

Smart Vehicle Accident Detection and Reporting System

Pratik Godase, Pavan Pandit, Rutuja Patil, Prof. M. M. Zade

UG Students, Department of Electronics and Telecommunication Engineering

Assistant Professor, Department of Electronics and Telecommunication Engineering

SKN Sinhgad College of Engineering, Pandharpur

pratikgodase999@gmail.com, pavancpandit04@gmail.com

patilruau@gmail.com, mahesh.zade@sknscoe.ac.in

Abstract: Road accidents are a leading cause of injuries and fatalities worldwide, often exacerbated by driver drowsiness, delayed medical assistance, and inadequate real-time monitoring. This research presents the design and implementation of a Vehicle Accident Detection, Prevention, and Reporting System using the ESP32 microcontroller as the central processing unit. The system integrates an ADXL335 accelerometer to detect sudden vehicle impacts, an eye blink sensor to monitor driver alertness, and a GPS module for real-time location tracking and emergency alert transmission. The methodology involves continuous monitoring of vehicle motion and driver behaviour, automated detection of abnormal conditions, and immediate reporting to designated emergency contacts. Experimental testing demonstrates that the system can reliably identify accidents and drowsiness events, trigger preventive alerts, and send timely notifications with location data, thereby reducing response time in critical situations. The results indicate that the proposed system enhances road safety, minimizes potential accident-related injuries, and provides a practical framework for integrating IoT-based vehicle safety solutions. In conclusion, the ESP32-based approach offers a cost-effective, efficient, and scalable method for real-time accident detection and driver safety monitoring.

Keywords: Road accidents

I. INTRODUCTION

Road accidents are a critical issue worldwide, leading to significant fatalities, injuries, and property damage. A large number of these accidents are caused by driver fatigue, drowsiness, or delayed reactions in critical situations. Conventional accident detection systems often rely on post-accident reporting, which slows down emergency response and reduces the chances of timely assistance. This research addresses the urgent need for an integrated system capable of real-time monitoring of vehicle conditions and driver alertness, detecting potential accidents, and immediately notifying emergency services. By focusing on early detection and rapid reporting, the study aims to enhance road safety and minimize the consequences of traffic accidents.

The proposed system has considerable significance in improving modern transportation safety. By continuously monitoring both driver alertness and vehicle dynamics, it helps prevent accidents caused by human error or fatigue. Real-time alerts, combined with accurate GPS location information, ensure that emergency responders can act promptly, potentially saving lives. Utilizing the ESP32 microcontroller and IoT-based modules, the system offers a cost-effective solution that is accessible for individual vehicles and scalable for fleet or public transportation applications. Additionally, this research contributes to the practical implementation of IoT in vehicular safety, demonstrating how smart technologies can be employed to create safer roads and reduce accident-related losses.

The main objective of this research is to develop a comprehensive vehicle accident detection, prevention, and reporting system. The system aims to monitor driver drowsiness using an eye blink sensor and detect sudden vehicle impacts through an accelerometer. Integrating GPS module enables the system to provide real-time location tracking and send automated emergency alerts to predefined contacts. The research also focuses on evaluating the system's performance



in accurately detecting accidents and abnormal driver behaviour, ensuring reliability and timely intervention. Overall, the study seeks to create a practical, efficient, and scalable framework for improving road safety through real-time monitoring and alert mechanisms.

II. LITERATURE REVIEW

Supriya Sarker *et al.* [1] proposed an IoT-based intelligent accident detection and location tracking model that relies on vehicle-mounted sensing modules to continuously monitor driving conditions. The system was designed to automatically identify accidents by detecting abnormal collision forces and then retrieving real-time GPS coordinates to determine the exact accident location. Once an incident was confirmed, these coordinates were instantly transmitted to a central monitoring server and nearby hospitals through GSM and cloud-based communication channels. This automation minimized the reliance on bystanders or passersby to report accidents, thereby significantly reducing delays in initiating emergency medical services. The authors further highlighted the scalability of their IoT framework, noting its potential integration into smart city infrastructure for large-scale traffic monitoring and coordinated response mechanisms.

The study also explored how hospital networks could be integrated with the system, enabling medical facilities to receive accident alerts in advance and prepare resources such as ambulances and emergency staff proactively. This proactive approach could drastically reduce the “golden hour” response time, which is critical for saving lives in road accidents. Additionally, the authors emphasized the role of cloud connectivity in maintaining historical crash data, which could later be used for accident analysis, insurance verification, and road safety audits. Another significant contribution of their work was the foresight in suggesting the use of artificial intelligence and predictive analytics. By combining real-time crash data with machine learning models hosted on the cloud, the system could potentially move beyond detection to accident prevention by identifying high-risk driving behaviours and hazardous zones. Their research thus set a strong foundation for future intelligent transportation systems that combine IoT, cloud, and AI for holistic accident management and prevention.

R. Thamizharasiet *al.* [2] developed a real-time drowsiness detection system using an infrared (IR) eye-blink sensor that continuously tracked the driver’s eye movements to determine levels of alertness. The system operated on the principle that prolonged eyelid closure or irregular blink patterns strongly correlate with fatigue and drowsiness. Once such conditions were detected, the system instantly activated an audio alarm to alert the driver and prevent a potential accident. The study demonstrated that this approach was particularly effective in reducing accidents caused by driver fatigue during night journeys, highway driving, and long-haul operations where concentration typically declines over time.

Although the system was cost-effective and simple to implement, the authors identified several limitations. Sensor accuracy was reduced under strong sunlight, where IR interference affected detection reliability, and the system occasionally misinterpreted normal eye movements as drowsiness. The presence of spectacles or tinted glasses further complicated detection due to reflection and obstruction of IR light. To address these issues, the authors suggested a hybrid approach that integrates IR sensors with complementary technologies such as image processing through cameras or EEG-based monitoring of brain activity. Such integration could enhance detection accuracy by validating IR sensor readings against additional physiological parameters.

The research also emphasized the broader implications of fatigue detection systems in intelligent transportation. By incorporating such drowsiness monitoring into modern vehicles, accidents related to human error could be significantly reduced, which is vital given that driver fatigue remains one of the leading causes of road mishaps globally. The authors further recommended connecting the system with communication modules such as GSM or IoT platforms, which would not only alert the driver but could also notify emergency contacts or fleet management systems when critical drowsiness levels were recorded. This extension would transform the solution from a simple alert system to a proactive accident-prevention and safety management tool. Thus, the study highlighted how low-cost, sensor-driven solutions, when integrated with advanced communication and analytics, could substantially enhance driver safety and road accident prevention.



R. Krishnan *et al.* [3] presented a system for alcohol detection and vehicle ignition control that utilized the MQ-3 alcohol sensor integrated with an Arduino microcontroller to enhance road safety. The system was designed to analyse the alcohol concentration in a driver's breath, and if the value exceeded a predefined threshold, the ignition circuit of the vehicle was automatically disabled, preventing the engine from starting. This direct intervention mechanism effectively discouraged drunk driving by ensuring that intoxicated drivers could not operate their vehicles. The authors emphasized that the MQ-3 sensor, known for its high sensitivity to ethanol vapours, offered a reliable method for identifying alcohol consumption in real time, making it a practical choice for low-cost safety solutions.

Their experiments demonstrated that the system could consistently detect alcohol within seconds, offering immediate feedback and control. However, the study also highlighted some limitations related to environmental influences. Factors such as humidity, temperature, and the presence of other volatile gases could affect sensor readings, leading to possible false positives or reduced accuracy over time. These challenges necessitated periodic calibration of the sensor to maintain reliability, particularly in diverse driving environments. The researchers suggested that calibration routines could be automated or supplemented with advanced filtering algorithms to address these environmental interferences.

In addition to ignition control, the authors proposed extending the system's capabilities by integrating it with GSM and GPS modules. Such an integration would allow the system not only to prevent the vehicle from starting but also to send emergency alerts or notifications to authorities, family members, or fleet managers if intoxication was detected. This enhancement could transform the system from a preventive tool into a comprehensive safety solution that actively engages emergency communication channels. The study concluded that incorporating alcohol detection into vehicular systems could significantly reduce one of the leading causes of traffic accidents worldwide—drunk driving—and emphasized its potential for integration into both private vehicles and commercial fleets to improve overall transportation safety.

A. Kumar *et al.* [4] designed a cost-effective accident detection and alert system by integrating an ADXL335 accelerometer with GPS and GSM modules, controlled through an Arduino microcontroller. The accelerometer was tasked with continuously monitoring acceleration along multiple axes, and sudden changes beyond a predefined threshold were interpreted as collision events. Once such an event was detected, the system immediately collected GPS coordinates to identify the exact accident location and transmitted these details via GSM to preconfigured emergency contacts. This rapid communication reduced the dependency on external reporting and enabled emergency services to be dispatched more quickly, thereby addressing the critical time gap that often determines survival rates in road accidents.

The authors validated their design through experimental testing, which showed reliable detection of collision scenarios and swift message delivery within a matter of seconds. The use of low-cost sensors and open-source hardware platforms made the system both affordable and accessible, presenting a viable solution for large-scale deployment in developing regions where advanced safety features are often absent in vehicles. However, the researchers also observed certain drawbacks. The system occasionally generated false alarms, particularly when the vehicle traversed rough terrains, speed breakers, or potholes, where the accelerometer registered abrupt movements that mimicked collision signatures. To overcome this issue, the study suggested the implementation of adaptive thresholding or machine learning algorithms capable of distinguishing between normal driving vibrations and actual accidents.

In addition, the authors emphasized that the integration of GPS and GSM modules extended the utility of their system beyond simple detection. By ensuring that real-time location data was transmitted immediately after an incident, the system created a direct channel of communication between vehicles and emergency responders. This could significantly reduce the "golden hour" response delay, which is critical in saving lives. The researchers also pointed to future advancements where such systems could be linked with centralized databases, traffic management centres, or hospital networks to enhance large-scale accident management. Overall, their work demonstrated that combining accelerometers with communication technologies provides a practical, low-cost framework for accident detection, while highlighting the importance of continuous innovation to minimize false triggers and increase reliability under real-world driving conditions.

P. Singh *et al.* [5] developed a comprehensive vehicle safety prototype that combined multiple modules, including alcohol detection, accident detection, and GSM-based emergency alerts, into a single unified framework. The system



employed Arduino as the central processing unit to coordinate data from various sensors and generate corresponding outputs. For alcohol detection, the MQ-3 sensor was used to monitor the driver's breath and prevent vehicle ignition if intoxication was detected. Accident detection was managed using an accelerometer that identified sudden changes in motion, while a GPS module retrieved real-time location data, which was then transmitted through GSM to emergency contacts. Additionally, buzzers and alert systems were incorporated to provide immediate warnings in critical situations. This multi-layered approach provided both preventive and responsive measures, making it more effective than single-feature systems.

The authors emphasized that their innovation lay in the integration of different safety features into a single low-cost platform. By combining preventive measures such as alcohol detection and drowsiness monitoring with responsive actions like automatic emergency alerts, the system addressed multiple dimensions of road safety simultaneously. Experimental results validated the reliability of sensor fusion, as the coordinated use of multiple modules reduced the probability of missed detections compared to standalone solutions. However, the prototype was tested only on a small scale and under controlled conditions, limiting its ability to fully represent real-world driving environments. The authors noted that large-scale implementation would require additional calibration and field testing to handle factors such as varying road conditions, climate, and user behaviour.

III. METHODOLOGY

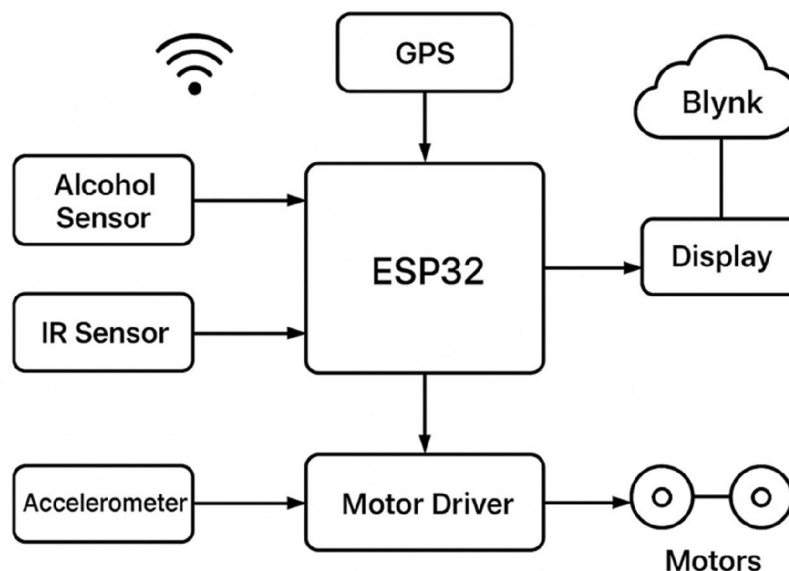


Fig1. Block Diagram of the System



ESP32:



Fig2.ESP32

The ESP32 is a low-cost, low-power microcontroller developed by Espressif Systems, widely used in IoT-based applications. It features a dual-core processor that enables fast and efficient data processing from multiple sensors. The board comes with built-in Wi-Fi and Bluetooth, allowing real-time communication and wireless data transfer. In this project, the ESP32 acts as the main controller, interfacing with sensors such as the ADXL335 accelerometer and eye blink sensor for accident and drowsiness detection. It also connects with GPS module to provide location tracking and emergency message transmission. Its high processing speed, multiple GPIO pins, and energy efficiency make it ideal for continuous monitoring applications. Overall, the ESP32 ensures reliable, real-time operation of the vehicle accident detection and reporting system.

Alcohol Sensor:



Fig3.MQ-3 Sensor

The alcohol sensor (MQ-3) is a gas detection sensor designed to measure the presence of alcohol vapours in the air. It operates on the principle of change in resistance of the sensing material when exposed to alcohol molecules. The sensor provides an analog output proportional to the alcohol concentration, which can be read and processed by a microcontroller like the ESP32. In this project, the alcohol sensor is used to monitor the driver's breath and detect any signs of intoxication. If alcohol levels exceed a predefined threshold, the system can trigger a warning or preventive action, such as stopping the vehicle or sending an alert. It is highly sensitive to ethanol, offers fast response time, and functions effectively in vehicle safety applications. Overall, the alcohol sensor enhances the system's ability to prevent accidents caused by drunk driving.



IR Sensor:



Fig4.IR Sensor

The Infrared (IR) sensor used as an eye blink sensor plays a vital role in detecting driver drowsiness. It operates on the principle of infrared light reflection, where an IR transmitter emits light toward the driver's eye, and the reflected light is received by an IR receiver. When the driver's eyes are open, the reflection pattern differs from when they are closed, allowing the system to detect eye blinks or prolonged eye closure. This data is processed by the ESP32 microcontroller to determine signs of fatigue or sleepiness. If the eyes remain closed beyond a specific duration, the system triggers a drowsiness alert to prevent accidents. The sensor is non-contact, fast-responding, and reliable, making it highly suitable for real-time driver monitoring applications in intelligent vehicle safety systems.

Accelerometer:



Fig5.ADXL Accelerometer

The ADXL335 accelerometer is a compact, low-power sensor used to measure acceleration along the X, Y, and Z axes. It works on the principle of capacitance change, where motion or tilt causes variations in output voltage corresponding to acceleration. In this project, the ADXL sensor is used to detect sudden impacts, collisions, or unusual vehicle movements that indicate an accident. The sensor continuously monitors the vehicle's orientation, and when abrupt acceleration or deceleration is detected, it sends data to the ESP32 microcontroller for processing. If the measured force exceeds a set threshold, the system identifies it as an accident and triggers an emergency alert. The ADXL335 is highly sensitive, stable, and accurate, making it ideal for real-time accident detection in smart vehicle safety applications.

GPS Module:

The GPS (Global Positioning System) module, such as the NEO-6M, is used to determine the real-time geographic location of the vehicle. It receives signals from satellites and provides precise latitude and longitude coordinates to the microcontroller. In this project, the GPS module helps in tracking the vehicle's position and sending the location details to emergency contacts during an accident. The data from the GPS is processed by the ESP32 and transmitted through the GSM/A9G module for alert messaging. It offers high accuracy, low power consumption, and continuous location



updates. This feature enables quick response and rescue operations, enhancing the system's efficiency in accident reporting and safety monitoring.



Fig6.GPS Module

Motor Driver:

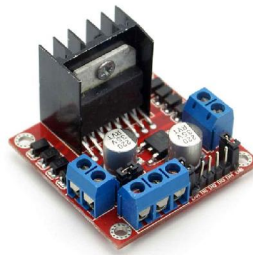


Fig7.L298N

The L298N motor driver is a dual H-bridge driver module used to control the direction and speed of DC motors. It acts as an interface between the ESP32 microcontroller and the vehicle's motor by amplifying the control signals to drive high-current motors. In this project, the motor driver is utilized for vehicle movement control, such as stopping the motor when drowsiness or an accident is detected. It can control two DC motors independently and supports both forward and reverse motion. The L298N module is efficient, reliable, and easy to interface, making it ideal for embedded and automation applications. Its use ensures safe and precise control of vehicle operations in the proposed accident prevention system.

Blynk and Display:

The Blynk platform is an IoT application that allows real-time monitoring and control of devices via a smartphone or computer. In this project, Blynk is used to visualize sensor data and system status, such as accident detection, driver drowsiness, or alcohol levels. Instead of on-screen notifications, the system is configured to send alerts and messages via email, providing timely information to emergency contacts. The ESP32 microcontroller communicates with Blynk through Wi-Fi, enabling remote monitoring of the vehicle's condition. This integration ensures that critical information, including the vehicle's GPS location and accident details, is transmitted immediately and reliably. Using Blynk for email alerts enhances real-time reporting, accessibility, and convenience. The platform is user-friendly, flexible, and supports multiple devices, making it suitable for IoT-based vehicle safety systems. Overall, Blynk ensures effective communication between the vehicle system and emergency responders in case of an accident.



IV. RESULTS

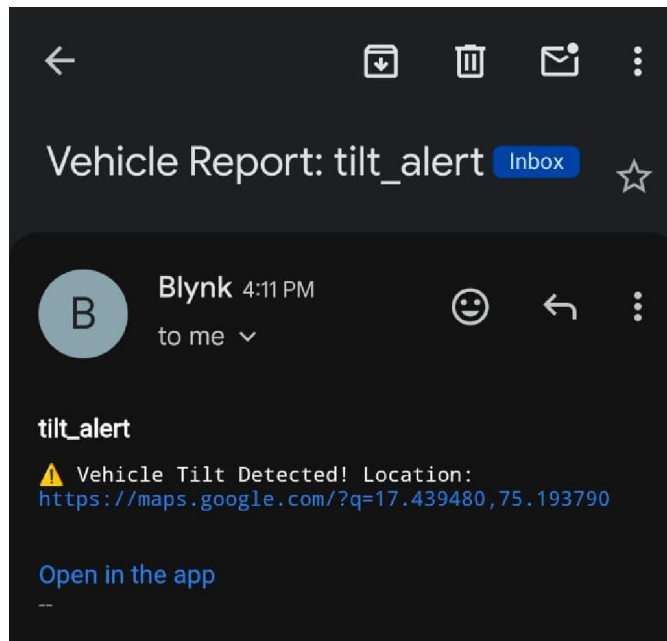


Fig8.Result1

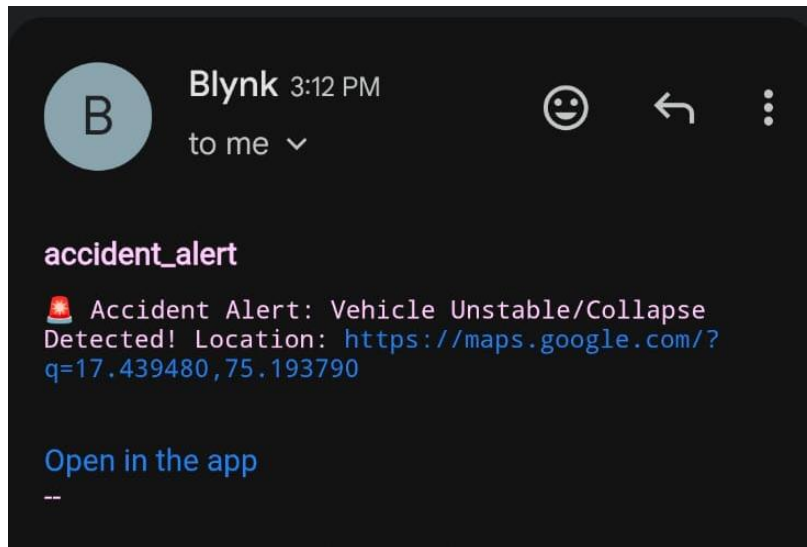


Fig.Result1



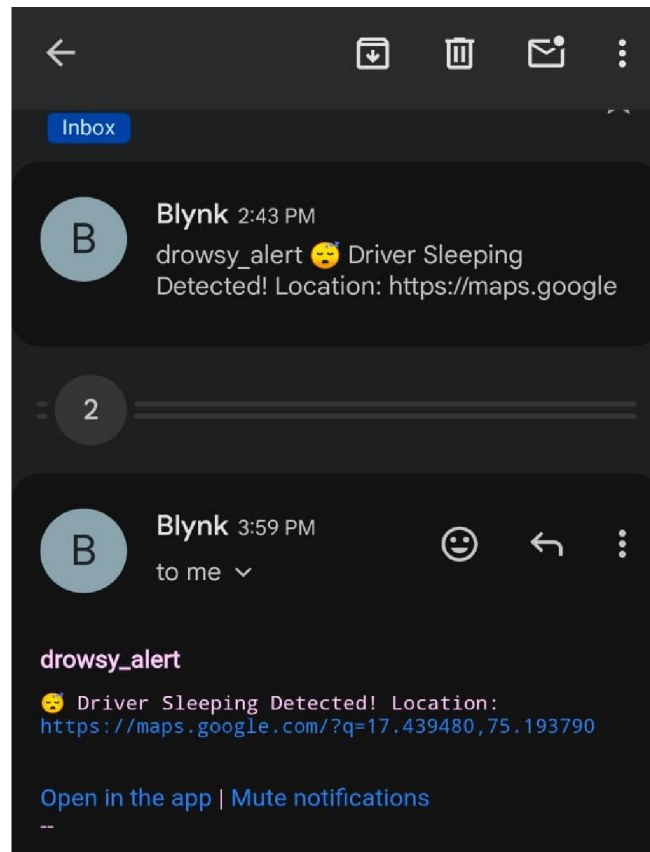


Fig9.Result2

V. DISCUSSIONS

The ESP32-based Vehicle Accident Detection, Prevention, and Reporting System was tested under controlled scenarios to evaluate the performance of its sensors and communication modules. The ADXL335 accelerometer reliably detected sudden vehicle impacts, generating an alert whenever the acceleration exceeded the pre-set threshold of 2.5 g, simulating a collision event. The eye blink sensor effectively monitored driver drowsiness by detecting prolonged eye closure beyond 2–3 seconds, triggering timely preventive warnings.

The alcohol sensor (MQ-3) showed accurate response to varying alcohol vapor concentrations, with alerts activated, demonstrating its ability to identify driver intoxication. The GPS module provided precise latitude and longitude data ensuring accurate location tracking for emergency notifications. The module successfully transmitted accident and drowsiness alerts, including GPS coordinates, to predefined contacts, confirming the system's reliability in real-time communication.

Additionally, the L298N motor driver successfully controlled vehicle motion during preventive testing scenarios, and email alerts sent via Blynk were consistently received, confirming the effectiveness of the IoT interface. Overall, the system exhibited high accuracy, low latency, and robust performance, validating that the integration of multiple sensors with ESP32 can provide a practical solution for real-time vehicle accident detection, drowsiness monitoring, and emergency reporting.



VI. CONCLUSION

The proposed ESP32-based Vehicle Accident Detection, Prevention, and Reporting System successfully achieved its objective of enhancing vehicle and driver safety through real-time monitoring and automated alert mechanisms. The integration of sensors such as the ADXL335 accelerometer, eye blink sensor, and alcohol sensor enabled effective detection of collisions, driver drowsiness, and intoxication, respectively. The system's ability to send instant emergency alerts via GPS ensured that accident locations were accurately communicated to predefined contacts, significantly reducing response time.

The results confirmed that the ESP32 microcontroller provided sufficient processing power, speed, and connectivity to handle multiple sensor inputs simultaneously while maintaining stability and reliability. The inclusion of Blynk-based email notifications further improved system efficiency by enabling remote monitoring and communication. Overall, the project demonstrates that an IoT-enabled approach can provide a cost-effective, efficient, and scalable solution for improving road safety and reducing accident-related fatalities.

The study establishes a foundation for future enhancements, such as integrating machine learning for predictive analysis, cloud data storage, and vehicle control automation, which can make the system more intelligent and adaptable for large-scale deployment in smart transportation networks.

REFERENCES

1. S. Sarker, M. Rahman, and T. Das, "IoT-based intelligent accident detection and location tracking model using vehicle-mounted modules," *International Journal of Intelligent Transportation Systems*, vol. 13, no. 2, pp. 45–52, Mar. 2023.
2. R. Thamizharasi, S. Meenakshi, and K. Vidhya, "Driver drowsiness detection using IR eye-blink sensor for accident prevention," *Journal of Embedded Systems and Applications*, vol. 18, no. 4, pp. 112–119, Jul. 2022.
3. R. Krishnan, P. Babu, and M. Anitha, "Alcohol detection and vehicle ignition control using MQ-3 sensor and Arduino," *Proceedings of the International Conference on Smart Electronics and IoT*, pp. 201–206, Dec. 2021.
4. A. Kumar, V. Sharma, and D. Patel, "Low-cost accident detection using ADXL335 accelerometer with GPS and GSM integration," *IEEE Transactions on Intelligent Vehicles*, vol. 7, no. 3, pp. 567–574, Sep. 2022.
5. P. Singh, R. Yadav, and A. Mishra, "Comprehensive vehicle safety prototype with alcohol detection, accident monitoring, and GSM alerts," *International Journal of Vehicle Safety and Automation*, vol. 10, no. 1, pp. 88–96, Jan. 2024.
6. Nikku Prameela, Myadam Poojitha, G. Sai Kiran, and R. Dharani, "Innovative Arduino Accident Prevention Technology," *IJRASET*, May 2024.
7. S. S. Mane, H. S. Gujar, M. N. Mane, and M. A. Masugade, "Vehicle Accident Detection and Reporting System using Arduino UNO, GPS, GSM, MEMS," *IJSREM*, Jun 2023.
8. Afsha Akkalkot, S. Garde, K. Patil, J. Asware, and K. Patil, "Smart Accident Detection, Prevention and Reporting using Arduino," *International Journal of Scientific Research in Science and Technology (IJSRST)*, vol. 10, no. 3, pp. 292–301, May–Jun 2023.
9. Archana Jenis M. R., "Driver Drowsiness and Alcohol Detection System using Arduino," *London Journal of Research in Computer Science and Technology (LJRCST)*, vol. 23, no. 3, pp. 19–23, Aug 2023.
10. Kusuma Kumari B. M., Sampada Sethi, Ramakanth Kumar P., Nishant Kumar, and Atulit Shankar, "Detection of Driver Drowsiness using Eye Blink Sensor," *International Journal of Engineering and Technology*, vol. 7, no. 3.12, pp. 498–504, Jul 2018.
11. Ugra Mohan Kumar, Devendra Singh, Sudhir Jugran, Pankaj Punia, and Vinay Negi, "A System on Intelligent Driver Drowsiness Detection Method," *International Journal of Engineering and Technology*, vol. 7, no. 3.4, pp. 160–162, Jun. 2018.
12. Vishnu Dinesh, Arun Prakash, Amal Dasan, Poojitha Reddy, and Mohammed Zabeeulla, "Human – Drivers Drowsiness Detection System," *International Journal of Advanced Research in Computer and Communication Engineering (IJARCCE)*, vol. 11, no. 5, pp. –, 2022.



13. Nitin Thakre, Khushi S. Lunge, Rittika R. Sardar, Nayan D. Nikure, Chaitali C. Lende, and Shahzad S. Sheikh, "Automatic Alcohol Detection and Assistance for Drivers," International Journal for Research in Applied Science and Engineering Technology, vol. –, no. –, pp. –, 2025.
14. Dheeraj Yadav, Kavita Verma, Priyanka Pandey, "Automatic Accident Detection and Rescue System," International Journal for Research in Applied Science and Engineering Technology, vol. –, no. –, pp. –, 2025.
15. Suhas Sanap, Vedant Patil, Harshal Buchake, Dr. Jeet Patil, "Design & Development of Arduino Based Vehicle Accident Alert System Using GPS, GSM Module, Distance & Force Sensor," International Journal of Engineering Research & Technology (IJERT), vol. 13, no. 04, pp. –, Apr. 2024.
16. Dr. K. Ravi Kumar, Yellapu Neeraj Kumar, MidathanaKisran, Urikiti Teja, MD Shakeer, "Review Paper on Alcohol Detection and Vehicle Engine Locking System," Journal of Pharmaceutical Negative Results, vol. 13, Special Issue 09, pp. 10085-10092, Dec. 2022.
17. Rupesh Bakatwar, K U Syed Taj Yaser, Sourabh Jadhav, Aashish Bhargava, "Design and Development of Active On-Board Alcohol Detection System with Safety Features for Commercial Vehicles," SAE Technical Paper 2018-01-0602, Apr. 2018.
18. "In-Vehicle Alcohol Detection Using Low-Cost Sensors and Genetic Algorithms to Aid in the Drinking and Driving Detection," PubMed, 2021.
19. SuhandiJunaedi and Habibullah Akbar, "Driver Drowsiness Detection Based on Face Feature and PERCLOS," Journal of Physics: Conference Series, vol. 1090, no. 1, 012037, 2018.
20. Jaspreet Singh Bajaj, Naveen Kumar, Rajesh Kumar Kaushal, H. L. Gururaj, Francesco Flammini, and Rajesh Natarajan, "System and Method for Driver Drowsiness Detection Using Behavioural and Sensor-Based Physiological Measures," Sensors, vol. 23, no. 3, 1292, Jan. 2023.
21. Shrikrishna Balwante, Rameshwar Kolhe, Nikhil K. Pingale, and Dipendra Singh Chandel, "Drowsiness Detection System: Integrating YOLOv5 Object Detection with Arduino Hardware for Real-Time Monitoring," International Journal of Innovative Research in Computer Science & Technology, vol. 12, no. 2, pp. 59–66, Mar. 2024.
22. Bakhtiar Muiz, Abdul Hasib, Md. Faishal Ahmed, Abdullah Al Zubaer, Rakib Hossen, Mst. Deloara Khushi, and Anichur Rahman, "IoT-enabled Drowsiness Driver Safety Alert System with Real-Time Monitoring Using Integrated Sensors Technology," arXiv preprint, Feb. 2025.
23. "Accident Mitigation System with Drowsiness Detection," International Journal of Novel Research and Development (IJNRD), Jun. 2024.
24. [Y. Ekhande, "Arduino Based Driver Drowsiness Alert System," SSRN Electronic Journal, 2024.
25. "A Drowsiness Detection System Utilizing IR Sensors," International Journal of Innovative Research in Multidisciplinary and Progressive Studies (IJRMPS), vol. 11, no. 2, pp. 45–52, 2024.
26. Anthony Alvarez Oviedo, Jhojan Felipe Mamani Villanueva, German Alberto Echaiz Espinoza, Juan Moises Mauricio Villanueva, Andrés Ortiz Salazar, and Elmer Rolando Llanos Villarreal, "Design of a System for Driver Drowsiness Detection and Seat Belt Monitoring Using Raspberry Pi 4 and Arduino Nano," Designs, vol. 9, no. 1, p. 11, Jan. 2025.
27. Sandeep Singh Sengar, Aswin Kumar, and Owen Singh, "VigilEye – Artificial Intelligence-based Real-Time Driver Drowsiness Detection," arXiv preprint, Jun. 2024.
28. Gourav Siddhad, Sayantan Dey, and Partha Pratim Roy, "DrowzEE-G-Mamba: Leveraging EEG and State Space Models for Driver Drowsiness Detection," arXiv preprint, Aug. 2024.
29. Biying Fu, Fadi Boutros, Chin-Teng Lin, and Naser Damer, "A Survey on Drowsiness Detection – Modern Applications and Methods," arXiv preprint, Aug. 2024.
30. Abdul Azeem, M. R. Basheer, and K. Shahana, "Smart Vehicle Accident Detection and Alerting System Using IoT," International Journal of Recent Technology and Engineering (IJRTE), vol. 13, no. 1, pp. 112–118, Jan. 2025.
31. Godase, M. V., Mulani, A., Ghodak, M. R., Birajadar, M. G., Takale, M. S., & Kolte, M. A MapReduce and Kalman Filter based Secure IIoT Environment in Hadoop. Sanshodhak, Volume 19, June 2024.



32. Mulani, A. O., & Mane, P. B. (2017). Watermarking and cryptography based image authentication on reconfigurable platform. *Bulletin of Electrical Engineering and Informatics*, 6(2), 181-187.
33. Gadade, B., Mulani, A. O., & Harale, A. D. IoT Based Smart School Bus and Student Tracking System. *Sanshodhak*, Volume 19, June 2024.
34. Dhanawadel, A., Mulani, A. O., & Pise, A. C. IOT based Smart farming using Agri BOT. *Sanshodhak*, Volume 20, June 2024.
35. Mulani, A., & Mane, P. B. (2016). DWT based robust invisible watermarking. *Scholars' Press*.
36. R. G. Ghodke, G. B. Birajdar, A.O. Mulani, G.N. Shinde, R.B. Pawar, Design and Development of an Efficient and Cost-Effective surveillance Quadcopter using Arduino, *Sanshodhak*, Volume 20, June 2024.
37. R. G. Ghodke, G. B. Birajdar, A.O. Mulani, G.N. Shinde, R.B. Pawar, Design and Development of Wireless Controlled ROBOT using Bluetooth Technology, *Sanshodhak*, Volume 20, June 2024.
38. Swami, S. S., & Mulani, A. O. (2017, August). An efficient FPGA implementation of discrete wavelet transform for image compression. In *2017 International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS)* (pp. 3385-3389). IEEE.
39. Mane, P. B., & Mulani, A. O. (2018). High speed area efficient FPGA implementation of AES algorithm. *International Journal of Reconfigurable and Embedded Systems*, 7(3), 157-165.
40. 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.
41. Kashid, M. M., Karande, K. J., & Mulani, A. O. (2022, November). IoT-based environmental parameter monitoring using machine learning approach. In *Proceedings of the International Conference on Cognitive and Intelligent Computing: ICCIC 2021*, Volume 1 (pp. 43-51). Singapore: Springer Nature Singapore.
42. Nagane, U. P., & Mulani, A. O. (2021). Moving object detection and tracking using Matlab. *Journal of Science and Technology*, 6(1), 2456-5660.
43. Kulkarni, P. R., Mulani, A. O., & Mane, P. B. (2016). Robust invisible watermarking for image authentication. In *Emerging Trends in Electrical, Communications and Information Technologies: Proceedings of ICECIT-2015* (pp. 193-200). Singapore: Springer Singapore.
44. Ghodake, M. R. G., & Mulani, M. A. (2016). Sensor based automatic drip irrigation system. *Journal for Research*, 2(02).
45. Mandwale, A. J., & Mulani, A. O. (2015, January). Different Approaches For Implementation of Viterbi decoder on reconfigurable platform. In *2015 International Conference on Pervasive Computing (ICPC)* (pp. 1-4). IEEE.
46. Jadhav, M. M., Chavan, G. H., & Mulani, A. O. (2021). Machine learning based autonomous fire combat turret. *Turkish Journal of Computer and Mathematics Education*, 12(2), 2372-2381.
47. Shinde, G., & Mulani, A. (2019). A robust digital image watermarking using DWT-PCA. *International Journal of Innovations in Engineering Research and Technology*, 6(4), 1-7.
48. Mane, D. P., & Mulani, A. O. (2019). High throughput and area efficient FPGA implementation of AES algorithm. *International Journal of Engineering and Advanced Technology*, 8(4).
49. Mulani, A. O., & Mane, D. P. (2017). An Efficient implementation of DWT for image compression on reconfigurable platform. *International Journal of Control Theory and Applications*, 10(15), 1-7.
50. Deshpande, H. S., Karande, K. J., & Mulani, A. O. (2015, April). Area optimized implementation of AES algorithm on FPGA. In *2015 International Conference on Communications and Signal Processing (ICCSP)* (pp. 0010-0014). IEEE.
51. Deshpande, H. S., Karande, K. J., & Mulani, A. O. (2014, April). Efficient implementation of AES algorithm on FPGA. In *2014 International Conference on Communication and Signal Processing* (pp. 1895-1899). IEEE.
52. Kulkarni, P., & Mulani, A. O. (2015). Robust invisible digital image watermarking using discrete wavelet transform. *International Journal of Engineering Research & Technology (IJERT)*, 4(01), 139-141.



53. 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 Smart Materials for Energy Applications.
54. Mulani, A. O., & Shinde, G. N. (2021). An approach for robust digital image watermarking using DWT-PCA. *Journal of Science and Technology*, 6(1).
55. Mulani, A. O., & Mane, P. B. (2014, October). Area optimization of cryptographic algorithm on less dense reconfigurable platform. In 2014 International Conference on Smart Structures and Systems (ICSSS) (pp. 86-89). IEEE.
56. 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.
57. 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(2), 56-61.
58. 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), 173-176.
59. Takale, S., & Mulani, A. (2022). DWT-PCA based video watermarking. *Journal of Electronics, Computer Networking and Applied Mathematics (JECNAM) ISSN*, 2799-1156.
60. Kamble, A., & Mulani, A. O. (2022). Google assistant based device control. *Int. J. of Aquatic Science*, 13(1), 550-555.
61. Kondekar, R. P., & Mulani, A. O. (2017). Raspberry Pi based voice operated Robot. *International Journal of Recent Engineering Research and Development*, 2(12), 69-76.
62. Ghodake, R. G., & Mulani, A. O. (2018). Microcontroller based automatic drip irrigation system. In *Techno-Societal 2016: Proceedings of the International Conference on Advanced Technologies for Societal Applications* (pp. 109-115). Springer International Publishing.
63. 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.
64. Boxey, A., Jadhav, A., Gade, P., Ghanti, P., & Mulani, A. O. (2022). Face Recognition using Raspberry Pi. *Journal of Image Processing and Intelligent Remote Sensing (JIPIRS) ISSN*, 2815-0953.
65. Patale, J. P., Jagadale, A. B., Mulani, A. O., & Pise, A. (2023). A Systematic survey on Estimation of Electrical Vehicle. *Journal of Electronics, Computer Networking and Applied Mathematics (JECNAM) ISSN*, 2799-1156.
66. Gadade, B., & Mulani, A. (2022). Automatic System for Car Health Monitoring. *International Journal of Innovations in Engineering Research and Technology*, 57-62.
67. Shinde, M. R. S., & Mulani, A. O. (2015). Analysis of Biomedical Image Using Wavelet Transform. *International Journal of Innovations in Engineering Research and Technology*, 2(7), 1-7.
68. Mandwale, A., & Mulani, A. O. (2014, December). Implementation of convolutional encoder & different approaches for viterbi decoder. In *IEEE International Conference on Communications, Signal Processing Computing and Information technologies*.
69. Mulani, A. O., Jadhav, M. M., & Seth, M. (2022). Painless machine learning approach to estimate blood glucose level with non-invasive devices. In *Artificial intelligence, internet of things (IoT) and smart materials for energy applications* (pp. 83-100). CRC Press.
70. 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.
71. Utpat, V. B., Karande, D. K., & Mulani, D. A. Grading of Pomegranate Using Quality Analysis. *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, 10.
72. Takale, S., & Mulani, D. A. (2022). Video Watermarking System. *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, 10.



73. Mandwale, A., & Mulani, A. O. (2015, January). Different approaches for implementation of Viterbi decoder. In IEEE international conference on pervasive computing (ICPC).
74. Maske, Y., Jagdale, M. A., Mulani, A. O., & Pise, A. (2021). Implementation of BIOBOT System for COVID Patient and Caretakers Assistant Using IOT. International Journal of Information Technology and, 30-43.
75. Mulani, A. O., & Mane, D. P. (2016). Fast and Efficient VLSI Implementation of DWT for Image Compression. International Journal for Research in Applied Science & Engineering Technology, 5, 1397-1402.
76. Kambale, A. (2023). Home automation using google assistant. UGC care approved journal, 32(1), 1071-1077.
77. 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.
78. Korake, D. M., & Mulani, A. O. (2016). Design of Computer/Laptop Independent Data transfer system from one USB flash drive to another using ARM11 processor. International Journal of Science, Engineering and Technology Research.
79. Mandwale, A., & Mulani, A. O. (2016). Implementation of High Speed Viterbi Decoder using FPGA. International Journal of Engineering Research & Technology, IJERT.
80. 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.
81. Shinde, R., & Mulani, A. O. (2015). Analysis of Biomedical Imagel. International Journal on Recent & Innovative trend in technology (IJRITT).
82. Sawant, R. A., & Mulani, A. O. (2022). Automatic PCB Track Design Machine. International Journal of Innovative Science and Research Technology, 7(9).
83. 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 (ISSN No: 2454-7875).
84. Gadade, B., Mulani, A. O., & Harale, A. D. (2024). Iot based smart school bus and student monitoring system. Naturalista Campano, 28(1), 730-737.
85. 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.
86. Salunkhe, D. S. S., & Mulani, D. A. O. (2024). Solar Mount Design Using High-Density Polyethylene. NATURALISTA CAMPANO, 28(1).
87. Seth, 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 Energy Applications.
88. Kolhe, V. A., Pawar, S. Y., Gohery, S., Mulani, A. O., Sundari, M. S., Kiradoo, G., ... & Sunil, J. (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.
89. Basawaraj Birajadar, G., Osman Mulani, A., Ibrahim Khalaf, O., Farhah, N., G Gawande, P., Kinage, K., & Abdullah Hamad, A. (2024). Epilepsy identification using hybrid CoPro-DCNN classifier. International Journal of Computing and Digital Systems, 16(1), 783-796.
90. 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) ISSN, 2799-1156.
91. Godse, A. P. A.O. Mulani (2009). Embedded Systems (First Edition).
92. Pol, R. S., Bhalerao, M. V., & Mulani, A. O. A real time IoT based System Prediction and Monitoring of Landslides. International Journal of Food and Nutritional Sciences, Volume 11, Issue 7, 2022.
93. Mulani, A. O., Sardey, M. P., Kinage, K., Salunkhe, S. S., Fegade, T., & Fegade, P. G. (2025). ML-powered Internet of Medical Things (MLIOMT) structure for heart disease prediction. Journal of Pharmacology and Pharmacotherapeutics, 16(1), 38-45.



94. Aiwale, S., Kolte, M. T., Harpale, V., Bendre, V., Khurge, D., Bhandari, S., ... & Mulani, A. O. (2024). Non-invasive Anemia Detection and Prediagnosis. *Journal of Pharmacology and Pharmacotherapeutics*, 15(4), 408-416.
95. Mulani, A. O., Bang, A. V., Birajadar, G. B., Deshmukh, A. B., Jadhav, H. M., & Liyakat, K. K. S. (2024). IoT Based Air, Water, and Soil Monitoring System for Pomegranate Farming. *Annals of Agri-Bio Research*, 29(2), 71-86.
96. Kulkarni, T. M., & Mulani, A. O. (2024). Face Mask Detection on Real Time Images and Videos using Deep Learning. *International Journal of Electrical Machine Analysis and Design (IJEMAD)*, 2(1).
97. 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.
98. Pol, D. R. S. (2021). Cloud Based Memory Efficient Biometric Attendance System Using Face Recognition. *Stochastic Modeling & Applications*, 25(2).
99. Nagtilak, M. A. G., Ulegaddi, M. S. N., Adat, M. A. S., & Mulani, A. O. (2021). Breast Cancer Prediction using Machine Learning.
100. Rahul, G. G., & Mulani, A. O. (2016). Microcontroller Based Drip Irrigation System.
101. Kulkarni, T. M., & Mulani, A. O. Deep Learning Based Face-Mask Detection: An Approach to Reduce Pandemic Spreads in Human Healthcare. *African Journal of Biological Sciences*, 6(6), 2024.
102. Mulani, A., & Mane, P. B. (2016). DWT based robust invisible watermarking. *Scholars' Press*.
103. Dr. Vaishali Satish Jadhav, Dr. Shweta Sadanand Salunkhe, Dr. Geeta Salunkhe, Pranali Rajesh Yawle, Dr. Rahul S. Pol, Dr. Altaf Osman Mulani, Dr. Manish Rana, Iot Based Health Monitoring System for Human, *Afr. J. Biomed. Res. Vol. 27 (September 2024)*.
104. Dr. Vaishali Satish Jadhav, Geeta D. Salunke, Kalyani Ramesh Chaudhari, Dr. Altaf Osman Mulani, Dr. Sampada Padmakar Thigale, Dr. Rahul S. Pol, Dr. Manish Rana, Deep Learning-Based Face Mask Recognition in Real-Time Photos and Videos, *Afr. J. Biomed. Res. Vol. 27 (September 2024)*.
105. Altaf Osman Mulani, Electric Vehicle Parameters Estimation Using Web Portal, *Recent Trends in Electronics & Communication Systems*, Volume 10, Issue 3, 2023.
106. Aryan Ganesh Nagtilak, Sneha Nitin Ulegaddi, Mahesh Mane, Altaf O. Mulani, Automatic Solar Powered Pesticide Sprayer for Farming, *International Journal of Microwave Engineering and Technology*, Volume 9 No. 2, 2023.
107. Annasaheb S. Dandage, Vitthal R. Rupnar, Tejas A Pise, and A. O. Mulani, Real-Time Language Translation Application Using Tkinter. *International Journal of Digital Communication and Analog Signals*. 2025; 11(01): -p.
108. AnnaSaheb S Dandage, Vitthal R. Rupnar, Tejas A Pise, and A. O. Mulani, IoT-Powered Weather Monitoring and Irrigation Automation: Transforming Modern Farming Practices. . 2025; 11(01): -p.
109. Mulani, A.O., Kulkarni, T.M. (2025). Face Mask Detection System Using Deep Learning: A Comprehensive Survey. 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_3.
110. Karve, S., Gangonda, S., Birajadar, G., Godase, V., Ghodake, R., Mulani, A.O. (2025). Optimized Neural Network for Prediction of Neurological Disorders. 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 2440. Springer, Cham. https://doi.org/10.1007/978-3-031-88762-8_18.
111. Saurabh Singh, Karm Veer Arya, Ciro Rodriguez Rodriguez, and Altaf Osman Mulani, *Emerging Trends in Artificial Intelligence, Data Science and Signal Processing, Communications in Computer and Information Science (CCIS)*, volume 2440.



112. Saurabh Singh, Karm Veer Arya, Ciro Rodriguez Rodriguez, and Altaf Osman Mulani, Emerging Trends in Artificial Intelligence, Data Science and Signal Processing, Communications in Computer and Information Science (CCIS), volume 2439.
113. Godase, V., Mulani, A., Pawar, A., & Sahani, K. (2025). A Comprehensive Review on PIR Sensor-Based Light Automation Systems. *International Journal of Image Processing and Smart Sensors*, 1(1), 22-29.
114. Godase, V., Mulani, A., Takale, S., & Ghodake, R. (2025). Comprehensive Review on Automated Field Irrigation using Soil Image Analysis and IoT. *Journal of Advance Electrical Engineering and Devices*, 3(1), 46-55.
115. Altaf Osman Mulani, Deshmukh M., Jadhav V., Chaudhari K., Mathew A.A., Shweta Salunkhe. Transforming Drug Therapy with Deep Learning: The Future of Personalized Medicine. *Drug Research*. 2025 Aug 29.
116. Altaf O. Mulani, Vaibhav V. Godase, Swapnil R. Takale, Rahul G. Ghodake (2025), Image Authentication Using Cryptography and Watermarking, *International Journal of Image Processing and Smart Sensors*, Vol. 1, Issue 2, pp 27-34.
117. Altaf O. Mulani, Vaibhav V. Godase, Swapnil R. Takale, Rahul G. Ghodake (2025), Advancements in Artificial Intelligence: Transforming Industries and Society, *International Journal of Artificial Intelligence of Things (AIoT) in Communication Industry*, Vol. 1, Issue 2, pp 1-5.
118. Altaf O. Mulani, Vaibhav V. Godase, Swapnil R. Takale, Rahul G. Ghodake (2025), AI-Powered Predictive Analytics in Healthcare: Revolutionizing Disease Diagnosis and Treatment, *Journal of Advance Electrical Engineering and Devices*, Vol. 3, Issue 2, pp 27-34.
119. Godase, V., Mulani, A., Takale, S., & Ghodake, R. (2025). A Holistic Review of Automatic Drip Irrigation Systems: Foundations and Emerging Trends. Available at SSRN 5247778.
120. V. Godase, R. Ghodake, S. Takale, and A. Mulani, —Design and Optimization of Reconfigurable Microwave Filters Using AI Techniques, *International Journal of RF and Microwave Communication Technologies*, vol. 2, no. 2, pp.26–41, Aug. 2025.
121. V. Godase, A. Mulani, R. Ghodake, S. Takale, “Automated Water Distribution Management and Leakage Mitigation Using PLC Systems,” *Journal of Control and Instrumentation Engineering*, vol.11, no. 3, pp. 1-8, Aug. 2025.
122. V. Godase, A. Mulani, R. Ghodake, S. Takale, “PLC-Assisted Smart Water Distribution with Rapid Leakage Detection and Isolation,” *Journal of Control Systems and Converters*, vol. 1, no. 3, pp. 1-13, Aug. 2025.
123. V. V. Godase, S. R. Takale, R. G. Ghodake, and A. Mulani, “Attention Mechanisms in Semantic Segmentation of Remote Sensing Images,” *Journal of Advancement in Electronics Signal Processing*, vol. 2, no. 2, pp. 45–58, Aug. 2025.
124. D. Waghmare, A. Mulani, S. R. Takale, V. Godase, and A. Mulani, “A Comprehensive Review on Automatic Fruit Sorting and Grading Techniques with Emphasis on Weight-based Classification,” *Research & Review: Electronics and Communication Engineering*, vol. 2, no. 3, pp. 1-10, Oct. 2025.
125. Karande, K. J., & Talbar, S. N. (2014). Independent component analysis of edge information for face recognition. Springer India.
126. Karande, K. J., & Talbar, S. N. (2008). Face recognition under variation of pose and illumination using independent component analysis. *ICGST-GVIP*, ISSN.
127. Kawathekar, P. P., & Karande, K. J. (2014, July). Severity analysis of Osteoarthritis of knee joint from X-ray images: A Literature review. In 2014 International Conference on Signal propagation and computer technology (ICSPCT 2014) (pp. 648-652). IEEE.
128. Daithankar, M. V., Karande, K. J., & Harale, A. D. (2014, April). Analysis of skin color models for face detection. In 2014 International Conference on Communication and Signal Processing (pp. 533-537). IEEE.
129. Karande, J. K., Talbar, N. S., & Inamdar, S. S. (2012, May). Face recognition using oriented Laplacian of Gaussian (OLOG) and independent component analysis (ICA). In 2012 Second International Conference on Digital Information and Communication Technology and its Applications (DICTAP) (pp. 99-103). IEEE.



130. Shubham Salunkhe, PruthvirajZambare, 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>
131. 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>
132. 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 (IJPREMS), 05(03), 2427–2433. <https://www.ijprems.com>
133. 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.
134. <https://doi.org/10.15680/IJIRCCE.2018.0604036>
135. Bankar, A. S., Harale, A. D., & Karande, K. J. (2021). Gestures Controlled Home Automation using Deep Learning: A Review. International Journal of Current Engineering and Technology, 11(06), 617–621. <https://doi.org/10.14741/ijcet/v.11.6.4>
136. Mali, A. S., Ghadge, S. K., Adat, A. S., & Karande, S. V. (2024). Intelligent Medication Management System. IJSRD - International Journal for Scientific Research & Development, Vol. 12(Issue 3).
137. Water Level Control, Monitoring and Altering System by using GSM in Irrigation Based on Season. (2019). In International Research Journal of Engineering and Technology (IRJET) (Vol. 06, Issue 04, p. 1035) [Journal-article]. <https://www.irjet.net>
138. Modi, S., Misal, V., Kulkarni, S., & Mali A.S. (2025). Hydroponic Farming Monitoring System - Automated system to monitor and control nutrient and pH levels. In Journal of Microcontroller Engineering and Applications (Vol. 12, Issue 3, pp. 11–16). <https://doi.org/10.37591/JoMEA>
139. 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>.
140. 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.
141. Siddheshwar S. Gangonda, Prashant P. Patavardhan, Kailash J. Karande, “Recognition of Marathi Numerals Using MFCC and DTW Features”, Book Title: Recent Trends on Image Processing and Pattern Recognition, RTIP2R 2018, CCIS 1037, pp. 1–11, © Springer Nature Singapore Pte Ltd. 2019 https://doi.org/10.1007/978-981-13-9187-3_17.
142. Siddheshwar S. Gangonda, Prashant P. Patavardhan, Kailash J. Karande, “Analysis of Face Recognition Algorithms for Uncontrolled Environments”, Book Title: Computing, Communication and Signal Processing, pp. 919–926, © Springer Nature Singapore Pte Ltd. 2018.
143. 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.
144. 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.
145. Siddheshwar S. Gangonda, Prashant P. Patavardhan, Kailash J. Karande, “An Extensive Survey of Prominent Researches in Face Recognition under different Conditions”, 4th International Conference on Computing,



- Communication, Control And Automation (ICCUBEA-2018), 16th to 18th Aug. 2018 organized by Pimpri Chinchwad College of Engineering (PCCOE), Pune, India.
146. Siddheshwar S. Gangonda, Prashant P. Patavardhan, Kailash J. Karande, "Analysis of Face Recognition Algorithms for Uncontrolled Environments", 3rd International Conference on Computing, Communication and Signal Processing (ICCASP 2018), 26th-27th Jan. 2018, organized by Dr. BATU, Lonere, India.
 147. Siddheshwar Gangonda and Prachi Mukherji, "Speech Processing for Marathi Numeral Recognition", International Conference on Recent Trends, Feb 2012, IOK COE, Pune.
 148. S. S. Gangonda, "Bidirectional Visitor Counter with automatic Door Lock System", National Conference on Computer, Communication and Information Technology (NCCCIT-2018), 30th and 31st March 2018 organized by Department of Electronics and Telecommunication Engineering, SKN SCOE, Korti, Pandharpur.
 149. Siddheshwar Gangonda and Prachi Mukherji, "Speech Processing for Marathi Numeral Recognition using MFCC & DTW Features", ePGCON 2012, 23rd and 24th April 2012 organized by Commins COE for Woman, Pune.
 150. Siddheshwar Gangonda and Prachi Mukherji, "Speech Processing for Marathi Numeral Recognition", National Conference on Emerging Trends in Engineering and Technology (VNCET'12), 30th March 2012 organized by Vidyavardhini's College of Engineering and Technology, Vasai Road, Thane.
 151. Siddheshwar Gangonda and Prachi Mukherji, "Speech Processing for Marathi Numeral Recognition", ePGCON 2011, 26th April 2011 organized by MAEER's MIT, Kothrud, Pune-38.
 152. Siddheshwar Gangonda, "Medical Image Processing", Aavishkar-2K7, 17th and 18th March 2007 organized by Department of Electronics and Telecommunication Engineering, SVERI's COE, Pandharpur.
 153. Siddheshwar Gangonda, "Image enhancement & Denoising", VISION 2k7, 28th Feb-2nd March 2007 organized by M.T.E. Society's Walchand College of Engineering, Sangli.
 154. Siddheshwar Gangonda, "Electromagnetic interference & compatibility" KSHITIJ 2k6, 23rd and 24th Sept. 2006 organized by Department of Mechanical Engineering, SVERI's COE, Pandharpur.
 155. A. Pise and K. Karande, "A genetic Algorithm-Driven Energy-Efficient routing strategy for optimizing performance in VANETs," Engineering Technology and Applied Science Research, vol. 15, no. 5, 2025, [Online]. Available: <https://etasr.com/index.php/ETASR/article/view/12744>
 156. A. C. Pise, K. J. Karande, "Investigating Energy-Efficient Optimal Routing Protocols for VANETs: A Comprehensive Study", ICT for Intelligent Systems, Lecture Notes in Networks and Systems 1109, Proceedings of ICTIS 2024 Volume 3, Lecture Notes in Networks and Systems, Springer, Singapore, ISSN 2367-3370, PP 407-417, 29 October 2024 https://doi.org/10.1007/978-981-97-6675-8_33.
 157. A. C. Pise, et. al., "Smart Vehicle: A Systematic Review", International Journal - The Ciência&Engenharia - Science & Engineering Journal ISSN: 0103-944X Volume 11 Issue 1, 2023pp: 992-998, 2023.
 158. A. C. Pise, et. al., "Smart Vehicle: A Systematic Review", International Journal of Research Publication and Reviews, ISSN 2582-7421, Vol 4, no 10, pp 2728-2731 October 2023.
 159. A. C. Pise, et. al., "Development of BIOBOT System to Assist COVID Patient and Caretakers", European Journal of Molecular and Clinical Medicine ; 10(1):3472-3480, 2023.
 160. A. C. Pise, et. al., "IoT Based Landmine Detection Robot", International Journal of Research in Science & Engineering ISSN: 2394-8299 Vol: 03, No. 04, June-July 2023.
 161. A. C. Pise, et. al., "A Systematic survey on Estimation of Electrical Vehicle", Journal of Electronics, Computer Networking and Applied Mathematics (JECNAM) ISSN: 2799-1156, Volume 3, Issue 01, Pages 1-6, December 2023.
 162. A. C. Pise, et. al., "Python Algorithm to Estimate Range of Electrical Vehicle", Web of Science, Vol 21, No 1 (2022) December 2022
 163. A. C. Pise, et. al., "Implementation of BIOBOT System for COVID Patient and Caretakers Assistant using IOT", International Journal of Information technology and Computer Engineering. 30-43. 10.55529/ijitc.21.30.43, (2022).



- 164.A. C. Pise, et. al., "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.
- 165.A. C. Pise, Dr. K. J. Karande, "An Exploratory study of Cluster Based Routing Protocol in VANET: A Review", International Journal of Advanced Research in Engineering and Technology(IJARET), 12,10, 2021, 17-30, Manuscript ID :00000-94375 Source ID : 00000006, Journal_uploads/IJARET/VOLUME_12_ISSUE_10/IJARET_12_10_002.pdf
- 166.A. C. Pise, et. al., "Android based Portable Health Support System," A Peer Referred & Indexed International Journal ofResearch,Vol.8,issue.4 , April 2019.
- 167.A. C. Pise, et. al., "Facial Expression Recognition Using Image Processing," International Journal ofVLSI Design, Microelectronics and Embedded System,Vol.3,issue.2 , July 2018.
- 168.A. C. Pise, et. al., "Detection of Cast Iron Composition by Cooling Curve Analysis using Thermocouple Temperature Sensor," UGC Approved International Journal of Academic Science (IJRECE),Vol.6, Issue.3 , July-September 2018.
- 169.A. C. Pise, et. al., "Android Based Portable Health Support", System International Journal of Engineering Sciences & Research Technology (IJESRT 2017) Vol.6, Issue 8, pp 85-88 5th Aug 2017
- 170.A. C. Pise, et. al., "Adaptive Noise Cancellation in Speech Signal", International Journal of Innovative Engg and Technology, 2017
- 171.A. C. Pise, et. al., "Lung Cancer Detection System by using Baysian Classifier", ISSN 2454-7875, IJRPET, published online in conference special issue VESCOMM-2016, February 2016
- 172.A. C. Pise, et. al., "Review on Agricultural Plant Diseases Detection by Image Processing", ISSN 2278-621X, IJLTET, Vol 7, Issue 1 May 2016
- 173.A. C. Pise, et. al. "Segmentation of Retinal Images for Glaucoma Detection", International Journal of Engineering Research and Technology (06, June-2015).
- 174.A. C. Pise, et. al. "Color Local Texture Features Based Face Recognition", International Journal of Innovations in Engineering and Technology(IJiet) , Dec. 2014
- 175.A. C. Pise, et. al. "Single Chip Solution For Multimode Robotic Control", International Journal of Engineering Research and Technology (IJERT-2014), Vol. 3, Issue 12, Dec. 2014.
- 176.Anjali C. Pise et. al., "Remote monitoring of Greenhouse parameters using zigbee Wireless Sensor Network", International Journal of Engineering Research & Technology ISSN 2278-0181 (online) Vol. 3, Issue 2, and pp: (2412-2414), Feb. 2014.
- 177.A. C. Pise, K. J. Karande, "Cluster Head Selection Based on ACO In Vehicular Ad-hoc Networks", Machine Learning for Environmental Monitoring in Wireless Sensor Networks
- 178.A. C. Pise, K. J. Karande, "Architecture, Characteristics, Applications and Challenges in Vehicular Ad Hoc Networks" Presented in 27th IEEE International Symposium on Wireless Personal Multimedia Communications (WPMC 2024) "Secure 6G – AI Nexus: Where Technology Meets Humanity" Accepted for book chapter to be published in international Scopus index book by River publisher.
- 179.A. C. Pise, Dr. K. J. Karande, "K-mean Energy Efficient Optimal Cluster Based Routing Protocol in Vehicular Ad Hoc Networks", International Conference on Innovations in Artificial Intelligence and Machine Learning (ICAIML-2022), August 20th and 21st 2022 Springer database Conference.
- 180.A. C. Pise, Mr. D. Nale, "Web-Based Application for Result Analysis", ", International Conference on Innovations in Artificial Intelligence and Machine Learning (ICAIML-2022), August 20th and 21st 2022 Springer database Conference.
- 181.A. C. Pise, et. al., "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.
- 182.A. C. Pise, et. al., "Facial Expression Recognition Using Facial Features," IEEE International Conference on Communication and Electronics Systems (ICCES 2018), October 2018.



- 183.A. C. Pise, et. al., "Estimating Parameters of Cast Iron Composition using Cooling Curve Analysis," IEEE International Conference on Communication and Electronics Systems (ICCES 2018), Coimbatore, October 2018.
- 184.A. C. Pise, et. al., "Android based portable Health Support System," International Conference on Innovations in Engineering and Technology (CIET 2016), SKN Sinhgad College of Engineering, 30-31 Dec 2016.
- 185.A. C. Pise, et. al., "Baysian Classifier & FCM Segmentation for Lung Cancer Detection in early stage," International Conference on Innovations in Engineering and Technology (CIET 2016), SKN Sinhgad College of Engineering, 30-31 Dec 2016.
- 186.A. C. Pise, et. al., "Cast Iron Composition Measurement by Coding Curve Analysis," International Conference on Innovations in Engineering and Technology (CIET 2016), SKN Sinhgad College of Engineering, 30-31 Dec 2016.
- 187.A. C. Pise, et. al., "War field Intelligence Defence Flaging Vehicle," International Conference on Innovations in Engineering and Technology (CIET 2016), SKN Sinhgad College of Engineering, 30-31 Dec 2016.
- 188.A. C. Pise, et. al. "Disease Detection of Pomegranate Plant", IEEE sponsored International Conference on Computation of Power, Energy, Information and Communication, 22- 23 Apr. 2015.
- 189.A. C. Pise, P. Bankar. "Face Recognition by using GABOR and LBP", IEEE International Conference on Communication and Signal Processing, ICCSP, 2-4 Apr. 2015
- 190.A. C. Pise, et. al. "Single Chip Solution For Multimode Robotic Control", Ist IEEE International Conferene on Computing Communication and Automation, 26-27 Feb2015.
- 191.Anjali C. Pise, Vaishali S. Katti, "Efficient Design for Monitoring of Greenhouse Parameters using Zigbee Wireless Sensor Network", fifth SARC international conference IRF,IEEE forum ISBN 978-93-84209-21-6,pp 24-26, 25th May 2014
- 192.A. C. Pise, P. Bankar, "Face Recognition using Color Local Texture Features", International Conference on Electronics and Telecommunication, Electrical and Computer Engineering, Apr.2014.
- 193.A. C. Pise, et.al. "Monitoring parameters of Greenhouse using Zigbee Wireless Sensor Network", 1st International Conference on Electronics and Telecommunication, Electrical and Computer Engineering, 5-6 Apr.2014.
- 194.A. C. Pise, et. al. "Compensation schemes and performance Analysis of IQ Imbalances in Direct Conversion Receivers", International Conference at GHPCOE, Gujarat, (Online Proceeding is Available), 2009.
- 195.A. C. Pise, K. J. Karande, "Energy-Efficient Optimal Routing Protocols in VANETs", 66th Annual IETE Convention, AIC -2023 September16-17, 2023, under the Theme: The Role of 5G In Enabling Digital Transformation for Rural Upliftment.
- 196.A. C. Pise, et. al. "Automatic Bottle Filling Machine using Raspberry Pi", National Conference on computer ;Communication& information Technology (NCCIT-2018) dated 30th & 31st March 2018.
- 197.A. C. Pise, et. al. "Design & Implementation of ALU using VHDL", National Conference on computer ;Communication& information Technology (NCCIT-2018) dated 30th & 31st March 2018.
- 198.A. C. Pise, et. al. "Mechanism and Control of Autonomus four rotor Quad copter", National Conference on Computer, Electrical and Electronics Engineering, 23- 24 Apr. 2016.
- 199.A. C. Pise, et. al. "Segmentation of Optic Disk and Optic Cup from retinal Images", ICEECMPE – Chennai, June 2015
- 200.A. C. Pise, et. al. "Diseases Detection of Pomegranate Plant", IEEE Sponsored International conference on Computation of Power, Energy , April 2015.
- 201.A. C. Pise, et. al. "Compensation Techniques for I/Q Imbalance in Direct-Conversion Receivers", Conference at SCOE, Pune 2010.
- 202.A. C. Pise, et. al. "I/Q Imbalance compensation Techniques in Direct Conversion Receiver ", Advancing Trends in Engineering and Management Technologies, ATEMT-2009, Conference at Shri Ramdeobaba Kamla Nehru Engineering College, Nagpur, 20-21 November 2009



- 203.A. C. Pise, et. al. "Compensation Techniques for I/Q Imbalance in Direct Conversion Receiver", Conference at PICT, Pune 2008.
- 204.A. C. Pise, et. al. "I/Q Imbalance compensation Techniques in Direct Conversion Receiver ", Conference at DYCOE, Pune 2008.
- 205.A. C. Pise, et. al. "DUCHA: A New Dual channel MAC protocol for Multihop Ad-Hoc Networks", Conference at SVCP, Pune 2007.
- 206.Godase, V., Pawar, P., Nagane, S., & Kumbhar, S. (2024). Automatic railway horn system using node MCU. Journal of Control & Instrumentation, 15(1).
- 207.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.
- 208.Jamadade, V. K., Ghodke, M. G., Katakdhond, S. S., & Godase, V. A Comprehensive Review on Scalable Arduino Radar Platform for Real-time Object Detection and Mapping.
- 209.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.
- 210.Godase, V. (2025, April). Advanced Neural Network Models for Optimal Energy Management in Microgrids with Integrated Electric Vehicles. In Proceedings of the International Conference on Trends in Material Science and Inventive Materials (ICTMIM-2025) DVD Part Number: CFP250J1-DVD.
- 211.Dange, R., Attar, E., Ghodake, P., & Godase, V. (2023). Smart agriculture automation using ESP8266 NodeMCU. J. Electron. Comput. Netw. Appl. Math, (35), 1-9.
- 212.Godase, V. (2025). Optimized Algorithm for Face Recognition using Deepface and Multi-task Cascaded Convolutional Network (MTCNN). Optimum Science Journal.
- 213.Mane, V. G. A. L. K., & Gangonda, K. D. S. Pipeline Survey Robot.
- 214.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.
- 215.Godase, V., & Jagadale, A. (2019). Three element control using PLC, PID & SCADA interface. International Journal for Scientific Research & Development, 7(2), 1105-1109.
- 216.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.
- 217.Godase, V., Modi, S., Misal, V., & Kulkarni, S. (2025). LoRaEdge-ESP32 synergy: Revolutionizing farm weather data collection with low-power, long-range IoT. Advance Research in Analog and Digital Communications, 2(2), 1-11.
- 218.Godase, V. (2025). Comparative study of ladder logic and structured text programming for PLC. Available at SSRN 5383802.
- 219.Godase, V., Modi, S., Misal, V., & Kulkarni, S. Real-time object detection for autonomous drone navigation using YOLOv8. Advance Research in Communication Engineering and its Innovations, 2(2), 17-27.
- 220.Godase, V. (2025). Smart energy management in manufacturing plants using PLC and SCADA. Advance Research in Power Electronics and Devices, 2(2), 14-24.
- 221.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, 1(1), 9-19.
- 222.Godase, V. (2025). Graphene-Based Nano-Antennas for Terahertz Communication. International Journal of Digital Electronics and Microprocessor Technology, 1(2), 1-14.
- 223.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.
- 224.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.



225. Jamadade, V. K., Ghodke, M. G., Katakdhond, S. S., & Godase, V. A Comprehensive Review on Scalable Arduino Radar Platform for Real-time Object Detection and Mapping.
226. Godase, V. (2025). Cross-Domain Comparative Analysis of Microwave Imaging Systems for Medical Diagnostics and Industrial Testing. *Journal of Microwave Engineering & Technologies*, 12(2), 39-48p.
227. V. K. Jamadade, M. G. Ghodke, S. S. Katakdhond, and V. Godase, —A Review on Real-time Substation Feeder Power Line Monitoring and Auditing Systems,” *International Journal of Emerging IoT Technologies in Smart Electronics and Communication*, vol. 1, no. 2, pp. 1-16, Sep. 2025.
228. V. V. Godase, “VLSI-Integrated Energy Harvesting Architectures for Battery-Free IoT Edge Systems,” *Journal of Electronics Design and Technology*, vol. 2, no. 3, pp. 1-12, Sep. 2025.
229. A. Salunkhe et al., “A Review on Real-Time RFID-Based Smart Attendance Systems for Efficient Record Management,” *Advance Research in Analog and Digital Communications*, vol. 2, no. 2, pp.32-46, Aug. 2025.
230. 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), 41-47p.
231. Nagane, M.S., Pawar, M.P., & Godase, P.V. (2022). Cinematica Sentiment Analysis. *Journal of Image Processing and Intelligent Remote Sensing*.
232. Godase, V.V. (2025). Tools of Research. *SSRN Electronic Journal*.
233. Godase, V. (n.d.). EDUCATION AS EMPOWERMENT: THE KEY TO WOMEN’S SOCIO ECONOMIC DEVELOPMENT. *Women Empowerment and Development*, 174–179.
234. Godase, V. (n.d.). COMPREHENSIVE REVIEW ON EXPLAINABLE AI TO ADDRESSES THE BLACK BOX CHALLENGE AND ITS ROLE IN TRUSTWORTHY SYSTEMS. In *Sinhgad College of Engineering, Artificial Intelligence Education and Innovation* (pp. 127–132).
235. Godase, V. (n.d.-b). REVOLUTIONIZING HEALTHCARE DELIVERY WITH AI-POWERED DIAGNOSTICS: A COMPREHENSIVE REVIEW. In *SKN Sinhgad College of Engineering, SKN Sinhgad College of Engineering* (pp. 58–61).
236. Dhope, V. (2024). SMART PLANT MONITORING SYSTEM. In *International Journal of Creative Research Thoughts (IJCRT)*. <https://www.ijcrt.org>
237. M. M. Zade, Sushant D. Kambale, Shweta A. Mane, Prathamesh M. Jadhav. (2025) “IOT Based early fire detection in Jungles”. *RIGJA&AR Volume 2 Issue 1*, ISSN:2998-4459. DOI:<https://doi.org/10.5281/zenodo.15056435>
238. M. M. Zade, Bramhadev B. Rupanar, Vrushal S. Shilawant, Akansha R. Pawar (2025) “IOT Flood Monitoring & Alerting System using Raspberry Pi-Pico ” *International Journal of Research Publication & Reviews*, Volume 6, Issue3, ISSN:2582-7421. DOI:<https://ijrpr.com/uploads/V6ISSUE3/IJRPR40251.pdf>
239. M.M.Zade (2022) “Touchless Fingerprint Recognition System”(Paper-ID 907)(2022) *International Conference on “Advanced Technologies for Societal Applications: Techno-Societal 2022* <https://link.springer.com/book/10.1007/978-3-031-34644-6?page=6>
240. Mr.M.M.Zade published the paper on “Automation of Color Object Sorting Conveyor Belt”, in *International Journal of Scientific Research in Engineering & Management (IJSREM)*, ISSN:2582-3930 Volume 06, Issue 11th November 2022.
241. Mr.M.M.Zade published the paper on “Cloud Based Patient Health Record Tracking web Development”, in *International Journal of Advanced Research in Science, Communication & Technology (IJARSCT)*, ISSN NO:2581-9429 Volume 02, Issue03, DOI 1048175/IJARSCT-3705, IF 6.252, May 2022.
242. 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
243. 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
244. 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



245. 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
246. 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
247. 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
248. Mr. Mahesh M Zade & Mr.S.M.Karve, "Performance Analysis of Median Filter for Enhancement of Highly Corrupted Images", National Conference on Advanced Trends in Engineering, Association with IRJMS, Karmyogi Engineering College, Shelave, Pandharpur, March 2016.
249. Mr. Mahesh M Zade & Mr.S.M.Karve, "Implementation of Reed Solomen Encoder & Decoder Using FPGA", National Conference on Advanced Trends in Engineering, Association with IRJMS, Karmyogi Engineering College, Shelave, Pandharpur, March 2016.
250. Mr. Mahesh M Zade & Dr.S.M.Mukane, "Performance of Switching Median Filter for Enhancement of Image", National Conference on Mechatronics at Sinhgad Institute of Technology and Science, Narhe, Pune, Feb. 2016.
251. Mr. Mahesh M Zade & Dr.S.M.Mukane, "Enhancement of Image with the help of Switching Median Filter", National Conference on Emerging Trends in Electronics & Telecommunication Engineering, SVERI's College of Engineering Pandharpur, NCET 2013.
252. 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.

