Project Submission Record

Project Title	Smart Ambulance Navigation System with Automatic Signal Control
Student Name	Naresh S
Course	M.Sc. Computer Science
College	Dr. Ambedkar Government Arts College
Guide/Supervisor	To be Assigned

Abstract

This project focuses on reducing ambulance waiting times at traffic signals by using an intelligent navigation system integrated with automatic traffic signal control. Whenever an ambulance approaches a signal, the system automatically switches the signal to green to provide a clear pathway, ensuring faster hospital reach times and saving lives.

Objectives

1. To reduce ambulance waiting time at traffic signals.
2. To automatically change traffic lights to green when an ambulance is detected.
3. To provide a cost-effective and reliable emergency response solution.
4. To improve survival chances of patients by reducing hospital reach time.

Working Principle

The system uses IoT-enabled modules (GPS + RF/LoRa/ESP32) placed inside ambulances. When an ambulance approaches a traffic signal within 100–150 meters, the module sends a signal to the traffic controller. The traffic light is automatically changed to green in the ambulance's path, while other directions are stopped. This ensures uninterrupted movement of the ambulance towards the hospital.

Approximate Budget

Component	Estimated Cost (INR)
ESP32/Arduino with Wi-Fi	1200
LoRa / RF Modules (Tx & Rx)	2500
Traffic Light Controller Integration	2000
Sensors (GPS, IR)	1500
Miscellaneous (Cables, Power, PCB, Installation)	2000
Total	≈ 9,200 INR

Expected Outcome

The system will significantly reduce the time ambulances spend waiting at signals, ensure faster hospital access, and increase the chances of saving critical patients' lives. It can be expanded city-wide to create a smart traffic management network.