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Problem Statement

Every year, many road accident victims don’t receive medical help during the golden hour, the critical time when timely treatment can save lives. Currently, emergency assistance relies on people dialing 108 or 112, which can be slow, untraceable, or completely missed if no one is nearby.

Automatic crash detection using car speed fluctuations alone can generate false alerts, and hospitals may not know how serious an incident is. There is a need for a smart, accurate system that can quickly detect real accidents, reduce false alarms, and notify hospitals so victims get help faster.

Solution Overview

We propose a sensor-based accident detection system that combines multiple features to improve accuracy and reduce false alerts:

Crash Detection & Speed Monitoring – Detects sudden speed changes or collisions.

Heart Rate Sensor – Monitors the victim's vitals to confirm if help is truly needed.

Crowd Density Estimation – Identifies if many people are at the accident site, indicating a serious incident.

GPS Tracking – Provides exact accident location for fast hospital/ambulance routing.

Manual Cancel Option – Allows users to cancel false alerts, preventing unnecessary emergency dispatch.

Google Maps Integration – Sends real-time alerts and directions to the nearest hospital or ambulance.

By combining these sensors and features, hospitals receive accurate, timely information about accidents, ensuring faster response and improving survival chances.

Technical Approach

1. Front-End Development
    - Build the user interface using Flutter (for cross-platform mobile apps) or React (for web/mobile applications).
    - Design screens for query submission, location input, and displaying results.
2. Back-End Development
    - Use Node.js with Express.js or Django to handle server-side operations.
    - Integrate Google Maps API for location and navigation features.
    - Use an SMS API (such as Twilio or MSG91) to notify hospitals of incoming queries.
    - Store data using MongoDB or Firebase Realtime Database.

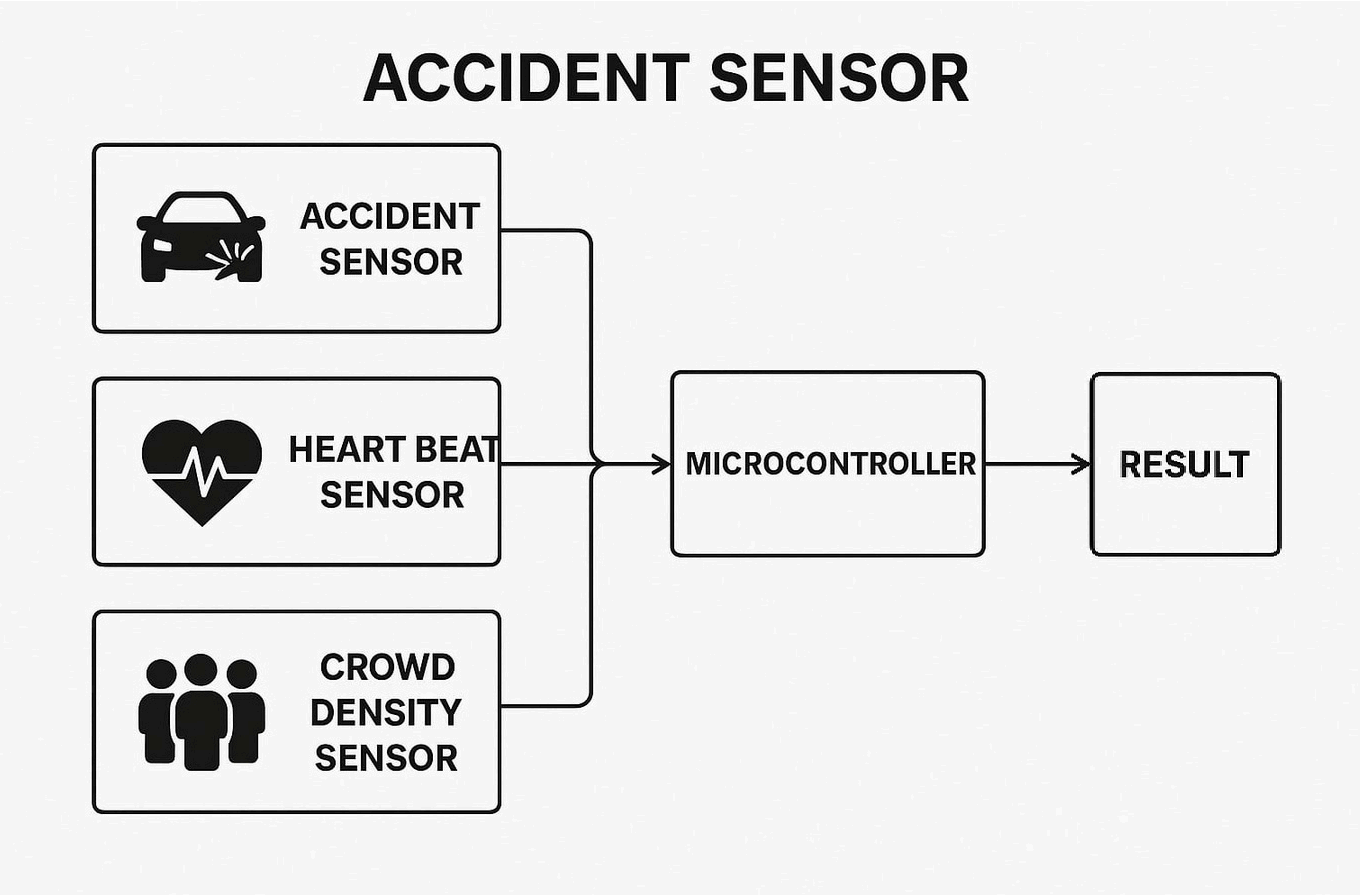
3. Hospital Dashboard

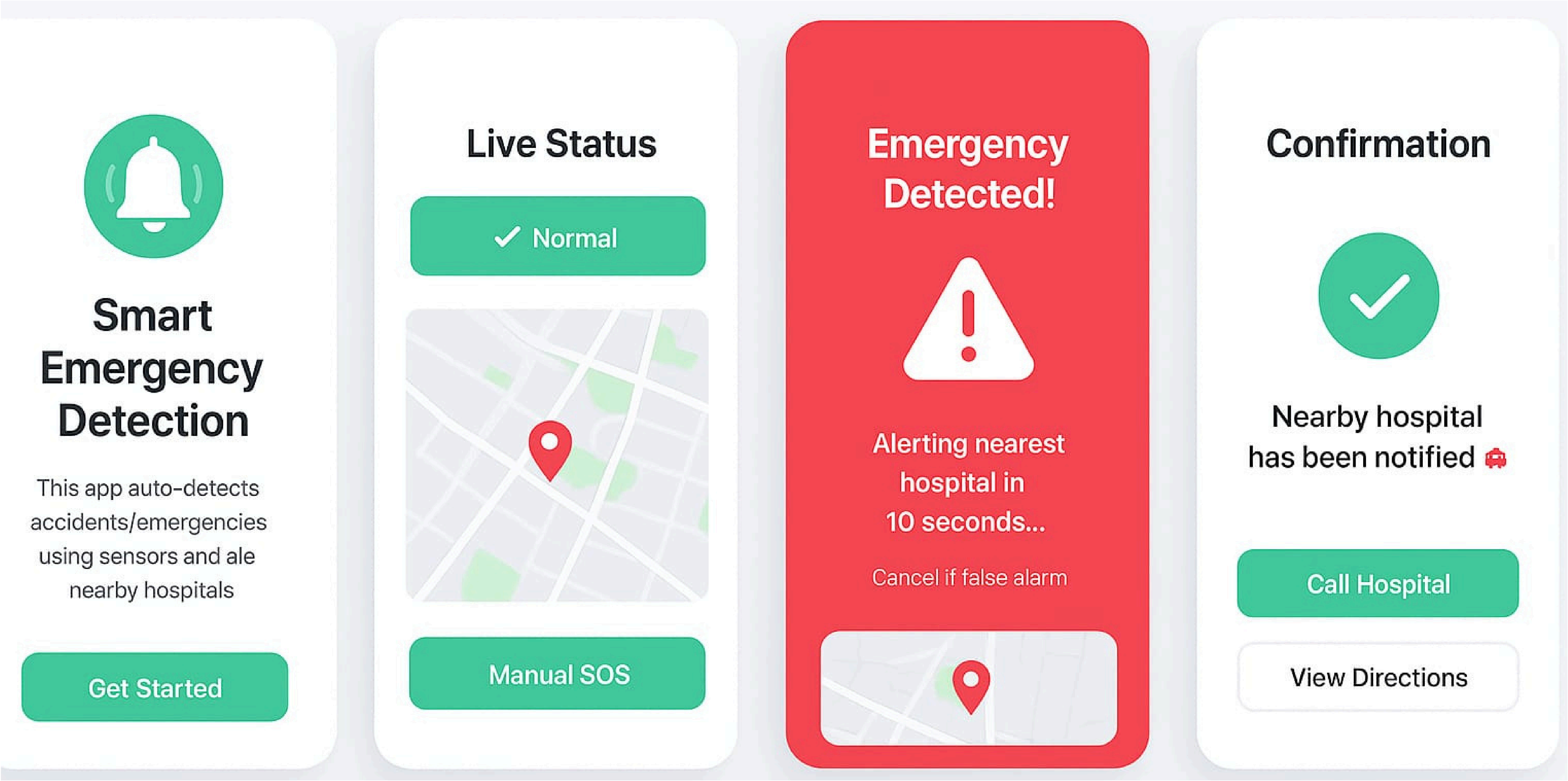
- Develop a web-based dashboard using React.js or Flutter Web.
- Allow hospitals to log in and view/respond to queries.
- Implement authentication using Firebase Auth or JWT (JSON Web Tokens).

4. Deployment

- Make the app available online by hosting the front-end and back-end using services like Netlify, Vercel, Heroku, or Firebase.
- Store data in cloud databases such as MongoDB Atlas or Firebase.

Diagrams/Flow Charts/Visuals/Demo





Smart Emergency Detection

This app auto-detects accidents/emergencies using sensors and ale nearby hospitals

Live Status

Emergency Detected!

Alerting nearest hospital in 10 seconds...

Cancel if false alarm

Confirmation

Nearby hospital has been notified 🚑