

ACADEMIC LIVE PROJECTS 2025 - 2026

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ELECTRONICS

✓ EMBEDDED SYSTEMS

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TCOAP
TECHNOLOGY CAPABILITY ORIENTED ACADEMIC PROJECTS

S. No	PROJECT CODE	TITLE	DOMAIN
1.	TEMBMA3698	Enhanced And Light Weight Yolov8 Based Model For Accurate Rice Pest Detection Objective: To detect rice pests using a lightweight YOLOv8 model. Aims for real-time, field-ready pest identification.	AI
2.	TEMBMA3687	Fruit Monitoring and Harvest Date Prediction Using On-Tree Automatic Image Tracking Objective: To monitor on-tree fruit growth-using automatic image tracking. Predicts optimal harvest dates to improve yield quality.	Deep Learning
3.	TEMBMA3693	Low Cost, Multi Sensor Non Destructive Banana Ripeness Estimation Using Machine Learning Objective: To estimate banana ripeness using multiple low-cost sensors. Machine learning enables accurate non-destructive analysis.	Machine Learning
4.	TEMBMA3694	Enhancing Road Safety: Detection of Animals on Highways During Night Objective: To detect animals on roads at night using ML and vision. Reduces collision risk and improves highway safety.	Machine Learning
5.	TEMBMA3695	Steroid Level Detection in Milk Production Objective: To identify steroid residues in milk using sensors and ML. Ensures dairy safety and regulatory compliance.	Machine Learning
6.	TEMBMA3734	Development of an IoT-Enabled Smart Healthcare Monitoring System for Real-Time Patient Health Surveillance Objective: The main objective is to develop a Smart Healthcare Monitoring System using IoT for real-time monitoring of vital signs like heart rate, temperature, and ECG via Arduino UNO and sensors. Data is displayed on an LCD,	Biomedical

		uploaded to the cloud, and alerts are sent for abnormal readings to enable remote care and early diagnosis.	
7.	TEMBMA3696	Efficient Web Based Automated Poultry Disease Detection Using Transfer Learning Models Objective: To detect poultry diseases from images on a web interface. Uses pretrained models for quick and accurate diagnosis.	AI
8.	TEMBMA3735	AIoT-Based Meat Quality Monitoring Using Camera and Gas Sensor With Wireless Charging Objective: To evaluate meat freshness using gas sensors and cameras. Wireless charging powers real-time AI-based analysis.	IOT
9.	TEMBMA3700	Automated Disease Detection in Oyster Mushroom Cultivation Using Deep Learning Technique Objective: To develop a deep learning-based system for detecting diseases in oyster mushrooms using image data. The goal is to enable early diagnosis and improve yield quality in mushroom farming.	Deep Learning
10.	TEMBMA3736	IoT and ML for Air Pollution Monitoring with Real Time Data and Prediction of Health Advisory Objective: The main objective is to develop an IoT and ML-based system for real-time air pollution monitoring using sensors at traffic signals to track CO, CO ₂ , and smoke levels. It analyzes data with a Decision Tree Classifier to provide health advisories, safe travel routes, and personalized recommendations via a mobile app.	Machine learning
11.	TEMBMA3737	Real-Time GPS Tracking and Health Monitoring for Animals Using IoT and Mobile Application	IOT

		Objective: The main objective is to develop an IoT-based real-time GPS and health monitoring system for animals to track location and heart rate using GPS and heartbeat sensors. Data is sent to a mobile app for live monitoring, with alerts on abnormal heart rates to support timely health interventions and prevent theft.	
12.	TEMBMA3738	IoT-Enhanced Battery Management System: Real-Time Monitoring, Predictive Analytics and Safety Optimization Objective: The main objective is to develop an IoT-based Battery Management System for real-time monitoring and control of battery parameters using sensors, cloud integration, and machine learning. It enhances safety, efficiency and longevity while enabling predictive analytics to reduce maintenance costs and promote sustainable battery usage.	IOT
13.	TEMBMA3739	Electric Vehicle Battery Parameters Monitoring System using IoT Objective: The main objective is to develop an IoT-based system for real-time monitoring of electric vehicle battery metrics to enhance safety and lifespan. It uses predictive analytics for early warnings and optimized charging, with remote monitoring through a custom dashboard to improve performance and maintenance.	IOT
14.	TEMBMA3699	IoT-Based Traffic Prediction for Smart Cities Objective: To collect and predict urban traffic using IoT and ML. Optimizes mobility and smart city planning.	IOT
15.	TEMBMA3703	Pothole Detection Using Deep Learning Classification Method Objective: To develop a deep learning-based classification model for detecting potholes in road images. The goal is to support timely maintenance and enhance transportation safety.	Deep Learning

16.	TEMBMA3757	Yolo - Early Fire/Smoke Detection Using Deep Learning Yolo Objective: To build a YOLO-based model for fast and accurate early detection of fire and smoke. The aim is to enable real-time alerts for improved safety and disaster prevention.	Deep Learning
17.	TEMBMA3741	Plant Leaf Detection and Disease Recognition using Deep Learning Objective: To develop a deep learning model that detects plant leaves and identifies diseases from images. The goal is to support early diagnosis and improve crop yield through automation.	Deep Learning
18.	TEMBMA3742	IoT-Based Gas Leak Detection and Fire Hazard Recognition System Using Image Processing for Household Safety Enhancement Objective: The main objective is to develop an IoT-based system for early detection of gas leaks and fire hazards with real-time monitoring and automatic gas shutoff. It enhances household safety by sending instant emergency alerts.	IOT
19.	TEMBMA3688	A Review of Metal Surface Defect Detection Technologies in Industrial Applications Objective: To analyze technologies for detecting defects on metal surfaces. Focus is on AI trends in industrial quality control.	Deep Learning
20.	TEMBMA3692	Work Place Safety: Machine Learning Techniques for Assessing Workplace Incident Severity Objective: To assess workplace risk severity using machine learning. Helps in proactive safety planning and prevention.	Machine Learning
21.	TEMBMA3743	ATMASAWADAHASTA: An Assistive Communication Device for Mobility and Speech-Impaired Patients	Open CV

		Objective: The main objective is to create a wearable glove that helps mobility and speech-impaired individuals communicate using touch sensors and text-to-speech technology.	
22.	TEMBMA3744	Hand Gestures Mechanism for Controlling and Supervising the Smart Mattress Objective: The main objective is to develop a smart mattress system that adjusts bed positions using hand gestures for easier control, especially for disabled patients. It also monitors vital signs and sends alerts to doctors to improve patient safety and comfort.	Biomedical
23.	TEMBMA3745	Satellite-Based Forest Stand Detection Using Artificial Intelligence Objective: To detect and classify forest stands using satellite imagery. AI helps automate and scale forest monitoring.	AI
24.	TEMBMA3707	A Low Computational Cost Deep Learning Approach for Localization and Classification of Diseases and Pests in Coffee Leaves Objective: To classify pests and diseases on coffee leaves efficiently. Uses low-resource DL models for remote areas.	Deep Learning
25.	TEMBMA3746	Water Leakage Detection and Recognition System Objective: The main objective is to develop an IoT-based system that detects water leaks in real-time using sensors and machine learning for accurate prediction. It aims to send quick alerts to users to prevent water loss and improve leak management.	Machine learning
26.	TEMBMA3747	IoT Enabled Device-to-Device Communication for Smart City Application Objective: The main objective is to create an IoT system that enables direct communication between devices for smart home control, improving energy efficiency and convenience. It	IOT

		allows users to remotely manage appliances through a mobile app with reliable and low-latency connections.	
27.	TEMBMA3748	Low-Cost, Multisensor Nondestructive Banana Ripeness Estimation Using Machine Learning Objective: The main objective is to develop a low-cost, nondestructive system to estimate banana ripeness using multiple sensors and machine learning. It aims to provide quick and accurate ripeness detection to improve fruit handling and reduce waste.	Machine learning
28.	TEMBMA3749	Smart Temperature Monitoring System with GPS Integration for Pharmaceutical Safety Objective: The main objective is to develop a low-cost Arduino-based system for real-time temperature monitoring with GPS and mobile app support. It aims to ensure pharmaceutical safety by sending alerts when temperatures cross set limits.	Embedded Applications
29.	TEMBMA3750	Design of Intelligent Wardrobe System Based on IoT Technology Objective: The main objective is to design an IoT-based smart wardrobe that offers features like dehumidification, temperature and humidity monitoring, and smart lighting. It aims to help users organize clothes easily, prevent mildew, and get daily outfit suggestions.	IOT
30.	TEMBMA3751	Design and Implementation of an IoT-Enabled Rover with ESP32 CAM for Object Detection, Environmental Monitoring and Web-Based Control Objective: The main objective is to design an IoT-enabled rover using ESP32-CAM for object detection and environmental monitoring. It aims to provide real-time data and remote control for uses like farming, surveillance, and disaster response.	IOT
31.	TEMBMA3714	IVEMPS: IoT-Based Vehicle Emission Monitoring and Prediction System	IOT

		Objective: The main objective is to develop an IoT-based system that monitors and predicts vehicle emissions in real time using gas sensors and deep learning. It aims to identify high-emission vehicles early and support pollution control through a web-based dashboard.	
32.	TEMBMA3752	RF and IoT-Driven Automated Lane Clearance System for Enhanced Emergency Response Objective: The main objective is to develop an automated lane clearance system using RF and IoT technologies that enables real-time communication between ambulances, vehicles, and traffic signals. This system aims to clear traffic paths quickly and control signals to reduce ambulance response times and improve emergency services in congested urban areas.	IOT
33.	TEMBMA3753	Utilization of Li-Fi Technology for Black Box in Ground Vehicles Objective: The objective is to develop a low-cost, universal Black Box for vehicles using Li-Fi technology to enable fast data communication for accident analysis, safety improvement, and quicker emergency response. The system also facilitates car-to-car communication to detect collision risks early, enhancing road safety and aiding insurance and medical processes.	WSN
34.	TEMBMA3690	Plant Disease Classification Using an Ensemble Learning Model of Convolutional Neural Networks and Vision Transformers Objective: To combine CNN and ViT for robust plant disease detection. Boosts accuracy and adaptability in agriculture.	Deep Learning
35.	TEMBMA3754	Intelligent Energy-Efficient GNSS-Assisted and LoRa-Based Positioning for Wildlife Tracking Objective: The objective is to develop an energy-efficient wildlife tracking system using LoRaWAN modules to collect RSSI and SNR data, combined with GNSS modules for occasional position updates, and use trajectory information for accurate location estimation.	WSN

		This system aims to balance precise tracking with low power use to extend monitoring time.	
36.	TEMBMA3758	Enhancing Care and Communication for Paralyzed Patients: A Microcontroller-Based Gesture Sensor Approach with GSM Integration Objective: The project uses a microcontroller with gesture sensors to detect hand movements from paralyzed patients and sends alerts through a GSM module for easy communication. This system helps improve patient care by enabling quick and reliable emergency notifications.	Embedded Applications
37.	TEMBMA3755	Web-Server Controlled Rover with Robotic Arm and Object Detection Objective: The objective is to design a web-server controlled rover with a robotic arm that allows remote movement and object detection using camera modules. This system enables real-time control and monitoring for efficient automation and interaction.	Robotics
38.	TEMBMA3756	A Real-Time Intelligent System Based on Machine-Learning Methods for Improving Communication in Sign Language Objective: The objective is to develop an intelligent system using a camera and machine learning to accurately recognize and translate sign language gestures into text or speech. This helps improve communication for people who use sign language.	Machine-Learning
39.	TEMBMA3709	A Portable Real-Time Electronic Nose for Evaluating Seafood Freshness Using Machine Learning Objective: To detect seafood freshness using gas sensors and ML. Offers portable, real-time spoilage prediction.	Machine Learning
40.	TEMBMA3710	Fast and High-Precision Human Fall Detection Using Improved YOLOv8 Model	AI

		Objective: To detect human falls quickly using an optimized YOLOv8. Provides real-time alerts in care or surveillance systems.	
41.	TEMBMA3759	YOLO-Based Abnormal Behavior Detection System for Elderly Healthcare Monitoring Objective: The objective of this system is to use YOLO-based computer vision to accurately detect abnormal behaviors in elderly individuals. It ensures timely alerts for caregivers, promoting safety and continuous healthcare monitoring.	Deep Learning
42.	TEMBMA3761	Smart Greenhouse Monitoring with Predictive Crop Health using ML Objective: The objective of Smart Greenhouse Monitoring with Predictive Crop Health using ML is to create an intelligent system that monitors environmental conditions and predicts crop health using machine learning. This helps optimize growth, prevent diseases, and improve agricultural productivity.	Machine Learning
43.	TEMBMA3762	AI Powered Automatic Pothole Detection and Filling System for Smart Road Maintenance Objective: The objective of AI-Powered Automatic Pothole Detection and Filling System for Smart Road Maintenance is to develop an intelligent system that detects potholes in real-time using AI and automates the filling process. This ensures safer roads, reduces maintenance costs, and enhances transportation efficiency.	Image Processing
44.	TEMBMA3763	Intelligent Chemical Monitoring System Using Raspberry Pi, LoRa, and Machine Learning Objective: The objective is to build a low-cost Raspberry Pi-based system that monitors chemical parameters in real time, uses LoRa for data transmission, and applies ML to predict risks for safer chemical management.	WSN
45.	TEMBMA3765	Raspberry Pi-Based Eye Movement Controlled Cursor System Using OpenCV	Opencv

		Objective: The objective is to create a Raspberry Pi-based system that uses OpenCV to track eye movements for hands-free cursor control, enhancing accessibility for differently-abled individuals.	
46.	TEMBMA3766	AI-Powered Crop Monitoring System with Android App Integration Objective: The objective is to build an AI-powered crop monitoring system that provides real-time health analysis and alerts via an Android app, helping farmers boost yield and manage crops effectively.	Embedded + Android
47.	TEMBMA3767	Automated Weed Identification and Plucking Using Deep Learning Techniques Objective: The objective is to create a deep learning-based system that automatically identifies and removes weeds, reducing crop damage, lowering manual effort, and improving farming productivity.	Deep Learning
48.	TEMBMA3793	Multi-Level Bank Locker Security System Using Raspberry Pi with Face, Fingerprint, and OTP Verification Objective: The objective is to create a Raspberry Pi-based multi-level bank locker system using face recognition, fingerprint scanning, and OTP verification to enhance security and prevent unauthorized access.	Embedded
49.	TEMBMA3768	AI-Powered Receptionist Robot with Facial Recognition and Voice Interaction Objective: The objective is to design a Raspberry Pi-based bank locker system with face recognition, fingerprint scanning, and OTP verification, ensuring multi-level security and protection of valuable assets.	Robotics
50.	TEMBMA3769	IoT-Based Real-Time Crop Irrigation, Disease Identification, and Animal Intrusion Alert System	IOT

		Objective: The objective is to create an IoT-based smart farming system that automates irrigation, identifies crop diseases, and detects animal intrusions in real time, ensuring water efficiency, crop protection, and improved productivity.	
51.	TEMBMA3770	Detect driver drowsiness in real time using eye tracking sensors, and send alert messages to nearby vehicles using VANET, improving road safety and reducing accidents Objective: The objective is to develop a real-time drowsiness detection system using eye tracking sensors that sends alerts via VANET to nearby vehicles, improving road safety and reducing accident risks.	
52.	TEMBMA3771	Design of an Edge-AI Embedded System for Underground Water Quality Surveillance Objective: The objective is to design an edge-AI embedded system that monitors underground water quality in real time, enabling early contamination detection and promoting safe, sustainable water management.	AI
53.	TEMBMA3772	AI-Powered Yield Estimation System using On-Field Image Data and Soil Parameters Objective: The objective is to build an AI-based system that analyzes crop images and soil parameters to accurately estimate yield, helping farmers optimize resources and boost productivity.	AI
54.	TEMBMA3773	Edge AI-Enabled Smart Vision Assistant for Visually Challenged Individuals Objective: The objective is to develop a portable edge-AI system that recognizes objects, text, and surroundings in real time, offering voice-based assistance to enhance independence and safety for visually impaired individuals.	Deep Learning

55.	TEMBMA3774	FitMat AI: Smart Yoga Mat for Personalized Wellness Journey Objective: The objective is to develop an AI-powered smart yoga mat that tracks postures, provides real-time feedback, and delivers personalized guidance to enhance practice, wellness and healthy living.	Machine Learning
56.	TEMBMA3775	AI-Powered Fracture Detection in Medical Images Using Hybrid Learning Architectures Objective: The objective of this project is to build an AI-based system using hybrid learning to accurately detect bone fractures from medical images, ensuring faster and more reliable diagnosis for improved patient care.	Machine Learning
57.	TEMBMA3776	Embedded-Based Real-Time Assistance and Safety System for Alzheimer's Patients Objective: The objective is to build an embedded system that offers real-time monitoring, tracking, and emergency alerts to ensure safety and provide assistance for Alzheimer's patients.	Embedded
58.	TEMBMA3777	Railway Safety Robot for Real-Time Track Error Detection Using GPS Objective: The objective is to design a railway safety robot that uses GPS to detect track errors or damages in real time, ensuring timely maintenance and improved railway safety.	Robotics
59.	TEMBMA3778	AI-Driven Disaster Forecasting and Response System Using Neural Networks Objective: The objective is to build an AI-based system using neural networks to accurately predict natural disasters and provide timely alerts with response strategies, reducing risks and improving disaster management.	Machine Learning
60.	TEMBMA3779	AI Enabled fire extinguisher robot with thermal Camera detection and Alert System	Robotics

		Objective: The objective is to develop an AI-powered fire extinguisher robot with a thermal camera that detects fires in real time, extinguishes them, and sends instant alerts for faster response and enhanced safety.	
61.	TEMBMA3780	AI Powered Number plate recognition with Automatic Toll Payment Objective: The objective is to develop an AI-driven system that recognizes vehicle number plates and automates toll payments, ensuring faster transactions, reduced traffic congestion, and improved transportation efficiency.	Machine Learning
62.	TEMBMA3781	Lightweight and Secure Framework for Medical Image Querying at the Edge Objective: The objective is to create a secure and efficient edge-based system for storing and querying medical images, ensuring privacy and faster medical decision-making.	
63.	TEMBMA3782	Intelligent Vertical Garden for Indoor Air Quality Monitoring Using IoT Objective: The objective is to create an AI bot that monitors exam halls in real time, detects suspicious movements and sounds, and sends instant alerts to invigilators to prevent malpractice and ensure exam fairness.	IOT
64.	TEMBMA3783	AI-Enhanced Skin Cancer Screening with CNN on Edge Devices using Raspberry Pi Objective: The objective is to develop a lightweight, real-time Raspberry Pi system using CNNs to detect skin cancer from images, enabling early diagnosis, affordable screening, and accessible healthcare.	Machine Learning
65.	TEMBMA3784	An Innovative Smart Irrigation Using Embedded and Regression-Based Machine Learning Technologies for Improving Water Security and Sustainability Objective: The objective is to develop a smart irrigation system using embedded devices and	Machine Learning

		regression-based ML to optimize water use, improve crop growth, and ensure sustainable agriculture.	
66.	TEMBMA3785	Edge AI-Powered Food Calorie Estimation for Real-Time Dietary Assessment on Raspberry Pi Objective: The objective is to develop an edge AI system on Raspberry Pi that estimates food calories in real time, enabling effective diet tracking and healthier lifestyle management.	Machine Learning
67.	TEMBMA3786	IoT-Enabled Autonomous Wheelchair with Real-Time Health Monitoring and Intelligent Navigation Assistance Objective: The objective is to create an IoT-enabled smart wheelchair that offers real-time health monitoring and autonomous navigation, improving safety, mobility, and independence for users.	IOT
68.	TEMBMA3787	Real-Time Safety Helmet Detection on Construction Sites Using YOLO Models and Raspberry Pi Objective: The objective is to create a real-time vision-based system using YOLO and Raspberry Pi to detect helmet usage on construction sites, improving workplace safety and preventing accidents.	Machine Learning
69.	TEMBMA3788	Smart Stick to Detect wildlife Animals for Trekkers Using Raspberry Pi Objective: The objective is to develop a portable Raspberry Pi-based smart stick that detects nearby wildlife and provides real-time alerts to ensure trekkers' safety during outdoor activities.	Machine Learning
70.	TEMBMA3789	Raspberry Pi-Based Non-Invasive Anemia Detection via Palpebral Conjunctiva Image Analysis Objective: The objective of Raspberry Pi-Based Non-Invasive Anemia Detection via Palpebral Conjunctiva Image Analysis is to develop a low-cost system that analyzes eye images to detect	Image Processing

		anemia without blood tests. This enables quick, portable, and non-invasive health screening.	
71.	TEMBMA3790	AI-Based Intelligent Garbage Classification and Disposal System Objective: The objective is to develop an AI-based system that classifies and disposes of waste into categories such as biodegradable, recyclable, and hazardous, promoting recycling and sustainable waste management.	Machine Learning
72.	TEMBMA3791	Renal Care: Personalized Alerting System for Renal Cancer Recurrence Prevention via IoT and ML Objective: The objective is to develop an IoT- and ML-based system that monitors patient data, predicts renal cancer recurrence risks, and sends personalized alerts for timely intervention.	IOT+ Machine Learning
73.	TEMBMA3792	Coin Operated Water ATM with Bottle Dispenser Objective: The objective of Coin Operated Water ATM with Bottle Dispenser is to design an automated system that dispenses purified water and bottles upon coin insertion. It provides an affordable, user-friendly, and efficient solution for clean drinking water access.	Embedded

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TCOAP
TECHNOLOGICAL CAPABILITY OF ACADEMIC PERSONNEL

LATEST MATLAB ACADEMIC PROJECTS

S. No	Project Code	Title	Domain
1	TMMACO171	Deep Reinforcement Learning-Driven Secure ISAC Optimization Using STAR-RIS in 6G Networks Objective: To develop a DRL-based framework using Soft Actor-Critic for optimizing secure multi-user ISAC systems with STAR-RIS, enhancing 6G communication, sensing, and security performance.	Communication
2	TMMACO172	Secure THz Communication in 6G: A Two-Stage DRL Approach for IRS-Assisted NOMA Objective: To optimize secrecy energy efficiency in IRS – assisted THz – NOMA systems using a two-stage DDPG-based deep reinforcement learning approach.	Communication
3	TMMACO174	Performance Enhancement of V2V Communication by QC-LDPC Code and NOMA-UM-MIMO Techniques Objective: This project aims to enhance V2V communication reliability and capacity by integrating QC-LDPC coding, NOMA, and UM-MIMO under Rician fading using MATLAB-based performance evaluation.	Communication
4	TMMAIP453	AI-Synthesized Image Detection: Source Camera Fingerprinting to Discern the Authenticity of Digital Images Objective: This study aims to detect AI-generated facial images by extracting deep features using ResNet-101 and classifying them with an SVM for reliable authenticity verification.	Image Processing/Artificial Intelligence
5	TMMAIP446	BorB: A Novel Image Segmentation Technique for Improving Plant Disease Classification with Deep Learning Models Objective: To develop BorB, an image segmentation technique using RGB and Lab b-channels to enhance plant disease classification accuracy with deep learning for precision agriculture applications.	Image Processing/Artificial Intelligence

6	TMMAAI382	Early Diagnosis of Alzheimer's Disease Using Adaptive Neuro K-Means Clustering Technique Objective: To develop an efficient diagnostic model for early Alzheimer's detection using AMSOM-FKM segmentation, GLCM feature extraction, PCA-based reduction, and multi-class classification of brain MRI images.	Image Processing/Artificial Intelligence
7	TMMASP216	A Resource-Efficient Time-Domain-Based Algorithm to Estimate Respiration Rate from Single-Lead ECG Signal Objective: To develop a computationally efficient time-domain MPD algorithm for accurate breath rate estimation from single-lead ECG signals, enabling real-time wearable respiratory monitoring.	Signal Processing
8	TMMASP221	A Deep and Interpretable Learning Approach for Long-Term ECG Clinical Noise Classification Objective: The objective is to develop explainable deep learning models to classify clinical noise severity in long-term ECG recordings, improving diagnostic accuracy and enhancing clinician trust in AI-based decision support.	Signal Processing
9	TMMASP222	Efficient Nearly Piecewise Continuous Signal Basis Expansion by Precision Calculation Objective: This study proposes an adaptive signal expansion method that accurately reconstructs nearly piecewise continuous 1D signals by segmenting and expanding smooth and large-gradient regions separately.	Signal Processing
10	TMMACO159	Enhancing Security and Privacy in 5G Device-to Device Communication: A Secure Gale-Shapley Algorithm Approach Objective To develop a robust AI-driven security framework for D2D communication in 5G networks, enhancing performance and protecting user data through adaptive jamming, differential privacy, MPC, and lightweight encryption.	Communication
11	TMMAIP445	A Comparative Study of Image Processing Techniques for Javanese Ancient Manuscripts Enhancement Objective To evaluate and compare multiple image enhancement techniques for improving the readability	Image Processing/Artificial Intelligence

		and structural clarity of degraded Javanese ancient manuscripts using MATLAB, aiding in digital preservation and cultural documentation.	
12	TMMAAI367	Optimized Brain Tumor Detection: A Dual-Module Approach for MRI Image Enhancement and Tumor Classification Objective: The proposed method enhances brain tumor detection by applying adaptive Wiener filtering for noise reduction, RBF neural networks for feature extraction, and SVM for classification, improving tumor diagnosis and treatment planning.	Image Processing/Artificial Intelligence
13	TMMACO146	Bandwidth Allocation and Power Control Optimization for Multi-UAVs Enabled 6G Network Objective: To develop an optimized algorithm for power control and bandwidth allocation in multi-UAV networks, enhancing energy efficiency and spectrum utilization.	Communication
14	TMMAAI374	Comparative Analysis of Fingerprint Authentication Using the Convolutional Neural Network (CNN) Method for Two Datasets Objective: The objective of this study is to analyze and compare CNN architectures for fingerprint authentication, enhancing accuracy, efficiency, and biometric security.	Image Processing/Artificial Intelligence
15	TMMACO161	Car-to-Car Communication Using RF Cognitive Radio with VLC Common Control Channel Objective To develop a hybrid car-to-car communication system integrating Cognitive Radio with a VLC-based Common Control Channel, enhancing spectrum efficiency, reducing RF congestion, and ensuring cost-effective, reliable vehicular network communication.	Communication
16	TMMAWS144	Optimized Cluster Routing Protocol with Energy-Sustainable Mechanisms for Wireless Sensor Networks Objective: To develop and evaluate novel clustering algorithms—IMP-RES-EL and EE-SEP—that enhance energy efficiency and network longevity in both homogeneous and heterogeneous wireless sensor networks by optimizing data transmission and reducing energy dissipation.	Communication

17	TMMASP213	OCADN: Improving Accuracy in Multi-Class Arrhythmia Detection from ECG Signals with a Hyper parameter-Optimized CNN Objective: To develop an optimized CNN-based model (OCADN) with advanced pre-processing and hyper parameter tuning for accurate and robust arrhythmia detection from ECG signals, outperforming traditional LSTM approaches in classification performance.	Signal Processing
18	TMMASP215	ENHANCING SPEECH FOR HEARING IMPAIRED AIDS THROUGH CNN Objective: To develop a real-time CNN-based speech enhancement system for hearing aid users, using log power spectrum features to improve speech intelligibility and quality while ensuring low latency on smartphones.	Signal Processing
19	TMMACO138	Millimeter-Wave Massive MU-MIMO Performance Analysis for Private Underground Mine Communications 10 Objective: This article evaluates mmWave massive MU-MIMO channel characteristics in an underground mine, emphasizing path loss, time dispersion, and spectral efficiency.	Communication
20	TMMAIP438	Single Underwater Image Restoration Using Variational Framework Guided by Imaging Model with Noise Objective: The objective is to enhance underwater image quality by integrating an improved imaging model with noise and variational frameworks for superior contrast, color correction, and noise suppression.	Image Processing
21	TMMASP197	Lightweight and High Accurate RR Interval Compensation for Signals from Wearable ECG Sensors Objective: The objective is to develop a lightweight, high-accuracy RRI compensation method for wearable ECG sensors, balancing power consumption and resolution.	Signal Processing
22	TMMASP194	A Novel ECG Signal Quality Index Method Based on Skewness-MODWT Analysis. Objective: Develop a novel Signal Quality Index (SQI) method to classify and optimize ECG signals for wearable devices, enhancing accuracy and efficiency.	Signal Processing

23	TMMASP201	A Morphology-Preserving Algorithm for Denoising of EMG-Contaminated ECG Signals Objective: Develop a novel iterative regeneration method to efficiently suppress EMG noise in ECG signals, preserving diagnostic information.	Signal Processing
24	TMMAIP440	Online Low-Light Sand-Dust Video Enhancement Using Adaptive Dynamic Brightness Correction and a Rolling Guidance Filter Objective: To enhance low-light sand-dust videos, an adaptive dynamic brightness correction and rolling guidance filter improve contrast, illumination, and noise reduction.	Image Processing, Image Enhancement
25	TMMAAI332	Lumbar Disease Classification Using an Involutional Neural Based VGG Nets (INVGG) Objective: The objective is to classify lumbar diseases accurately using an advanced INVGG network that combines involutional layers with a modified VGG structure, enhancing diagnostic precision in medical imaging.	Image Processing/Artificial Intelligence
26	TMMAWS94	Wireless Sensor Network (WSN) Model Targeting Energy Efficient Wireless Sensor Networks Node Coverage Objective: Designing and improving energy-efficient coverage methods for wireless sensor networks using the improved gray wolf algorithm to optimize node deployment.	Communication
27	TMMAAI321	Tomato Quality Classification Based on Transfer Learning Feature Extraction and Machine Learning Algorithm Classifiers Objective: The study introduces a CNN-SVM hybrid model for tomato quality grading, achieving 97.50% accuracy in binary and 97.54% in multiclass classifications.	Image Processing/Artificial Intelligence
28	TMMAAI343	A Novel Framework for Vehicle Detection and Tracking in Night Ware Surveillance Systems Objective: To enhance nighttime vehicle detection and tracking, our model employs MIRNet for image enhancement and YOLO with SIFT for accurate tracking.	Image Processing/Artificial Intelligence

29	TMMAAN21	AENS OR: A Multi-Objective Opportunistic Routing Protocol with Adaptive Power Control and Energy Prediction Objective: The objective of this study is to design an energy-efficient routing protocol that balances power consumption, reliability, and network lifetime. It aims to integrate adaptive power control with energy prediction to optimize routing decisions under dynamic network conditions. Furthermore, the objective is to enhance data delivery, reduce energy wastage, and ensure sustainable performance in wireless sensor networks.	Communications
30	TMMAAN19	Design and Analysis of a Broadband Miniaturized Blade Monopole Antenna with Slot Loading and High-Pass Matching Networks Objective: The objective of this study is to design a compact broadband antenna with improved impedance matching and bandwidth. It aims to utilize slot loading and high-pass matching techniques to enhance performance while minimizing size. Additionally, the objective is to ensure efficient and reliable operation for modern wireless communication applications.	Antennas
31	TMMAAI385	Transformative Transfer Learning for MRI Brain Tumor Precision: Innovative Insight Objective: The objective of this study is to enhance the accuracy of brain tumor detection and classification from MRI scans. It aims to adapt pre-trained models to medical imaging for precise feature extraction, improved generalization, and reduced training effort. Additionally, the objective is to support early diagnosis, improve clinical decision-making, and contribute to more effective treatment planning.	Image Processing/Artificial Intelligence
32	TMMAWS153	Wireless Sensor Network Optimization for Constrained Environments with Limited a priori Target Information Objective: The objective of this study is to design efficient optimization strategies that enable effective sensing and communication under restricted resources and uncertain target data. It aims to maximize coverage, minimize energy consumption, and enhance network lifetime despite limited prior knowledge of targets. Additionally, the objective is to improve adaptability and	Communication

		reliability of wireless sensor networks in challenging and dynamic environments.	
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S. No	Project I'd	Title	Domain
1.	TVMABE309, TVMABE310	Analysis of Low area Digital up/down clipping counter for digital In-memory counting Objective: The objective is to design and analyze a low-area digital up/down clipping counter optimized for in-memory computing applications. This involves developing a counter architecture that minimizes silicon area while supporting efficient counting operations with upper and lower bounds (clipping behavior). The focus is on evaluating the counter's performance in terms of area, speed, and power, ensuring its suitability for integration in digital in-memory computing systems where memory and logic are co-located to improve data access efficiency and reduce latency.	BackEnd Domains / Transistor Logic
2.	TVMABE304, TVMABE305	Design and implementation of 16 Bit SAR ADC for high resolution Objective: Build a high-resolution SAR ADC capable of 16-bit accuracy by leveraging advanced calibration, low-noise comparator and CDAC design, and optimized architecture (segmented CDAC, redundancy, efficient SAR logic), all while maintaining practical speed, low power, and manufactural silicon performance.	BackEnd Domains / Transistor Logic
3.	TVMABE311	Experimental Verification and Evaluation of Non-Stateful Logic Gates in Resistive RAM Objective: The objective is to experimentally verify and evaluate the functionality and performance of non-stateful logic gates implemented using Resistive RAM (ReRAM) technology. This includes designing logic gates that operate without storing intermediate logic states, thereby enabling in-memory computing with reduced latency and power consumption. The study aims to assess key metrics such as switching speed, reliability, energy efficiency, and scalability, establishing the potential of non-stateful ReRAM-based logic as a low-power alternative to conventional CMOS logic in emerging computing architectures.	BackEnd Domains / Transistor Logic/ low power
4.	TVMABE318	Design and Implementation of High-Speed Carry Look-Ahead Decimal Adder (CLDA) Using CMOS Technology Objective: The objective is to design and implement a high-speed Carry Look-Ahead Decimal Adder (CLDA) using CMOS technology for enhanced arithmetic performance in digital systems. The	BackEnd Domains / Transistor Logic

		project aims to improve the speed of decimal addition by reducing carry propagation delay through parallel carry generation logic. Using CMOS-based circuit design, the focus is on optimizing parameters such as delay, power consumption, and area, making the adder suitable for high-performance arithmetic units in processors, digital signal processing (DSP), and real-time computing applications.	
5.	TVMABE306, TVMABE307, TVMABE308	DESIGNING OF ARRAY MULTIPLIER BY USING MEMORY ELEMENT AND MEMRISTOR FOR LOW POWER CONSUMPTION Objective: This project aims to create a low-power, high-density array multiplier by integrating: Memristor crossbar computing for in-memory multiply-accumulate, Hybrid CMOS-memristor cells for logic efficiency	
6.	TVMAFE653	Design of Approximate Adder With Reconfigurable Accuracy Objective: To design and implement an approximate adder architecture that allows dynamic or reconfigurable control over its accuracy to achieve an optimal trade-off between power consumption, area, delay, and computational accuracy, especially for error-resilient applications such as image processing, machine learning, and IoT devices.	Front end Domain / Low power
7.	TVMAFE655	Design of Radix-8 Unsigned Bit Pair Recoding Algorithm-Based Floating-Point Multiplier for Neural Network Computations Objective: The primary objective of this project is to design a high-performance floating-point multiplier based on the Radix-8 Unsigned Bit Pair Recoding algorithm, specifically optimized for neural network computations. Neural networks require a large number of multiply-accumulate operations, making efficient multipliers crucial for accelerating deep learning tasks. The proposed design aims to reduce the number of partial products generated during multiplication by utilizing Radix-8 recoding, thereby minimizing hardware complexity, latency, and power consumption. By maintaining compliance with the IEEE 754 floating-point standard, the design ensures accuracy and compatibility in real-world applications. This multiplier architecture targets hardware platforms such as FPGAs or ASICs,	Front end Domain/ Testing

		aiming to improve speed, area efficiency, and energy performance in neural network processors. Performance evaluation will include a detailed analysis of delay, power, and resource utilization compared to traditional Radix-2 and Radix-4 designs, demonstrating its suitability for real-time and energy-constrained AI systems.	
8.	TVMABE319	Ternary Toward Binary: Circuit-Level Implementation of Ternary Logic Using Depletion-Mode and Conventional MOSFETs Objective: The objective is to design and implement ternary logic circuits at the transistor level using a combination of depletion-mode and conventional enhancement-mode MOSFETs. This project aims to explore multi-valued logic (MVL) as an alternative to binary logic, focusing on reducing circuit complexity, interconnect overhead, and power consumption. By bridging ternary logic with binary-compatible interfaces, the study evaluates the feasibility, performance, and efficiency of implementing compact, low-power logic circuits suitable for future digital and nano electronics systems.	BackEnd Domains / Transistor Logic/ low power
9.	TVMABE320	RISC-V CPU Design Using RRAM-CMOS Standard Cells Objective: The objective is to design a RISC-V CPU architecture using hybrid RRAM-CMOS standard cells to leverage the benefits of non-volatile memory integration in logic design. This project explores the fusion of Resistive RAM (RRAM) with conventional CMOS technology to reduce power consumption, enhance area efficiency, and enable in-memory computing capabilities. The goal is to evaluate the performance, energy efficiency, and scalability of a RISC-V core implemented with RRAM-CMOS logic, aiming to advance energy-efficient processor design for emerging applications such as IoT, edge computing, and neuromorphic systems.	BackEnd Domains / Transistor Logic/ low power
10.	TVMABE317	Operational Current Amplifier-Based Quadrature Oscillators Family Objective: To develop a systematic family of quadrature oscillator structures by transforming well-known voltage-mode, active-RC oscillator schemes into pure current-mode configurations using OCAs, via the adjoint network theorem.	Back-end Domain/ Transistor logic
11.	TVMABE321	Protecting Analog Circuits Using Switch Mode Time Domain Locking	Back-end Domain/ Low power VLSI

		Objective: Lock analog circuit behavior by integrating a time-domain switching mechanism controlled by a key. Use random-key-based switching phases instead of conventional fixed-clock signals, ensuring that only with the correct key and correct phase alignment does the analog circuit operate as intended.	
12.	TVMABE322	A High-Speed, Low-Power, High-Reliability and Fully Single Event Double Node Upset Tolerant Design for Magnetic Random Access Memory Objective: High-Speed Operation Enhance read/write access times, making the memory competitive in performance. Low-Power Consumption Minimize the energy required per operation—especially crucial for battery-powered and embedded systems.	Back-end Domain/ Low power VLSI
13.	TVMABE323	A 10-bit 50-MS/s Radiation Tolerant Split Coarse/Fine SAR ADC in 65-nm CMOS Objective: Radiation-Hardened by Design (RHBD): Incorporate robust architecture and circuit-level strategies to mitigate radiation-induced errors (Single Event Effects, Total Ionizing Dose effects, etc.) without resorting to inherently radiation-hardened (and often expensive) fabrication processes	Back-end Domain/ Low power VLSI
14.	TVMAFE664	Performance Analysis of MAC Unit with Various Parallel Adders Objective: To evaluate the performance of a multiply-accumulate (MAC) unit using different parallel adder architectures to determine trade-offs in speed, area, and power. To identify the best adder choice for MAC-based applications by comparing latency, resource utilization, and energy efficiency across implementations.	Front end /FPGA
15.	TVMABE326	Reliable Multistate RRAM Devices for Reconfigurable CAM and IMC Applications Objective: Integrate these RRAM devices with MOS transistors to build a 4T2R array, enabling reconfigurable analog voltage-based Content-Addressable Memory (CAM) and In-Memory Computing (IMC) accelerators.	Backend/Nano technology
16.	TVMABE324 TVMABE325	A 10bit 50MS per sec Radiation Tolerant Split Coarse or Fine SAR ADC in 65-nm CMOS Objective: Radiation-Hardened by Design (RHBD): Incorporate robust architecture and circuit-level strategies to mitigate radiation-induced errors (Single Event Effects, Total Ionizing Dose effects,	Backend/Nano technology/ Low power

		etc.) without resorting to inherently radiation-hardened (and often expensive) fabrication processes.	
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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
- ❖ PLAGARISM DOCUMENTATION
- ❖ INTERNATIONAL JOURNAL/CONFERENCE PUBLISHING
- ❖ PROJECT ACCEPTANCE LETTER
- ❖ PROJECT COMPLETION CERTIFICATE

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