Project Title : Smart Signaling for Ambulance

Team-48 | 404 - Team Not Found

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Team Members:

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Project Goal:

To optimize emergency response times by implementing an intelligent traffic signaling system that prioritizes ambulances using a unique blue light detection mechanism, thereby reducing congestion and improving road clearance efficiency.

Work Completed Today:

1. Ambulance GPS and Route Planning

- Implemented a route optimization system where the ambulance driver selects a hospital as the destination.
- Integrated *Google Maps API* to calculate the fastest route using real-time traffic data.
- Developed an algorithm to suggest alternative routes dynamically in case of congestion.
- *Tools Used:* Visual Studio Code, Google Maps API.

2. Traffic Signal Management

- Designed a sensor-based detection system to identify approaching ambulances (within ~500 meters of an intersection).

- Programmed *ESP32 microcontrollers* to trigger blue LED signals at intersections, instructing vehicles to clear the path.
- Ensured signals revert to normal operation once the ambulance passes.
- *Hardware Used:* ESP32, LEDs, Breadboard, Jumper Wires.

3. Vehicle Alert System

- Developed a real-time alert mechanism to notify nearby vehicles via visual signals (LED indicators) and smartphone notifications.
- Incorporated *vehicle number plate detection* for compliance tracking.
- Implemented guidance protocols to assist drivers in safely making way for the ambulance.

Next Steps:

- Enhance sensor accuracy for ambulance detection.
- Integrate IoT for real-time signal synchronization across multiple intersections.
- Test the system in a simulated urban traffic environment.