PANIMALAR ENGINEERING COLLEGE

An Autonomous Institution

[JAISAKTHI EDUCATIONAL TRUST]

Approved by AICTE | Affiliated to Anna University | Recognized by UGC

All Eligible UG Programs are Accredited by NBA

Bangalore Trunk Road,Varadharajapuram, Poonamallee, Chennai- 600 123

TECHDIVATHON

Empower, Innovate, Elevate: Code the Future Together

Domain: WIRELESS COMMUNICATION

Problem Statements:

Sno	Title	Problem Statement	Description
1	Long-Range IoT Device for Smart Agriculture	Farmers lack efficient tools for monitoring large-scale agricultural operations remotely.	Uses LoRaWAN technology to transmit real-time data from farms to a centralized dashboard, ensuring better crop management and resource allocation.
2	Portable Wireless Health Monitor	Emergency health monitoring devices are not easily portable for on-the-go use.	A compact device that measures vital signs and transmits them wirelessly to doctors during emergencies for timely medical intervention.
3	Drone-Based Communication Relay	Traditional communication networks fail during disasters, leaving affected areas isolated.	Deploys drones as temporary communication relays in disaster-stricken areas to provide essential connectivity.
4	Smart Home Sensor Hub	Smart devices often lack a unified platform for seamless communication.	Centralizes communication for all smart devices, creating an interconnected ecosystem for efficient home automation.
5	Wi-Fi Signal Strength Booster	Wi-Fi networks struggle to provide strong signals in remote or obstructed areas.	Enhances Wi-Fi signal coverage, ensuring consistent connectivity in hard-to-reach places.
6	Compact Wireless Data Logger	Collecting and sharing real-time sensor data is challenging in remote environments.	A portable device that records and transmits sensor data wirelessly, ideal for monitoring industrial or environmental conditions.
7	IoT-Enabled Vehicle Tracker	Real-time vehicle tracking is critical but often limited to expensive systems.	Monitors vehicle location in real time and sends the data to a mobile app, improving fleet safety and logistics.
8	Mesh Network Nodes for Emergency Communication	Communication breakdowns occur in disaster zones due to damaged infrastructure.	Establishes decentralized wireless communication networks to ensure connectivity during emergencies.
9	Wireless Traffic Light Controller	Traffic lights fail to adapt dynamically to varying traffic conditions.	Adjusts signal timings based on real-time traffic data, reducing congestion and improving urban mobility.
10	IoT-Integrated Health Parameter Device	Continuous health monitoring systems are often expensive and cumbersome.	Sends live health parameter updates wirelessly, ensuring accurate and uninterrupted patient monitoring.

11	Crowd Density Monitoring App	Managing crowd levels in public spaces is difficult without real-time insights.	Uses Bluetooth beacons to track crowd density, aiding event organizers and ensuring public safety.
12	AI-Optimized Network Traffic Management Tool	Inefficient bandwidth usage leads to poor network performance.	Utilizes artificial intelligence to optimize bandwidth allocation across devices, ensuring smoother communication.
13	Wi-Fi Security Vulnerability Checker	Many users are unaware of security weaknesses in their Wi-Fi networks.	Scans for vulnerabilities in Wi-Fi networks and provides fixes to enhance security.
14	Signal Strength Mapping App	Users often face challenges in finding the best network coverage in unfamiliar areas.	Maps Wi-Fi and cellular signal strengths to help users identify optimal coverage zones.
15	Emergency Communication Platform	Conventional messaging apps fail when networks go down during disasters.	Enables offline messaging using peer-to-peer communication, ensuring connectivity during emergencies.
16	Wireless File Transfer App	Traditional file transfer methods are often slow or unreliable.	Facilitates fast and secure wireless file transfers between devices, improving productivity.
17	IoT Monitoring Dashboard	Managing multiple IoT devices from separate platforms is cumbersome.	Provides a centralized interface for tracking and controlling connected devices in real time.
18	Battery Optimization App for Wireless Devices	Wireless devices often suffer from short battery life.	Analyzes usage patterns and optimizes device performance to extend battery life.
19	Smart Network Prioritization Tool	Critical applications often experience reduced bandwidth during peak network usage.	Allocates bandwidth dynamically, prioritizing essential services for uninterrupted performance.
20	Multi-Device Sync Manager	Synchronizing data across multiple wireless devices can be inefficient.	Provides seamless synchronization between devices, improving usability and data management.
21	Wireless Parking Management System	Finding parking spaces in real time is a challenge in crowded urban areas.	Combines wireless sensors and an app to detect and display available parking spots instantly.
22	Disaster Communication Kit with Mesh Networks	Communication during disasters is disrupted due to a lack of reliable infrastructure.	Integrates hardware nodes and a mobile app to establish offline communication networks in emergencies.
23	IoT-Based Smart Traffic Light System	Static traffic light systems fail to address dynamic traffic conditions.	Utilizes IoT-enabled sensors to manage traffic dynamically, reducing congestion and improving flow.
24	Smart Router with AI Security	Home routers often lack advanced protection against modern cybersecurity threats.	Features built-in AI to detect and prevent cyber threats while providing analytics for network optimization.
25	Wireless Environmental Monitoring Kit	Monitoring environmental parameters like air and water quality is often labor-intensive.	Collects and displays real-time environmental data, promoting awareness and informed decision-making.