] 229. Bhakti B.Bhaganagare Avinash.D.Harale, “Iris as Biometrics for Security System”, 2nd International Conference on Electrical, Computer and Communication Technologies, IEEE,2017.
- [230] 230. Supriya A Salunke and Avinash D Harale, “Vehicle Tracking System Using GPRS For School Bus”, International Journal of Engineering Research in Electrical and Electronic Engineering (IJEREEE), ISSN-2395-2717, Vol 3, Issue 1, January 2017.
- [231] 231. Sanaha S. Pathan and Avinash D. Harale, “Automated silkworm eggs count”, IEEE International Conference on Advances in Electronics, Communication and Computer Technology (ICAECCT)”, Rajarshi Shahu College of Engineering, Pune India. Dec 2-3, 2016.
- [232] 232. Sanaha S. Pathan and Avinash D. Harale, “Silkworm Egg Counting System Using Image Processing Algorithm -A Review”, International Research Journal of Engineering and Technology (IRJET) Volume: 03 Issue: 06, ISSN: 2395-0072, June-2016.
- [233] 233. Gorakhnath U.Waghmode and Avinash D.Harale , “A survey on: Cloud Enabled Agricultural Management”, International Journal of Research (IJR), e-ISSN: 2348-6848, p-ISSN: 2348-795X Volume 2, Issue 09, September 2015.
- [234] 234. Mrunmayee V. Daithankar, Kailash J. Karande and Avinash D. Harale, “Analysis of Skin Color Models for Face Detection”, International Conference on Communication and Signal Processing, IEEE April 3-5, 2014.
- [235] 235. Apurva Sutar, K. J. Karande and A. D. Harale, “Deep Learning based Automated Billing Cart”, International Journal of Advanced Research in Science, Communication and Technology (IJARSCT), ISSN (Online) 2581-9429, Volume 3, Issue 4, April 2023.
- [236] 236. Apurva Sutar, K. J. Karande and A. D. Harale , “Deep Learning Based Smart Billing Cart Using RFID and Yolo”, Purakala, ISSN: 0971-2143, Vol 32 Issue 1, 2023.
- [237] 237. Yogesh Jadhav, Kakade Vishal, Virendra Metkari, Siddheshwar S. Gangonda, “IOT Based Greenhouse Monitoring and Controlling System”, IJSRD - International Journal for Scientific Research & Development| Vol. 12, Issue 3, 2024 | ISSN (online): 2321-0613.
- [238] 238. Akash Lawande, Kishor Mane, Kunal Davad, Siddheshwar S. Gangonda, “Pipeline Survey Robot”, IJSRD - International Journal for Scientific Research & Development| Vol. 12, Issue 3, 2024 | ISSN (online): 2321-0613.
- [239] 239. Siddheshwar S. Gangonda, Prashant P. Patavardhan, Kailash J. Karande, “VGHN:



variations aware geometric moments and histogram features normalization for robust uncontrolled face recognition”, International Journal of Information Technology, <https://doi.org/10.1007/s41870-021-00703-0>.

- [240] 240. Siddheshwar Gangonda and Prachi Mukherji, “Speech Processing for Marathi Numeral Recognition using MFCC & DTW Features”, International Journal of Engineering Research and Applications (IJERA) pp. 118-122, ISSN: 2248- 9622.
- [241] 241. Siddheshwar S. Gangonda, Prashant P. Patavardhan, Kailash J. Karande, “Recognition of Marathi Numerals using MFCC and DTW Features”, 2nd International Conference on Recent Trends in Image Processing and Pattern Recognition (RTIP2R 2018), 21th -22th Dec., 2018, organized by Solapur University, Solapur in collaboration with University of South Dakota (USA) and Universidade de Evora (Portugal), India.
- [242] 242. Siddheshwar S. Gangonda, Prashant P. Patavardhan, Kailash J. Karande, “A Comprehensive Survey of Face Databases for Constrained and Unconstrained Environments”, 2nd IEEE Global Conference on Wireless Computing & Networking (GCWCN-2018), 23th-24th Nov. 2018, organized by STES's Sinhgad Institute of Technology, Lonavala, India.
- [243] 243. Siddheshwar Gangonda and Prachi Mukherji, “Speech Processing for Marathi Numeral Recognition”, ePGCON 2011, 26th April 2011 organized by MAEER’s MIT, Kothrud, Pune-38.
- [244] 244. Siddheshwar Gangonda, “Medical Image Processing”, Aavishkar-2K7, 17th and 18th March 2007 organized by Department of Electronics and Telecommunication Engineering, SVERI’s COE, Pandharpur.
- [245] 245. Bhaganagare, S., Chavan, S., Gavali, S., & Godase, V. (2025). The vocal cortex of the smart home: A review of esp32-based control and automation architectures. International Journal of Advanced Research in Science, Communication and Technology, 1071-1094.
- [246] 246. Bhaganagare, S., Chavan, S., Gavali, S., & Godase, V. V. (2025). Voice-controlled home automation with esp32: A systematic review of IoT-based solutions. Journal of Microprocessor and Microcontroller Research, 2(3), 1-13.
- [247] 247. Dange, R., Attar, E., Ghodake, P., & Godase, V. (2023). Smart agriculture automation using ESP8266 NodeMCU. J. Electron. Comput. Netw. Appl. Math,(35), 1-9.
- [248] 248. Dhope, V., Chavan, A., Hadmode, N., & Godase, V. (2024). Smart plant monitoring system. International Journal of Creative Research Thoughts (IJCRT). <https://www.ijcrt.org>.
- [249] 249. Ghadage, I., Ghadge, P., Kamble, R., Mhamane, R., & Godase, V. V. (2025). Development of a cloud-connected industrial temperature and humidity monitoring system. Development, 5(4).
- [250] 250. Ghadage, I., Ghadge, P., Kamble, R., Mhamane, R., & Godase, V. V. (n.d.).



Industrial environment monitoring using IoT: A comprehensive review on temperature and humidity control

- [251] 251. Godase, V., & Jagadale, A. (2019). Three element control using PLC, PID & SCADA interface. *International Journal for Scientific Research and Development*, 7(2), 1105-1109.
- [252] 252. Godase, V. (2023). Smart agriculture automation using ESP8266 node MCU. *Journal of Electronics, Computer Networking and Applied Mathematics (JECNAM)* ISSN, 2799(1156), 1.
- [253] 253. Godase, V., Mulani, A., Ghodak, R., Birajadar, G., Takale, S., & Kolte, M. (2024). A MapReduce and kalman filter based secure IIoT environment in hadoop. *Sanshodhak*, 25, 38-47.
- [254] 254. Godase, V., Pawar, P., Nagane, S., & Kumbhar, S. (2024). Automatic railway horn system using node MCU. *Journal of Control & Instrumentation*, 15(1).
- [255] 255. Godase, V., & Godase, J. (2024). Diet prediction and feature importance of gut microbiome using machine learning. *Evolution in Electrical and Electronic Engineering*, 5(2), 214-219.
- [256] 256. Godase, V., Jadhav, Y., & Kakade, V. (2024). IOT based greenhouse monitoring and controlling system. *International Journal for Scientific Research & Development*, 12(3), 138-140.
- [257] 257. Godase, V. (2025). A comprehensive review on PIR sensor-based light automation systems. *International Journal of Image Processing and Smart Sensors*, 1(1), 22-29.
- [258] 258. Godase, V. (2025). A comprehensive review on scalable Arduino radar platform for real-time object detection and mapping. *Journal of Microprocessor and Microcontroller Research e-ISSN*, 3048-6637.
- [259] 259. Godase, V. (2025). A comprehensive study of revolutionizing EV charging with solar-powered wireless solutions. *Advance Research in Power Electronics and Devices e-ISSN*, 3048-7145.
- [260] 260. Godase, V., Khiste, R., & Palimkar, V. (2025). Ai-optimized reconfigurable antennas for 6G communication systems. *Journal of RF and Microwave Communication Technologies*, 2(3), 1-12.
- [261] 261. Godase, V. V. (2025). Artificial intelligence and human society: A double-edged sword. *Impact of Artificial intelligence On Society*.
- [262] 262. Godase, V. (2025). Automated water distribution management and leakage mitigation using PLC systems. *Journal of Control and Instrumentation Engineering*.
- [263] 263. Godase, V., Altaf Mulani, S. T., Ghodake, R., & Birajadar, G. (2025). Blockchain for transparent irrigation water allocation and management. *Int. Water Irrig*, 44, 518-521.



- [264] 264. Godase, V. (2025). Case study: Combating adversarial attacks in AI systems. Artificial Intelligence Education And Innovation.
- [265] 265. Godase, V. (2025). Comparative study of ladder logic and structured text programming for PLC. Available at SSRN.
- [266] 266. Godase, V. (2025). Comprehensive review on explainable ai to addresses the black box challenge and its role in trustworthy systems. Sinhgad College of Engineering, Artificial Intelligence Education and Innovation, 127-132.
- [267] 267. Godase, V. (2025). Cross-domain comparative analysis of microwave imaging systems for medical diagnostics and industrial testing. Journal of Microwave Engineering & Technologies, 12(2), 39-48.
- [268] 268. Godase, V. (2025). Design and optimization of reconfigurable microwave filters using AI techniques. Journal of RF and Microwave Communication Technologies, 2(2), 26-41.
- [269] 269. Godase, V. V. (2025). Digital governance and the right to information in india: Pathways to transparency. Available at SSRN 5817082.
- [270] 270. Godase, V. (2025). Edge AI for smart surveillance: Real-time human activity recognition on low-power devices. International Journal of AI and Machine Learning Innovations in Electronics and Communication Technology, 1(1), 29-46.
- [271] 271. Godase, V. V. (2025). Education as empowerment: The key to women's socio-economic development. Available at SSRN 5536520.
- [272] 272. Godase, V. V. (2025). Fra-polar net: A novel image processing framework for transformer condition monitoring. Recent Trends in Semiconductor and Sensor Technology, 2(3), 11-24.
- [273] 273. Godase, V. (2025). Graphene-based nano-antennas for terahertz communication (source details not available on Scholar profile).
- [274] 274. Godase, V. (2025). IoT-MCU integrated framework for field pond surveillance and water resource optimization. International Journal of Emerging IoT Technologies in Smart Electronics and Communication.
- [275] 275. Godase, V. (2025). LoRaEdge-ESP32 synergy: Revolutionizing farm weather data collection with low-power, long-range IoT. Advance Research in Analog and Digital Communications.
- [276] 276. Godase, V. (2025). Navigating the digital battlefield: An in-depth analysis of cyber-attacks and cybercrime. International Journal of Data Science, Bioinformatics and Cyber Security, 1(1), 16-27.
- [277] 277. Godase, V. (2025). Optimized algorithm for face recognition using deep face and multi-task cascaded convolutional network (MTCNN). Optimum Science Journal, 66-74.
- [278] 278. Godase, V., Khiste, R., & Palimkar, V. (2025). Programmable smart surfaces and



intelligent reflecting surfaces for enhanced wireless propagation in indoor and outdoor environments. *International Journal of Satellite-Based Communication and Wireless Networks System*, 1(2), 29-41.

- [279] 279. Godase, V., Modi, S., Misal, V., & Kulkarni, S. (2025). Real-time object detection for autonomous drone navigation using yolov8, ll. *Advance Research in Communication Engineering and its Innovations*, 2(2), 17-27.
- [280] 280. Godase, V. (2025). Smart energy management in manufacturing plants using PLC and SCADA. *Advance Research in Power Electronics and Devices*, 2(2), 14-24.
- [281] 281. Godase, V. V. (2025). Vlsi-integrated energy harvesting architectures for battery-free IoT edge systems. *Journal of Electronics Design and Technology*, 2(3), 1-12.
- [282] 282. Godase, V. (2025). Voice controlled home automation using ESP32 and IoT-Based cloud integration. *International Journal of Advanced Research in Science, Communication and Technology*.
- [283] 283. Godase, V., Pandhare, A., & Pandhare, S. (2026). Mechanical and thermal characterization of natural fiber-reinforced epoxy composites for structural applications. *International Journal of Composite Materials and Matrices*, 12(1), 37-48p.
- [284] 284. Hipparkar, J., Mulani, A., Godase, V., Takale, S., & Ghodake, R. (2026). Real-time vision-based disease detection using edge-optimized deep learning models. In *2026 IEEE International Conference on Emerging Computing and Intelligent Technologies (ICoECIT)* (pp. 1-5). IEEE.
- [285] 285. Jamadade, V. K., Ghodke, M. G., Katakdhond, S. S., & Godase, V. (2025). A review on real-time substation feeder power line monitoring and auditing systems,”. *International Journal of Emerging IoT Technologies in Smart Electronics and Communication*, 1(2), 1-16.
- [286] 286. Jamadade, V., Ghodake, M., Katakdhond, S., & Godase, V. (n.d.). A comprehensive review of real-time feeder monitoring and auditing systems: Architectures, technologies, and analytics for the smart grid (source details not available on Scholar profile).
- [287] 287. Jamadade, V., Ghodake, M., Katakdhond, S., & Godase, V. (n.d.). A review on ai-powered image generation system using AI
- [288] 288. Kumbhar, B., Kokelar, S., Rohidas, K., & Jadhav, S. (n.d.). An overview of real-time bus tracking in smart bus stop system (source details not available on Scholar profile).
- [289] 289. Nagane, S. K., Pawar, P. S., & Godase, V. V. (2022). Cinematica sentiment analysis. *Journal of Image Processing and Intelligent Remote Sensing*, 2(3), 27-32.
- [290] 290. Vaibhav, V. G. (2025). A neuromorphic-inspired, low-power VLSI architecture for edge AI in IoT sensor nodes. *Journal of Microelectronics and Solid-State Devices*, 12(2), 41-47.
- [291] 291. Godase, M. V., Mulani, A., Ghodak, M. R., Birajadar, M. G., Takale, M. S., & Kolte, M. (2024). A MapReduce and Kalman filter based secure IIoT environment in Hadoop.



Sanshodhak, 25, 38–47.

- [292] 292. A.H.Shinde, V. V. Sardar, S. M. Ubale, and S. M. Moholkar, “IoT-Based Prepaid Energy Meter with Stealing Alert,” in *Proceedings of the 6th International Conference on Recent Trends in ...*, vol. 1737, 2026, DOI: 10.1007/978-981-95-5082-1_12.
- [293] 293. K. G. Landage, V. B. Manepatil, R. R. Mokashi, and A. H. Shinde, “IoT Based Smart Electricity Energy Meter,” *International Journal of Progressive Research in Engineering Management and Science (IJPREMS)*, vol. 05, no. 03, pp. 1298–1302, Mar. 2025.
- [294] 294. V. Dhage, A. Nagane, R. Menkudale, and A. H. Shinde, “The Evolution of Student Monitoring Systems in School Buses: A Detailed Review,” *International Journal of Electrical Machine Analysis and Design (IJEMAD)*, vol. 2, no. 1, Jan.–Jun. 2024, DOI: 10.37591/IJEMAD.
- [295] 295. S. Pandhare, S. Mali, K. Sahani, and A. H. Shinde, “Sentiment Analysis Based on Movie Review,” *International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)*, vol. 5, no. 4, Oct. 2025, DOI: 10.48175/IJARSCT-29496.
- [296] 296. S. Pandhare, S. Mali, K. Sahani, and A. H. Shinde, “A Systematic Review – Sentiment Analysis Based on Movie Review,” *International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)*, vol. 5, no. 4, Oct. 2025, DOI: 10.48175/IJARSCT-29495.
- [297] 297. P. Devram, A. Pise, G. Tanwade, and A. H. Shinde, “A Review on Voice Assistant,” *International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)*, vol. 5, no. 4, Oct. 2025, DOI: 10.48175/IJARSCT-29487.
- [298] 298. P. Devram, A. Pise, G. Tanwade, and A. H. Shinde, “Voice Assistant,” *International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)*, vol. 5, no. 4, Oct. 2025, DOI: 10.48175/IJARSCT-29488.
- [299] 299. P. Devram, A. Pise, G. Tanwade, and A. H. Shinde, “Literature Review on Smart Door Lock Using Keypad & GSM,” *International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)*, vol. 5, no. 4, Oct. 2025, DOI: 10.48175/IJARSCT-29452.
- [300] 300. P. Devram, A. Pise, G. Tanwade, and A. H. Shinde, “Smart Door Lock Using Keypad & GSM,” *International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)*, vol. 5, no. 4, Oct. 2025, DOI: 10.48175/IJARSCT-29438.
- [301] 301. Shubham Salunkhe, Pruthviraj Zambare, Sakshi Shinde, S. K. Godase. (2024). API Development for Cloud Parameter Curation International. *Journal of Electrical and Communication Engineering Technology*, 2(1). <https://doi.org/10.37591/ijecet>
- [302] 302. Badave, A., Pawale, A., Andhale, T., Godase, S. K., & STM JOURNALS. (2024). Smart home safety using fire and gas detection system. *Recent Trends in Fluid*



- Mechanics, 1, 35–43. <https://journals.stmjournals.com/rtfm>
- [303] 303. Asabe, H., Asabe, R., Lengare, O., & Godase, S. (2025). IOT- BASED STORAGE SYSTEM FOR MANAGING VOLATILE MEDICAL RESOURCES IN HEALTHCARE FACILITIES. INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREAMS), 05(03), 2427–2433. <https://www.ijprems.com>
- [304] 304. Karche, S. N., Mulani, A. O., Department of Electronics, SKN Sinhgad College of Engineering, Korti, & University of Solapur, Maharashtra, India. (2018). AESC Technique for Scalable Face Image Retrieval. International Journal of Innovative Research in Computer and Communication Engineering, 6(4), 3404–3405. <https://doi.org/10.15680/IJIRCCE.2018.0604036>
- [305] 305. Obstacle avoidance and Bluetooth control car. (2025). In International Journal of Advanced Research in Science, Communication and Technology (Vol. 5, Issue 4) [Journal-article]. <https://www.ijarsct.co.in>
- [306] 306. Ultrasonic and arduino based radar system. (2025). In International Journal of Advanced Research in Science, Communication and Technology (Vol. 5, Issue 4) [Journal-article]. <https://www.ijarsct.co.in>
- [307] 307. Shitole, M., Thokale, S., Patil, N., Shingare, S., & Godase, S. K. (2025). Review on Ultrasonic Sensor-Based RADAR Systems for object detection and distance Measurement. International Journal of Advanced Research in Science Communication and Technology, 392–408. <https://doi.org/10.48175/ijarsct-29424>
- [308] 308. Chavan, R., Chavan, S., Gaikwad, O., Gaikwad, K., & Godase, S. K. (2025). Review of smart robotic car systems for obstacle detection and Bluetooth Control. International Journal of Advanced Research in Science Communication and Technology, 521–536. <https://doi.org/10.48175/ijarsct-29432>
- [309] 309. Patil, S., Navale, P., Suryawanshi, V., & Godase, S. K. (2025). Advance solar tracking and automatic sprinkler irrigation system. In SKN Sinhgad College of Engineering, International Journal of Advanced Research in Science, Communication and Technology (Vol. 5, Issue 4) [Journal-article]. <https://www.ijarsct.co.in>
- [310] 310. Navale, P., Patil, S., Suryawanshi, V., & Prof. S. K. Godase. (2025). Smart Solar-Irrigo System. In International Journal of Advanced Research in Science, Communication and Technology (Vol. 5, Issue 4) [Journal-article]. <https://www.ijarsct.co.in>
- [311] 311. A Systematic Review- Sugarcane disease prediction. (2025). In International Journal of Advanced Research in Science, Communication and Technology (Vol. 5, Issue 4) [Journal-article]. <https://www.ijarsct.co.in>
- [312] 312. Zade, M. M., & Mukane, D. S. (2013). Enhancement of image with the help of switching median filter. In National Conference on Emerging Trends in Electronics &



Telecommunication.

- [313] 313. Zade, M. M., Rupanar, B. B., Shilawant, V. S., & Pawar, A. R. (2025). IOT flood monitoring & alerting system using Raspberry Pi-Pico. International Journal of Research Publication & Reviews, 6(3).
- [314] 314. Zade, M. M. (2019). Performance analysis of PSNR vs. impulse noise for the enhancement of image using SMF. In National Conference on Mathematical Modeling and Computational Intelligence.
- [315] 315. Zade, M. M. (2019). Dynamic clustering of wireless sensor network using modified AODV. In National Conference on Mathematical Modeling and Computational Intelligence.
- [316] 316. Zade, M. M. (2019). Classification of power quality disturbances using SVM & their efficiency comparison. In National Conference on Mathematical Modeling and Computational Intelligence.
- [317] 317. Zade, M. M. (2016). Performance analysis of median filter for enhancement of highly corrupted images. In National Conference on Advanced Trends in Engineering.
- [318] 318. Zade, M. M. (2016). Implementation of Reed Solomon encoder & decoder using FPGA. In National Conference on Advanced Trends in Engineering.
- [319] 319. Zade, M. M. (2016). Performance of switching median filter for enhancement of image. In National Conference on Mechatronics at Sinhgad Institute of Technology.
- [320] 320. Zade, M. M., Kambale, S. D., Mane, S. A., & Jadhav, P. M. (2025). IOT based early fire detection in jungles. RIGJA&AR, 2(1).
- [321] 321. Zade, M. R. (2017). Finite element analysis and fatigue analysis of crane hook with different materials. International Research Journal of Engineering and Technology, 4(01).
- [322] 322. Bansude, V. U., Togrikar, P. S., Karve, S. M., & Zade, M. M. (n.d.). A hybrid model for early PCSO detection using VGG16 CNN and XGBoost on multimodal data. Journal of Technical Education, 342.
- [323] 323. Mahadev, M., Rahulkumar, D. R., & Shirkande, D. (n.d.). Efficient routing and data fusion in IoT-WSNs for resilient forest fire monitoring.
- [324] 324. Mr. Zade Mahesh Mahadev published a paper in International Journal of Artificial Intelligence and Machine Learning on “An Iot-Enabled Resilient Wireless Sensor Network Framework For Early Forest Fire Detection And Monitoring” June 2026(SCOPUS)
- [325] 325. Mr. Zade Mahesh Mahadev published a paper in International Journal of Artificial Intelligence and Machine Learning on “A Reliable, Energy-Efficient And Secure Data Aggregation Framework For Resource Constrained Wireless Sensor Networks” June 2026(SCOPUS)
- [326] 326. Mr. Zade Mahesh Mahadev published a paper in Shodhkosh-Journal of Visual & Performing Arts on “Visualizing Forest Fire Risks: An Efficient and Resilient IoT-Enabled



Wireless Sensor Network Approach” March 2026

- [327] 327. Mr. Zade Mahesh Mahadev published a paper in Shodhkosh-Journal of Visual & Performing Arts on “The Aesthetics of Data Flow: Enhancing Reliability and Efficiency in Resource-Constrained Wireless Sensor Networks” March 2026
- [328] 328. Mr. Zade Mahesh Mahadev published a paper in Anveshana’s International Journal of Research in Engineering and Applied Sciences on “EFFICIENT ROUTING AND DATA FUSION IN IOT-WSNS FOR RESILIENT FOREST FIRE MONITORING” AIJREAS VOLUME 10, ISSUE 9 (2025, SEP) (ISSN-2455-6300) ONLINE
- [329] 329. Mr.M.M.Zade Presented the Paper on “Touchless Fingerprint Recognition System” (Paper-ID 907) in International Conference on “Advanced Technologies for Societal Applications: Techno-Societal 2022 organized by Shri Vithal Education & Research Institute(SVERI), Pandharpur from 9th December 2022 to 10th December 2022.
- [330] 330. Mr. Mahesh M Zade, “Performance analysis of PSNR Vs. Impulse Noise for the enhancement of Image using SMF”, Journal of Applied Science & Computations (JASC UGC Approved), Volume VI, Issue II, Feb.2019
- [331] 331. Mr. Mahesh M Zade, “Classification of Power Quality Disturbances Using SVM & their Efficiency Comparison”, Journal of Applied Science & Computations (JASC UGC Approved), Volume VI, Issue II, Feb.2019
- [332] 332. Mr. Mahesh M Zade, “Dynamic Clustering of Wireless Sensor Network Using Modified AODV”, Journal of Applied Science & Computations (JASC UGC Approved), Volume VI, Issue II, Feb.2019
- [333] 333. Mr. Mahesh M Zade, “Performance analysis of PSNR Vs. Impulse Noise for the enhancement of Image using SMF”, National Conference on Mathematical Modeling and Computational Intelligence 2K19 (MMCI-2k19), in association with JASC, at S. B. Patil College of Engineering, Indapur, Feb.2019
- [334] 334. Mr. Mahesh M Zade, “Classification of Power Quality Disturbances Using SVM & their Efficiency Comparison”, National Conference on Mathematical Modeling and Computational Intelligence 2K19 (MMCI-2k19), in association with JASC, at S. B. Patil College of Engineering, Indapur Feb.2019
- [335] 335. Mr. Mahesh M Zade, “Dynamic Clustering of Wireless Sensor Network Using Modified AODV”, National Conference on Mathematical Modeling and Computational Intelligence 2K19 (MMCI-2k19), in association with JASC, at S. B. Patil College of Engineering, Indapur Feb.2019
- [336] 336. Mr.Mahesh M Zade & Dr.S.M.Mukane,"Enhancement of Image with the help of Switching Median Filter", International Journal of Computer Application (IJCA) SVERI's College of Engineering, Pandharpur, Dec.2013.



- [337] 337. Ghadage, A., Gholave, C., Devkar, A., & Naiknavare, M. V. (2025). Email spam detection with machine learning. *International Journal of Advanced Research in Science, Communication and Technology*.
- [338] 338. Naiknavare, M. V. (2024). Innovative approaches in greenhouse technology: A critical analysis of spectral data for enhanced plant growth monitoring. *International Journal of Creative Research Thoughts*, 12(5).
- [339] 339. Rao, P. V. K. J., Madhava, M., Sreedevi, P., Kiranmayi, K., & Lakshmi, M. B. (2023). Optimisation of process parameters for centrifugal clarification of sugarcane juice for quality jaggery. *Journal of Agricultural Engineering (India)*, 60(3), 261–271.
- [340] 340. Ghadage, A., Gholave, C., Devkar, A., & Naiknavare, M. V. (n.d.). Smart poultry farming with ESP8266: A comprehensive review of monitoring and automation approaches.
- [341] 341. Khedekar, S., Jadhav, R., Pawar, S., & Naiknavare, M. V. (n.d.). Simplifying travel planning with AI-powered chatbot assistance.
- [342] 342. Advancements in Real-Time Crack Detection Techniques for Structural Health Monitoring International Journal of Advanced Research in Science, Communication and Technology, International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal, Volume 5, Issue 4, October 2025
- [343] 343. Intelligent Monitoring of Civil Infrastructure Health Tushar Ghadage, Amit Pandhare, Aaditya Metkari, Prof. V. B. Utpat International Journal of Advanced Research in Science, Communication and Technology International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal Volume 5, Issue 4, October 2025
- [344] 344. A Comprehensive Review on IoT-Based Smart Energy Meter with Real-Time Monitoring and Automated Billing System Shubham Tathe¹, Abhishek Savalg², Amit Thombare³, Ganesh Sarak⁴, Ms. V. B. Utpat⁵, Dr. S. V. Pingale⁶ International Journal of Advanced Research in Science, Communication and Technology International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal Volume 5, Issue 4, October 2025
- [345] 345. Digital Timetable Automation System Anurag Pawar¹, Prathamesh Aradhya², Akash katta³, Prof. Utpat V. B. International Journal of Advanced Research in Science, Communication and Technology International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
- [346] 346. Automatic Waste Segregation Mayank Kulkarni¹, Sudesh Godase², Digvijay Khilare³, Prof. V. B. Utpat Advanced Research in Science, Communication and Technology International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal