



ACADEMIC PROJECTS 2026-2027

ELECTRONICS & COMMUNICATIONS



- Embedded Systems
- VLSI / FPGA Design
- IoT Applications
- Wireless Communication
- Image / Signal Processing
- Antenna Design
- Robotics & Automation
- & many more domains

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EMBEDDED TITLE LIST 2026-27

S.No	Project Code	Title / Objective / Tools	Domain
1	TEMBMA4015	Moving Vehicle Obstacle Pre-Detection with Telemetry Sensing Signal Prediction by Negative Group Delay Method Objective: To implement an obstacle pre detection system for moving vehicles using telemetry sensing signals. The system aims to enhance vehicle safety through early obstacle awareness. Tools: Arduino IDE, Embedded C	Embedded
2	TEMBMA3968	TriSafe: Real-Time AI-Driven Fall, Anomaly, and Toxic-Air Protection for Sanitation Workers Objective: To develop an AI-driven safety system for sanitation workers that detects falls, anomalies, and toxic air exposure in real time. The system aims to enhance worker safety and emergency response. Tools: Arduino IDE, Embedded C, Python	Embedded + AI
3	TEMBMA3939	Real-Time Tray-Level Egg Fertility Detection on Raspberry Pi Using YOLOv5 and Custom LED Backlighting Objective: The objective of this project is to develop a real-time egg fertility detection system using Raspberry Pi, YOLOv5, and custom LED backlighting to accurately classify fertile and infertile eggs. The system aims to automate the egg inspection process, reduce manual effort, improve detection accuracy, and enhance hatchery productivity through intelligent image analysis. Tools: Python, Raspbian OS	Embedded + DL
4	TEMBMA4012	Development of Noncontact and Real-time Thickness Measurement System of a Solid Object Based on Ultrasonic Sensing Method Objective: To create a noncontact thickness measurement system using ultrasonic sensing technology. The system aims to provide measurements of solid objects. Tools: Arduino IDE, Embedded C	Embedded
5	TEMBMA4002	An IoT based Voice-Activated Wheelchair for Healthcare and Mobility Assistance Objective: To implement a voice-activated wheelchair using IoT technology for healthcare assistance. The system aims to improve mobility and independence for physically challenged users.	Biomedical + IOT

		Tools: Arduino IDE, Embedded C	
6	TEMBMA3941	AI-Based Image Caption Generator using BLIP and Deep Learning Objective: To develop an AI-based image caption generator using the BLIP model that automatically generates meaningful descriptions for images in real time, improving image understanding and accessibility. Tools: Python, Arduino IDE, Embedded C	DL
7	TEMBMA3969	Integration of Vision Transformer Networks in YOLOv8 for Object Detection: Comparative Study on Plant Disease Detection Objective: To develop an advanced plant disease detection system by integrating Vision Transformer networks with YOLOv8. The system aims to improve detection accuracy through deep learning techniques. Tools: Python, Arduino IDE, Embedded C	DL
8	TEMBMA4014	Error Analysis in Detection of Soil Moisture Using Triad Spectroscopy Sensor Objective: To investigate the accuracy of soil moisture detection using a triad spectroscopy sensor. The system aims to identify errors and improve measurement reliability. Tools: Arduino IDE, Embedded C	Embedded
9	TEMBMA3980	Real-Time Crime Detection and Suspicious Activity Classification in Public Spaces Using Deep Learning and Enhanced Surveillance Technology Objective: To develop a real-time crime detection system using deep learning techniques. The system aims to identify suspicious activities and improve public safety through intelligent surveillance. Tools: Python, Arduino IDE, Embedded C	DL
10	TEMBMA4013	Design and Integration of a Compact Mobile Outdoor Soil Sampling Agricultural Robot Objective: To design and integrate a mobile agricultural robot for automated soil sampling. The system aims to improve soil data collection efficiency in farming environments. Tools: Arduino IDE, Embedded C	Embedded + Robotics
11	TEMBMA3943	IoT-Based Smart Tomato Cultivation Monitoring and Pest Prediction System Using CNN, LSTM and Fuzzy Logic Objective: To develop an IoT-based smart tomato cultivation system that monitors environmental conditions and predicts pest outbreaks using CNN, LSTM, and Fuzzy Logic. The system aims to provide early pest detection and	Embedded + IOT

		intelligent alerts to improve crop yield and support sustainable farming. Tools: Arduino IDE, Embedded C	
12	TEMBMA4017	On-Device Edge AI for Monthly Energy Forecasting on ESP32-S3 Using 3-Day Windows Objective: To implement an edge AI-based energy forecasting system on ESP32-S3 devices. The system aims to provide accurate monthly energy predictions with low hardware resources. Tools: Python, Arduino IDE, Embedded C	AI
13	TEMBMA4018	A Lightweight, Real-Time Human Detection and Tracking System for Privacy-Preserving Occupancy Monitoring Using Low-Resolution Thermal Sensors Objective: To develop a lightweight human detection and tracking system using thermal sensors. The system aims to enable privacy-preserving occupancy monitoring. Tools: Python, Arduino IDE, Embedded C	DL
14	TEMBMA4028	ESP8266 WiFi Module-Enabled Embedded System for Detection of Natural Disaster Objective: To design an ESP8266-based disaster detection system for monitoring natural hazards. The system aims to provide early warnings and improve disaster preparedness. Tools: Arduino IDE, Embedded C	Embedded + IOT
15	TEMBMA4025	TrustEdge: SAINT-Driven Intrusion Detection for Resource-Constrained IoT Devices Objective: To implement an intelligent intrusion detection system for resource-constrained IoT devices. The system aims to enhance network security by identifying and preventing cyber threats. Tools: Arduino IDE, Embedded C	IOT
16	TEMBMA3958	IoT and Machine Learning-Based Automated Poultry Feeding Objective: To develop an automated poultry feeding system using IoT and machine learning. The system aims to optimize feeding schedules and improve poultry farm efficiency. Tools: Arduino IDE, Embedded C	IOT
17	TEMBMA4007	Smart Assistive System for Real-Time AV Interaction and Home Automation Using Raspberry Pi and Arduino Objective: To create a smart assistive system for audio-visual interaction and	Embedded + AI

		home automation. The system aims to improve accessibility and user convenience through intelligent control. Tools: Python, Raspbian OS	
18	TEMBMA3960	Intelligent Cold Storage Monitoring for Perishable Fruits Objective: To develop an intelligent cold storage monitoring system for perishable fruits. The system aims to track environmental conditions and maintain product quality during storage. Tools: Arduino IDE, Embedded C	Embedded
19	TEMBMA3961	Design and Implementation of a Simple IoT System for Monitoring Pet Living Conditions Objective: To develop an IoT-based monitoring system for pet living conditions. The system aims to continuously track environmental parameters and ensure pet well-being. Tools: Arduino IDE, Embedded C	Embedded + IOT
20	TEMBMA3962	Early Prediction of Respiratory Illness Identification using Machine Learning and IoT Objective: To develop a system for the early prediction of respiratory illnesses using machine learning and IoT. The system aims to analyse health data and support timely medical intervention. Tools: Python, Arduino IDE, Embedded C	ML
21	TEMBMA3966	Machine Learning-Driven Hazardous Gas Monitoring and Forecasting System for Rural and Remote Regions Objective: To develop a hazardous gas monitoring and forecasting system using machine learning. The system aims to detect gas levels and predict potential risks in rural and remote areas. Tools: Python, Arduino IDE, Embedded C	ML
22	TEMBMA3970	IoT-Enabled Real-Time Monitoring and Disease Prediction System for Sustainable Aquaculture Objective: To develop an IoT-enabled system for real-time monitoring and disease prediction in aquaculture. The system aims to improve aquatic health management and sustainability. Tools: Arduino IDE, Embedded C	IOT
23	TEMBMA4023	AquOculus: A Cost-effective Advanced Metering Infrastructure for Urban Water Distribution Systems Objective: To design a cost-effective metering infrastructure for urban water	IOT

		distribution systems. The system aims to improve water usage monitoring and resource management. Tools: Arduino IDE, Embedded C	
24	TEMBMA4027	LPWAN Smart Waste Bin With On-Device AI Trained on Synthetic Data Objective: To build a smart waste management system using LPWAN connectivity and on-device AI. The system aims to optimize waste collection through intelligent monitoring and classification. Tools: Arduino IDE, Embedded C, Python	Embedded + AI
25	TEMBMA3972	Detecting Glioma, Meningioma, Pituitary Tumors, and Normal Brain Tissues based on YOLOV8 and YOLOV11 Deep Learning Models Objective: To develop a brain tumor detection system using YOLOv8 and YOLOv11 models. The system aims to accurately classify brain tumors and normal tissues for medical diagnosis. Tools: Arduino IDE, Embedded C, Python	Biomedical +DL
26	TEMBMA4022	Cross-Domain Fall Detection and Activity Recognition Using Low-Resolution Infrared Sensors and Deep Learning Objective: To implement a fall detection and activity recognition system using infrared sensors and deep learning. The system aims to improve safety through continuous human activity monitoring. Tools: Arduino IDE, Embedded C	Embedded
27	TEMBMA3975	Multi-Class Traffic Accident Severity Detection and Classification Objective: To develop a traffic accident severity detection and classification system using machine learning techniques. The system aims to analyze accident data and support effective road safety management. Tools: Python, Arduino IDE, Embedded C	ML
28	TEMBMA3977	Enhanced Food Recognition and Calorie Estimation Using Deep Learning Models Objective: To develop a food recognition and calorie estimation system using deep learning models. The system aims to identify food items and estimate their nutritional values accurately. Tools: Python, Arduino IDE, Embedded C	DL
29	TEMBMA3978	An Integrated Machine Learning and Clinical Analysis System for Kidney Disease Prediction and Management Objective: To develop a machine learning-based system for kidney disease	Biomedical + ML

		prediction and management. The system aims to assist healthcare professionals through accurate clinical data analysis. Tools: Arduino IDE, Embedded C, Python	
30	TEMBMA3986	Smart Surveillance System Using Deep Learning for Detection of Missing Persons, Criminals, And Violent Activities Objective: To develop a smart surveillance system using deep learning for detecting missing persons, criminals, and violent activities. The system aims to enhance public safety through real-time monitoring and identification. Tools: Python, Arduino IDE, Embedded C	DL
31	TEMBMA3987	Early Paddy Disease Detection & Sustainable Farming for South Indian Farmers Objective: To develop a paddy disease detection system for early identification of crop diseases. The system aims to support sustainable farming and improve agricultural productivity. Tools: Python, Arduino IDE, Embedded C	DL
32	TEMBMA3989	Vehicle Detection and Counting using YOLOv11 on Raspberry Pi 4 Objective: To develop a real-time vehicle detection and counting system using YOLOv11 on Raspberry Pi 4. The system aims to improve traffic monitoring through accurate vehicle analysis. Tools: Python, Raspbian OS	DL
33	TEMBMA3991	Deep Learning-Based Student Behaviour Monitoring in Smart Classrooms Objective: To develop a student behaviour monitoring system using deep learning techniques. The system aims to analyze classroom activities and enhance learning environments. Tools: Python, Arduino IDE, Embedded C	DL
34	TEMBMA3992	Evaluation of Object Detection Models on Indian Road Scenarios for Pothole Detection Objective: To evaluate object detection models for accurate pothole detection on Indian roads. The system aims to improve road safety through intelligent monitoring. Tools: Arduino IDE, Embedded C	Embedded
35	TEMBMA3994	TinyML-Based Ripeness Classification System for Mango and Banana Deployed on Raspberry Pi Objective: To develop a TinyML-based system for classifying the ripeness	ML

		of mangoes and bananas. The system aims to provide accurate fruit maturity assessment on edge devices. Tools: Python, Raspbian OS	
36	TEMBMA3997	AI and IoT Based Non-Contact Patient Monitoring System for Early Health Risk Detection Objective: To develop a non-contact patient monitoring system using AI and IoT technologies. The system aims to detect health risks early and support continuous patient care. Tools: Arduino IDE, Embedded C, Python	IOT & AI
37	TEMBMA4020	Design of a Low-Cost Power Quality Analyzer with LoRa-WAN Telemetry for Rural Smart Grid Applications Objective: To design a low-cost power quality analyzer with LoRa-WAN telemetry capabilities. The system aims to support efficient monitoring of rural smart grid infrastructures. Tools: Arduino IDE, Embedded C	Electrical
38	TEMBMA4033	Automated IoT-Controlled Microgrid Switching for Reliable Energy Distribution Objective: To implement an IoT-controlled microgrid switching system for efficient energy distribution. The system aims to enhance power reliability and grid stability. Tools: Arduino IDE, Embedded C	Electrical + IOT
39	TEMBMA4034	Design and Implementation of a Multi-Functional Precision Smart Electronic Scale Using STM32 and Internet of Things Technology Objective: To design a precision smart electronic scale using STM32 and IoT technology. The system aims to provide accurate measurements and remote monitoring capabilities. Tools: Arduino IDE, Embedded C	Embedded + IOT
40	TEMBMA4035	A Human-Centric IoT-Based Transformer Safety System with Proximity Detection, Fault Monitoring and Inductive Discharge Protection Objective: To create an IoT-based transformer safety system with fault monitoring and proximity detection. The system aims to improve electrical safety and operational reliability. Tools: Arduino IDE, Embedded C	Electrical + IOT
41	TEMBMA4036	A Microcontroller-based Intelligent Shopping Cart with Automated Navigation and Real-Time Billing	Embedded

		Objective: To develop an intelligent shopping cart with automated navigation and real-time billing features. The system aims to enhance customer convenience and shopping efficiency. Tools: Arduino IDE, Embedded C	
42	TEMBMA4039	Intelligent Brightness Control Using Hand Gestures Objective: To design a hand gesture-based brightness control system for smart environments. The system aims to provide touchless and user-friendly lighting control. Tools: Arduino IDE, Embedded C	Embedded
43	TEMBMA4044	Development of an IoT-driven Wearable Belt for Comprehensive Maternal and Fetal Health Tracking Objective: To create an IoT-driven wearable belt for monitoring maternal and fetal health. The system aims to support continuous healthcare tracking and early risk detection. Tools: Arduino IDE, Embedded C	Biomedical + IOT
44	TEMBMA4048	Multipurpose Solar-Powered Agricultural Robot with ML-based Disease Detection Objective: To develop a solar-powered agricultural robot with machine learning-based disease detection. The system aims to automate farming operations and improve crop health monitoring. Tools: Arduino IDE, Embedded C, Python	Robotic + Renewable + ML
45	TEMBMA4051	Integrated Multifunctional Onboard Charger with Low-Voltage DC-DC Conversion and Solar Roof Interface for Electric Vehicles Objective: To design an integrated onboard charging system for electric vehicles with solar roof support. The system aims to improve charging efficiency and energy utilization. Tools: Arduino IDE, Embedded C	Renewable + Electrical
46	TEMBMA4052	Real-Time Parametric Analysis for Electric Vehicle Battery Swapping System Objective: To implement a real-time analysis system for electric vehicle battery swapping operations. The system aims to improve battery management and swapping efficiency. Tools: Arduino IDE, Embedded C	Electrical
47	TEMBMA4053	Intelligent Anaesthesia Dosage Monitoring System using Machine Learning	ML

		Objective: To develop a machine learning-based anaesthesia dosage monitoring system. The system aims to assist healthcare professionals in ensuring accurate dosage administration. Tools: Python, Arduino IDE, Embedded C	
48	TEMBMA4058	WattWhisper: An AI-Enabled IoT Platform for Real-Time Electrical Load Identification and Overload Protection Objective: To create an AI-enabled IoT platform for electrical load identification and overload protection. The system aims to improve electrical safety and energy management. Tools: Arduino IDE, Embedded C, Python	AI + IOT + Electrical
49	TEMBMA4059	Integrated Digital Health Device for Continuous Stress Evaluation Using HRV and Biosensors Objective: To design a digital health device for continuous stress evaluation using HRV and biosensors. The system aims to support real-time stress monitoring and health assessment. Tools: Arduino IDE, Embedded C	Embedded + Biomedical
50	TEMBMA3947	Satellite- Based Forest stand Detection using Artificial Intelligence Objective: To develop an AI-based forest stand detection system using YOLOv8 on a Raspberry Pi for analyzing satellite or drone images to identify forested and non-forested areas. The system aims to provide real-time detection results with location tracking and remote alerts for efficient environmental monitoring and land-use assessment. Tools: Python, Raspbian OS	AI
51	TEMBMA3949	Bidirectional communication system for deaf and mute sign to voice and voice to sign Objective: To develop a bidirectional communication system that converts sign language into speech and spoken language into sign language using Raspberry Pi and machine learning techniques. The system aims to enable seamless and inclusive communication between deaf/mute and hearing individuals in real-time. Tools: Python, Raspbian OS	Embedded
52	TEMBMA3954	Edge AI-Based Tree Smuggling Detection System for Forests Using Image Processing and LoRa Communication Objective: To design and implement an edge AI-based system for detecting illegal tree cutting activities in forest areas using YOLOv8 on a Raspberry Pi. The system aims to enable real-time local processing with low latency and transmit alerts through LoRa communication for effective forest monitoring	AI

		and prevention of tree smuggling. Tools: Python, Raspbian OS	
53	TEMBMA4072	Map-Free Robot Navigation via Episodic Semantic Reasoning with Vision–Language and Large Language Models Objective: To implement a map-free robot navigation system using vision-language and large language models for intelligent decision-making. The system aims to enable autonomous navigation by understanding the surrounding environment through semantic reasoning. Tools: Arduino IDE, Embedded C, Python	Robotics + AI
54	TEMBMA4074	PCAD: A Raspberry Pi Zero–Based Portable Cybersecurity Platform with On-Device K-Means Modelling of Wi-Fi Environments Objective: To design a portable cybersecurity platform using Raspberry Pi Zero with on-device K-Means modelling for Wi-Fi environment analysis. The system aims to detect and classify Wi-Fi network conditions locally, enabling efficient and secure wireless monitoring. Tools: Python, Raspbian OS	Embedded Applications + ML
55	TEMBMA3944	AI-Based Object Detection and Obstacle Warning System Using MobileNet-SSD Objective: To implement an AI-based object detection and obstacle warning system using the MobileNet-SSD model. The system aims to identify nearby objects and provide timely obstacle alerts for safer navigation. Tools: Python, Arduino IDE, Embedded C	AI + Deep Learning
56	TEMBMA4075	Hand Gesture Classification for Object Recognition Using Hybrid CNN-LSTM Model Objective: To implement a hand gesture classification system using a hybrid CNN-LSTM model for object recognition. The system aims to accurately recognize hand gestures and improve human–computer interaction through intelligent gesture analysis. Tools: Python, Arduino IDE, Embedded C	Deep Learning
57	TEMBMA4077	Developing a High-Resolution Lane-Change Trajectory Prediction Model by Combination of Graph Neural Network and Transformer Objective: To propose a high-resolution lane-change trajectory prediction model using Graph Neural Networks and Transformer architecture. The system aims to accurately predict vehicle lane-change movements and enhance intelligent driving assistance. Tools: Python, Arduino IDE, Embedded C	AI + Deep Learning

58	TEMBMA4078	AI-Based Hybrid Renewable Energy Management System using LSTM + Genetic Algorithm Objective: To introduce an AI-based hybrid renewable energy management system using LSTM and Genetic Algorithm for intelligent energy optimization. The system aims to improve energy utilization, reduce power wastage, and enhance the efficiency of renewable energy sources. Tools: Arduino IDE, Embedded C	Renewable
59	TEMBMA4080	An Intelligent Insect Monitoring System with Tracking-Based Duplicate Image Elimination Objective: To implement an intelligent insect monitoring system using AI-based detection and tracking techniques with duplicate image elimination. The system aims to improve insect identification accuracy and provide efficient monitoring for agricultural applications. Tools: Python, Arduino IDE, Embedded C	AI + Deep Learning
60	TEMBMA4082	AI-Powered Vision Sensing System for Real-Time Inspection of Particles in Intravenous Bags Through Mult object Detection-Tracking Configurations Objective: To implement an AI-powered vision sensing system for detecting and tracking particles in intravenous bags using multi-object detection techniques. The system aims to enhance medical inspection accuracy and ensure safer quality monitoring of intravenous fluids. Tools: Arduino IDE, Embedded C, Python	Biomedical + Deep Learning
61	TEMBMA4083	Smart Academic Book Scanner for Mathematical Expression Detection and Real-Time Result Display Using Raspberry Pi Objective: To design a smart academic book scanner using Raspberry Pi for mathematical expression detection and result generation. The system aims to recognize mathematical equations through image processing and provide instant solutions for educational assistance. Tools: Python, Raspbian OS	Embedded Applications + AI
62	TEMBMA4085	Real-Time Bone Fracture Prediction Using Vision Transformer (ViT) with Raspberry Pi Objective: To implement a bone fracture prediction system using Vision Transformer (ViT) with Raspberry Pi for medical image analysis. The system aims to assist in early fracture detection and provide efficient support for healthcare diagnosis. Tools: Python, Raspbian OS	Biomedical + Deep Learning
63	TEMBMA4087	AI-Based Facial Recognition and Intelligent Surveillance System for	Embedded Applications +

		Military Checkpoints Using ESP32-CAM, Face Net, and SVM Objective: To implement an AI-based facial recognition and intelligent surveillance system using ESP32-CAM, FaceNet, and SVM for military checkpoint security. The system aims to enhance identity verification and provide efficient monitoring for secure access control. Tools: Arduino IDE, Embedded C, Python	AI
64	TEMBMA4089	Vision-Based Sign Language Recognition System Using Media Pipe Landmark Extraction and XGBoost Classification Objective: To implement a vision-based sign language recognition system using MediaPipe landmark extraction and XGBoost classification. The system aims to accurately interpret hand gestures and improve communication assistance for hearing-impaired individuals. Tools: Python, Arduino IDE, Embedded C	AI + Deep Learning
65	TEMBMA4091	Design and Development of a bluetooth based wireless mouse without USB Receiver Objective: To design and implement a Bluetooth-based wireless mouse without using a USB receiver. The system aims to provide a cost-effective and convenient wireless input device with improved portability and connectivity. Tools: Arduino IDE, Embedded C	Embedded Applications
66	TEMBMA4092	Exploration of Random Forest Algorithm Optimized by Particle Swarm Optimization in Predicting Heart Disease Objective: To implement a heart disease prediction system using a Random Forest algorithm optimized with Particle Swarm Optimization. The system aims to improve disease prediction performance and support early healthcare decision-making. Tools: Arduino IDE, Embedded C, Python	Biomedical + ML
67	TEMBMA4094	CNN-Based Biometric Recognition for IoT Edge Devices Objective: To implement a CNN-based biometric recognition system for IoT edge devices with efficient identity verification. The system aims to provide secure and intelligent authentication with reduced computational complexity on edge platforms. Tools: Arduino IDE, Embedded C, Python	Deep Learning + IoT
68	TEMBMA4096	Chronic Lung Disease Predictive Analytics Using LightGBM and IoT-Based Health Monitoring Objective: To develop a chronic lung disease prediction system using LightGBM with IoT-based health monitoring. The system aims to analyze	Biomedical + ML

		patient health parameters and support early disease prediction and continuous monitoring. Tools: Arduino IDE, Embedded C, Python	
69	TEMBMA4100	AI-Driven Real-Time Fall Detection and Image-Based Alert Transmission Using DDS for IoT-Assisted Smart Home Care Objective: To implement an AI-driven fall detection system with image-based alert transmission using DDS communication for smart home care. The system aims to identify emergency fall events and provide timely assistance through intelligent monitoring. Tools: Arduino IDE, Embedded C, Python	Deep Learning + IoT
70	TEMBMA4102	Design and Implementation of an IoT-Based Smart Seat Monitoring System with Embedded Data Processing. Objective: To design and implement an IoT-based smart seat monitoring system with embedded data processing for usage analysis. The system aims to monitor seating conditions efficiently and provide intelligent data-driven insights for smart applications. Tools: Arduino IDE, Embedded C	Embedded Applications + IoT
71	TEMBMA4104	IOT-based real-time monitoring and protection system for DC Objective: To implement an IoT-based real-time monitoring and protection system for DC systems. The system aims to monitor electrical parameters, detect abnormal conditions, and provide efficient protection for reliable operation. Tools: Arduino IDE, Embedded C	Electrical + Embedded Applications + IoT
72	TEMBMA410	Real-Time Autonomous Navigation on a Raspberry Pi with Deep Learning and Sensor Fusion Objective: To implement an autonomous navigation system using deep learning and sensor fusion on a Raspberry Pi platform. The system aims to enable intelligent robot movement by combining environmental perception and sensor data for accurate navigation. Tools: Python, Raspbian OS	Deep Learning + Robotics
73	TEMBMA4109	Designing a Smart Face Recognition Payment System for Self-Service Laundry Facilities Objective: To design a smart face recognition-based payment system for self-service laundry facilities. The system aims to provide secure user authentication and enable automated cashless payment operations. Tools: Arduino IDE, Embedded C, Python	Embedded Applications + AI

74	TEMBMA4111	Prediction of Battery Duration and Reachability of Nearest Charging Station Using Machine Learning Objective: To develop a machine learning-based system for predicting battery duration and nearest charging station reachability. The system aims to optimize battery usage and assist users in efficient charging decisions. Tools: Arduino IDE, Embedded C, Python	Embedded Applications + ML
75	TEMBMA4113	Adaptive Headlight Control System for Enhanced Vehicular Safety in Dynamic Weather Conditions Objective: To design an adaptive headlight control system that adjusts lighting conditions based on dynamic weather environments. The system aims to improve vehicle visibility and enhance driving safety through intelligent control mechanisms. Tools: Arduino IDE, Embedded C, Python	Embedded Applications + AI
76	TEMBMA4115	Design and Implementation of Intelligent Dressing Mirror Based on Raspberry Pi Objective: To implement an intelligent dressing mirror using Raspberry Pi 4B with smart image-based features. The system aims to provide personalized assistance through automated analysis and interactive user support. Tools: Python, Raspbian OS	Embedded Applications + AI
77	TEMBMA4117	An Efficient DCNN-based System for Multi-Disease Symptom Analysis on Raspberry Pi Hardware Objective: To implement a DCNN-based multi-disease symptom analysis system on Raspberry Pi hardware. The system aims to assist in disease identification and provide efficient healthcare support using deep learning techniques. Tools: Python, Raspbian OS	Biomedical + Deep Learning
78	TEMBMA4119	Raspberry Pi-Based Real-Time Tyre Fault Detection System Objective: To implement a Raspberry Pi-based real-time tyre fault detection system using intelligent image analysis techniques. The system aims to identify tyre defects early and improve vehicle safety through automated monitoring. Tools: Python, Raspbian OS	Embedded Applications + AI
79	TEMBMA4121	An Intelligent Access Control Device Based on the OpenCV Vision Library and Raspberry Pi Objective: To develop an intelligent access control device using OpenCV vision library and Raspberry Pi for automated authentication. The system	Opencv

		aims to provide secure entry management through vision-based recognition. Tools: Python, Raspbian OS	
80	TEMBMA4122	Development of an Automated Microclimate Monitoring System Based on the ESP32 Microcontroller Objective: To implement an automated microclimate monitoring system using the ESP32 microcontroller for environmental parameter analysis. The system aims to provide efficient monitoring and management of surrounding conditions through IoT-based sensing. Tools: Arduino IDE, Embedded C	Embedded Applications + IoT
81	TEMBMA4124	Design and Implementation of a Low-Cost IoT-Based Smart Agricultural System Using ESP32 and LoRa Technology Objective: To design a low-cost smart agricultural system using ESP32 and LoRa technology for remote field monitoring. The system aims to improve agricultural management through wireless data communication and intelligent sensing. Tools: Arduino IDE, Embedded C	Embedded Applications + IoT
82	TEMBMA4126	Mask and Weapon Detection Surveillance System Using YOLO and Arduino-Based Alert Mechanism Objective: To implement an AI-based surveillance system for mask and weapon detection using YOLO with an Arduino alert mechanism. The system aims to enhance security monitoring by providing automated threat detection and alerts. Tools: Arduino IDE, Embedded C, Python	AI + Embedded Applications
83	TEMBMA4128	Development of a Smart Adaptive Prosthetic Hand with Dynamic Grip Control Objective: To design a smart adaptive prosthetic hand with dynamic grip control for improved user assistance. The system aims to enhance hand functionality by providing intelligent and responsive grasping capabilities. Tools: Arduino IDE, Embedded C	Biomedical + Robotics
84	TEMBMA4130	An AI-Driven Automated Prescription-to-Pill Dispensing System Using YOLOv8 and OCR Objective: To implement an AI-driven automated prescription-to-pill dispensing system using YOLOv8 and OCR technologies. The system aims to improve medication management by accurately recognizing prescriptions and assisting in automated pill dispensing. Tools: Arduino IDE, Embedded C, Python	Biomedical + AI

85	TEMBMA4132	Smart Retail Billing System using YOLOv10 Object Detection and Raspberry Pi Objective: To design a smart retail billing system using YOLOv10 object detection with Raspberry Pi. The system aims to automate product identification and provide efficient checkout solutions. Tools: Python, Raspbian OS	AI + Embedded Applications
86	TEMBMA4134	IoT-Driven Robotic System for Enhanced Nighttime Perimeter Security and Real-Time Surveillance in Smart Environments Objective: To develop an IoT-driven robotic surveillance system for nighttime perimeter security and monitoring. The system aims to enhance safety through autonomous patrolling and real-time environmental observation. Tools: Arduino IDE, Embedded C	Robotics + IoT
87	TEMBMA4135	IoT-Based Luggage Monitoring and Real-Time Tracking System Using Microcontroller Objective: To implement an IoT-based luggage monitoring and tracking system using a microcontroller. The system aims to provide real-time location tracking and improve luggage security. Tools: Arduino IDE, Embedded C	Embedded Applications + IoT
88	TEMBMA4137	Embedded-Based Target Recognition and Tracking Vehicle Objective: To design an embedded-based target recognition and tracking vehicle using intelligent sensing techniques. The system aims to enable autonomous target detection and tracking for robotic applications. Tools: Arduino IDE, Embedded C	Embedded Applications + Robotics
89	TEMBMA4139	Pose-Based Video Sign Language Recognition on Edge Devices Using Deep Neural Networks Objective: To implement a pose-based video sign language recognition system using deep neural networks on edge devices. The system aims to improve gesture interpretation and support effective communication assistance. Tools: Python, Arduino IDE, Embedded C	Deep Learning
90	TEMBMA4140	A Comparative Study on Machine Learning Models for Currency and Object Detection Objective: To analyze and compare machine learning models for currency and object detection applications. The system aims to identify suitable algorithms for accurate and efficient visual recognition.	AI

		Tools: Python, Arduino IDE, Embedded C	
91	TEMBMA4141	Real-Time Monkey Detection Using YOLO with Slack Alerts for Crop Protection Objective: To implement a real-time monkey detection system using YOLO with automated alert notifications. The system aims to protect crops by detecting animal intrusion and providing timely warnings. Tools: Python, Arduino IDE, Embedded C	AI + Deep Learning
92	TEMBMA4143	Gesture-Controlled Hospital Bed Using IoT for Patient-Centric Care Objective: To design a gesture-controlled hospital bed using IoT technology for patient assistance. The system aims to improve healthcare convenience through contactless bed control and monitoring. Tools: Arduino IDE, Embedded C	Biomedical + IoT
93	TEMBMA4145	Design and Implementation of Vehicle Theft Prevention by Operating Fuel Injector Objective: To implement a vehicle theft prevention system by controlling the fuel injector operation. The system aims to enhance vehicle security through intelligent access control mechanisms. Tools: Arduino IDE, Embedded C	Embedded Applications
94	TEMBMA4146	Smart Umbrella using Internet of Things Objective: To implement a smart umbrella system using IoT technology for weather-based assistance. The system aims to provide intelligent alerts and improve user convenience during changing weather conditions. Tools: Arduino IDE, Embedded C	IoT
95	TEMBMA4147	Real-Time Object Dimension Measurement and IoT Data Logging System Using OpenCV and Flask Objective: To develop a real-time object dimension measurement system using OpenCV and Flask with IoT data logging. The system aims to provide accurate size measurement and efficient data management. Tools: Python, Arduino IDE, Embedded C	Opencv
96	TEMBMA4148	Integrating Edge AI and IoT: A Deep Learning Approach to Safeguard Crops from Wildlife Threats Objective: To develop an Edge AI and IoT-based crop protection system using deep learning techniques. The system aims to detect wildlife threats and provide intelligent monitoring for agricultural safety. Tools: Arduino IDE, Embedded C, Python	Deep Learning + IoT

97	TEMBMA4150	Development of an IoT-Enabled Variable-Rate Waste Charging System for Urban Municipalities Objective: To implement an IoT-enabled variable-rate waste charging system for smart municipal waste management. The system aims to optimize waste collection monitoring and improve resource management in urban areas. Tools: Arduino IDE, Embedded C	IoT
98	TEMBMA4151	Design and Implementation of a Self-Triggered IoT Based Accident Alert System Objective: To design a self-triggered IoT-based accident alert system for automatic emergency detection. The system aims to provide timely accident notifications and improve safety through intelligent monitoring. Tools: Arduino IDE, Embedded C	Embedded Applications + IoT
99	TEMBMA4153	IoT-Integrated Embedded System for Precision Food Production in Controlled Environment Objective: To implement an IoT-integrated embedded system for precision food production in controlled environments. The system aims to monitor and regulate environmental conditions for improved production efficiency. Tools: Arduino IDE, Embedded C	Embedded Applications + IoT
100	TEMBMA4155	AI-Powered IoT System for Autonomous Railway Level Crossing Control Objective: To develop an AI-powered IoT system for autonomous railway level crossing control. The system aims to enhance railway safety through intelligent train detection and automated crossing management. Tools: Arduino IDE, Embedded C, Python	AI + Embedded Applications + IoT
101	TEMBMA4158	IoT Based Speed Control Monitoring and Accident Avoidance using AI Traffic Sign Detection Objective: To implement an IoT-based speed monitoring system with AI traffic sign detection for accident prevention. The system aims to improve road safety by providing intelligent speed control and warning mechanisms. Tools: Arduino IDE, Embedded C, Python	AI + IoT
102	TEMBMA4160	IoT Based Smart Water Meter and Electricity Meter for Domestic Utilities Objective: To design an IoT-based smart water and electricity metering system for domestic utility monitoring. The system aims to provide real-time consumption tracking and efficient resource management.	Electrical + Embedded Applications + IoT

		Tools: Arduino IDE, Embedded C	
103	TEMBMA4163	Gesture-Driven Virtual Mouse for Human Computer Interaction Objective: To implement a gesture-driven virtual mouse system for human-computer interaction using hand movement recognition. The system aims to provide a touchless control interface and improve accessibility for users. Tools: Arduino IDE, Embedded C, Python	AI + Embedded Applications
104	TEMBMA4165	Eyeball-Controlled Wheelchair for Paralyzed Patients Objective: To design an eyeball-controlled wheelchair system for assisting paralyzed patients with mobility support. The system aims to enable hands-free wheelchair operation through eye movement-based control. Tools: Arduino IDE, Embedded C	Biomedical + Robotics
105	TEMBMA4167	Smart System for Indoor Plant Selection and Maintenance Support Objective: To develop a smart indoor plant selection and maintenance support system using intelligent monitoring techniques. The system aims to recommend suitable plants and assist users in maintaining healthy growth conditions. Tools: Arduino IDE, Embedded C, Python	AI + Embedded Applications
106	TEMBMA4169	An Enhanced Impedance Trajectory-Based Adaptive Distance Protection for Renewable Energy Systems Objective: To implement an adaptive distance protection system using impedance trajectory analysis for renewable energy systems. The system aims to improve fault detection and enhance the reliability of modern power networks. Tools: Arduino IDE, Embedded C	Electrical
107	TEMBMA4170	Eco-Friendly Energy from Flowing Water: A Review of Floating Waterwheel Power Generation Objective: To explore floating waterwheel-based power generation as an eco-friendly renewable energy solution. The system aims to utilize flowing water resources for sustainable electricity generation. Tools: Arduino IDE, Embedded C	Renewable
108	TEMBMA4171	Optimal Energy Management of a Hybrid System Composed of PV, Wind Turbine, Pumped Hydropower Storage, and Battery Storage to Achieve a Complete Energy Self-Sufficiency in Residential Buildings Objective: To design an optimal energy management system integrating solar, wind, hydropower storage, and battery storage technologies. The system aims to achieve efficient energy utilization and support self-sufficient	Renewable

		residential power management. Tools: Arduino IDE, Embedded C	
109	TEMBMA4172	Design of an Efficient Energy Harvesting System for Smart Grid Connection Based on Piezoelectric Technology Objective: To design an efficient piezoelectric energy harvesting system for smart grid integration. The system aims to convert mechanical energy into electrical power and support sustainable energy solutions. Tools: Arduino IDE, Embedded C	Renewable
110	TEMBMA4173	Bus Crowd Analysis Using Open CV Objective: To develop a Bus Crowd Analysis system using OpenCV for real-time passenger detection and counting. The system monitors bus occupancy to reduce overcrowding and improve public transport efficiency. Tools: Python, Arduino IDE, Embedded C	Opencv

PROJECT SUPPORTS FOR STUDENTS:

- Project Abstract
- Project IEEE Base Paper/ Reference Paper
- Project Presentation in PPT Format
- Project Review Assistance for Viva
- Project Diagrams
- Project Source Code
- Project Report
- Project Screen Shots
- Project Demo
- Project Explanation
- Plagiarism Documentation
- International Journal/Conference Publishing
- Project Acceptance Letter
- Project Completion Certificate

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Takeoff provided good support throughout the project development process. They delivered the project on time.

Venkatesh U



The team explained the project well. They delivered project on time. Overall the good experience.

Meenakshi Narayan



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