

Smart Fleet Management System Using IoT and Real-Time Monitoring

1. Introduction

This project presents a smart fleet management system that integrates GPS tracking, IoT sensors, and cloud technologies to monitor vehicles, drivers, and cargo in real time.

2. Problem Statement

Traditional fleet systems lack real-time monitoring, driver safety tracking, and cargo security, leading to inefficiencies and risks.

3. Aim

To develop a smart system that provides real-time tracking, safety monitoring, and intelligent alerts using IoT.

4. Objectives

Implement GPS tracking, geofencing, fatigue detection, ticket checking, goods tracking, fuel monitoring, and alert generation.

5. Proposed Solution

The system combines mobile apps, web dashboards, backend services, and IoT hardware to monitor fleet operations and generate alerts.

6. Scope

Includes monitoring, tracking, alerting, and management of vehicles, drivers, and cargo. Limited to decision support.

7. Methodology

Requirement analysis, system design, development, integration, testing, and deployment.

8. Tools & Technologies

Flutter, Python, Firebase, ESP32, GPS, Ultrasonic Sensor, EMR Relay.

9. Expected Outcomes

Improved safety, real-time monitoring, better decision-making, and efficient fleet management.

10. Conclusion

The system provides a complete solution for modern fleet monitoring using IoT and cloud technologies.