Smart Interactable Dashboard for Real-Time Monitoring & Diagnosis of Electric Vehicle Performance.

Block diagram:

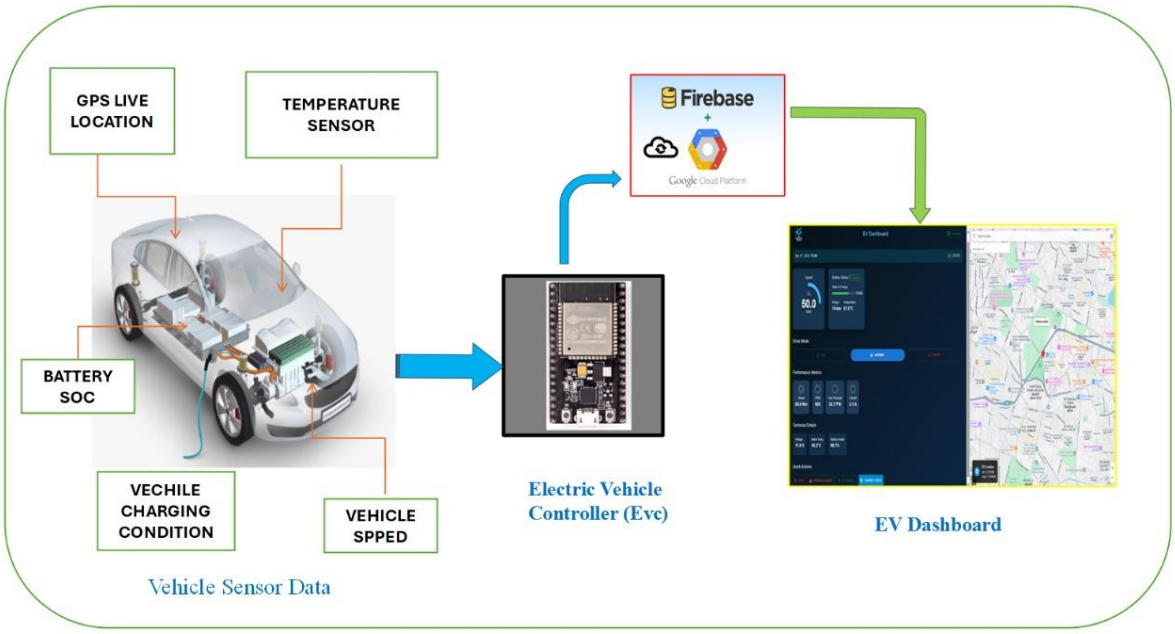


Figure 1: proposed block diagram of data flow working.

Virtual Testing:

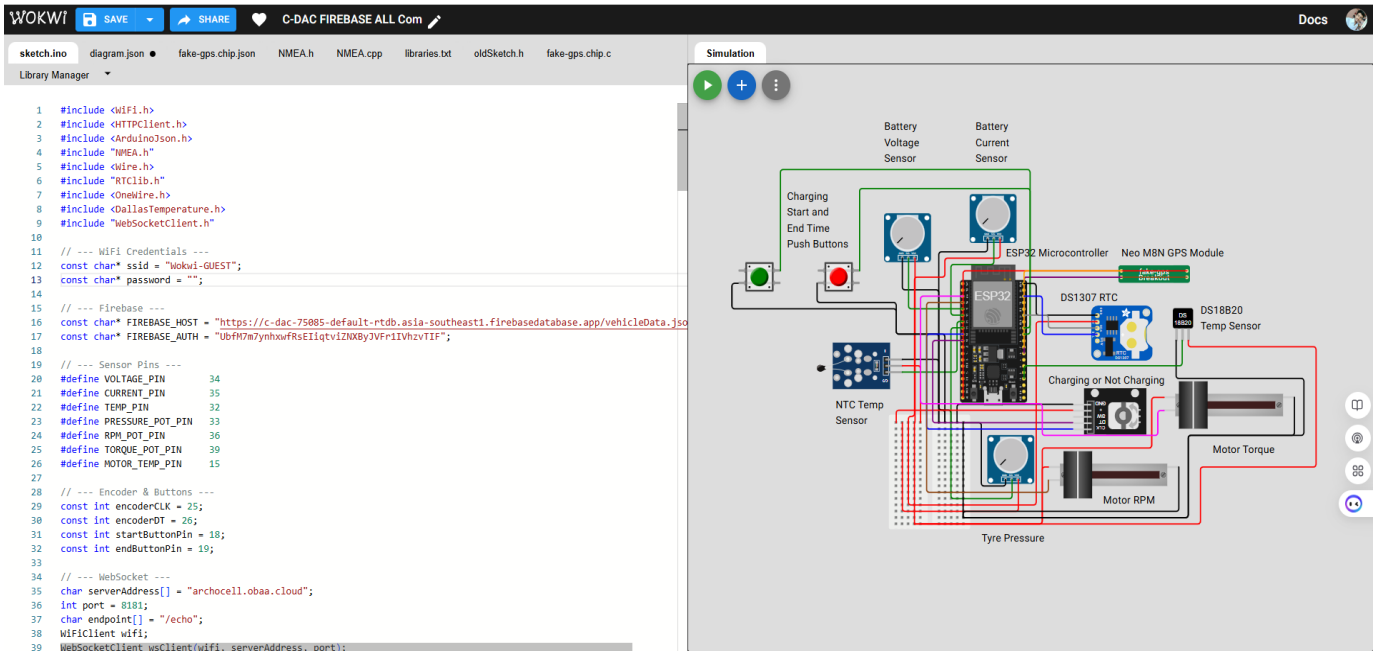
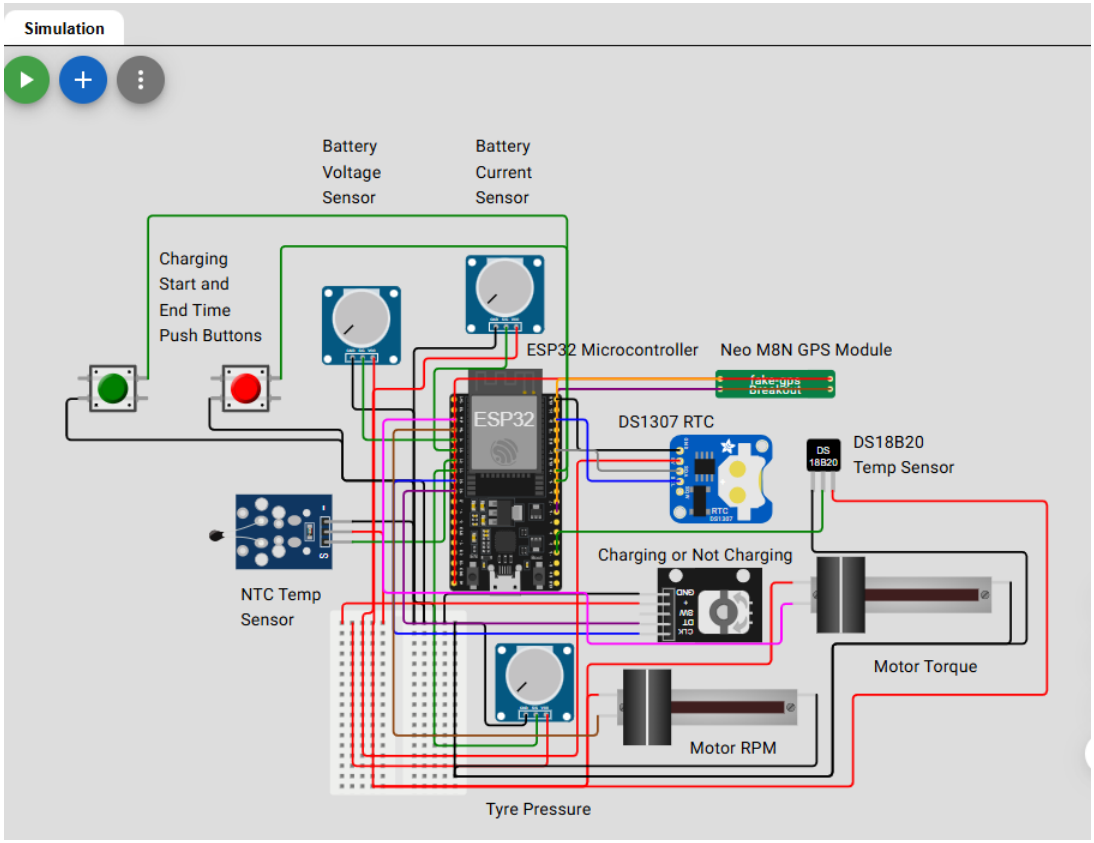


Figure :2 Virtual Simulation Diagram of ESP32-Based Smart Vehicle Monitoring System using Wokwi



link to access: https://wokwi.com/projects/427729634764677121

Hardware Implementation:

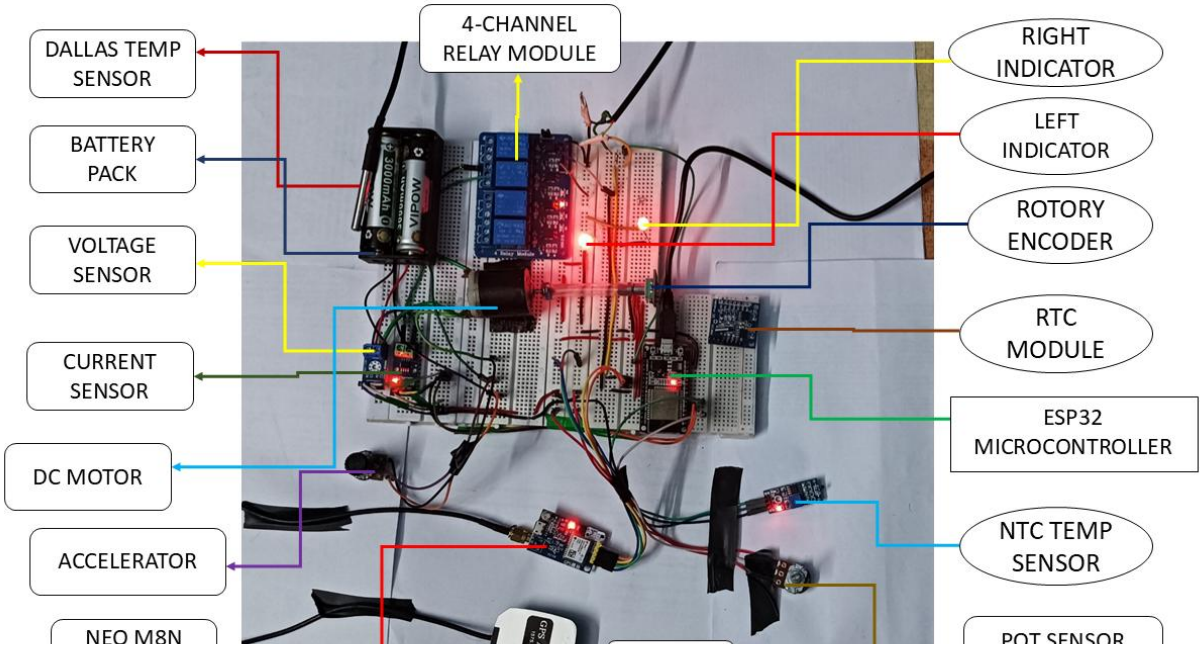


Figure 3 Embedded System Hardware Architecture for Smart Vehicle Monitoring

Cloud Integration:

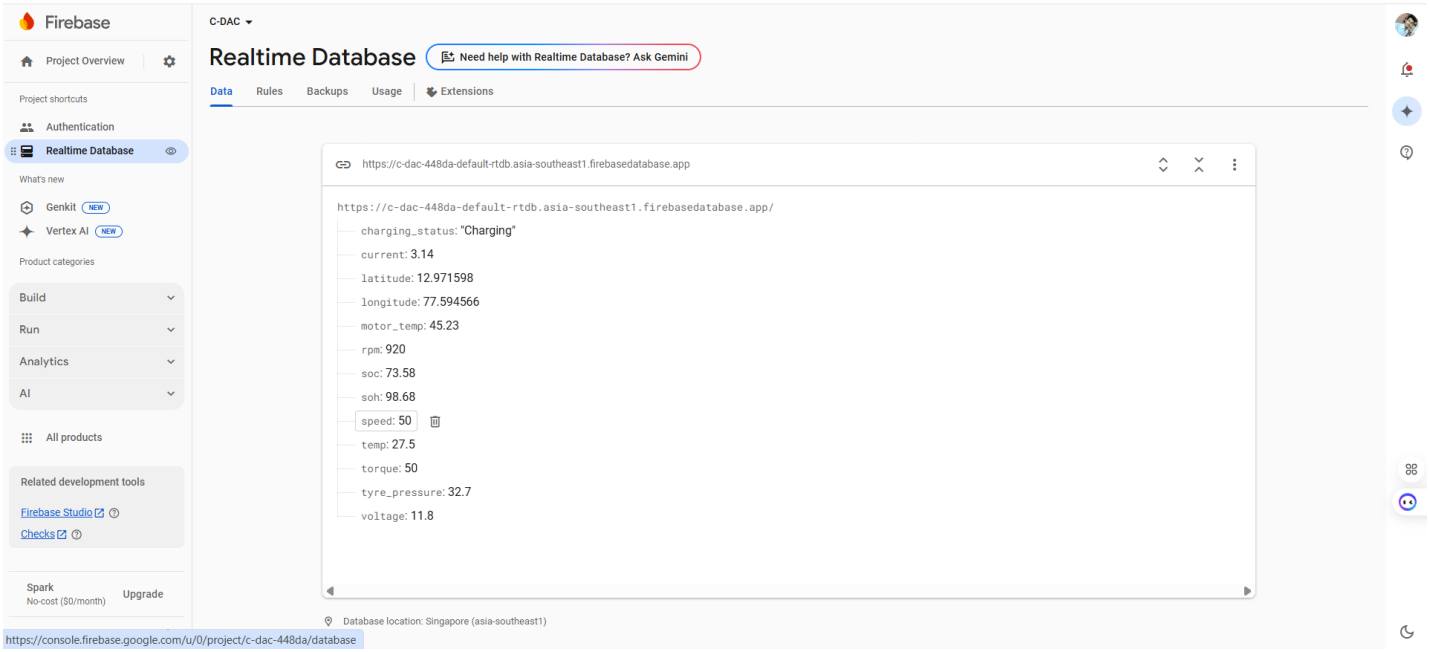
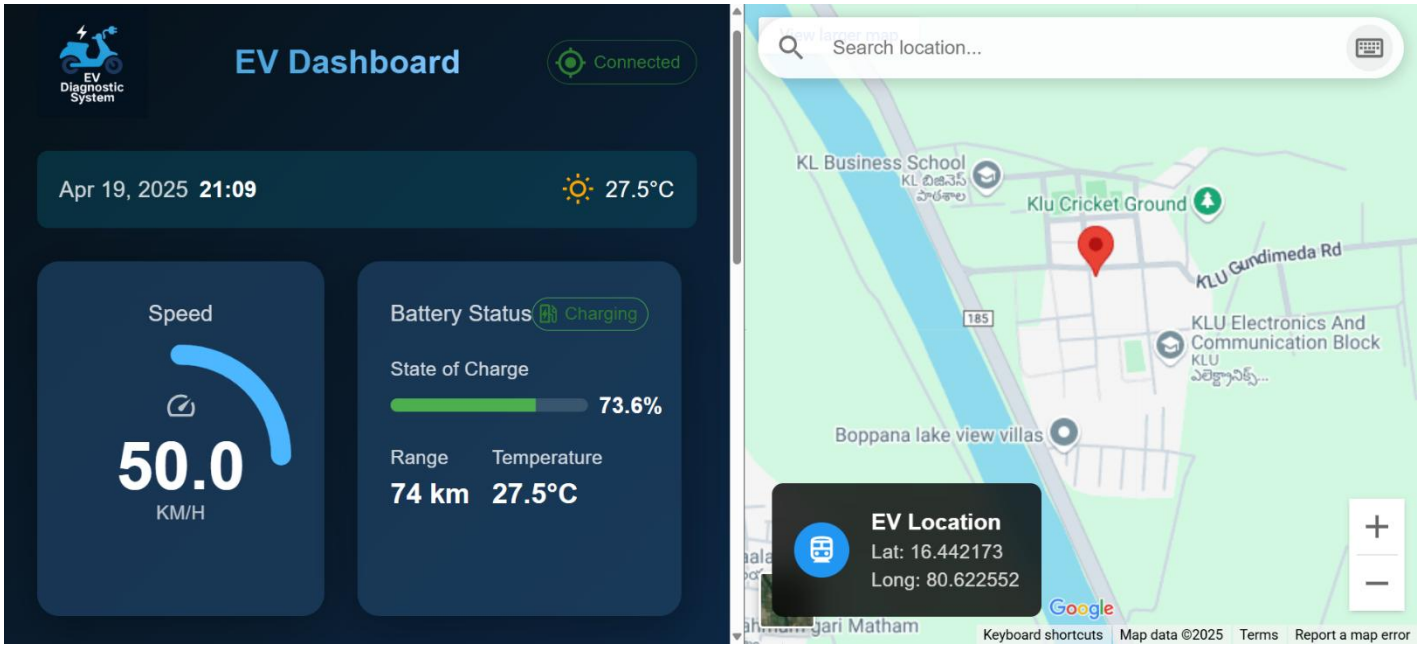
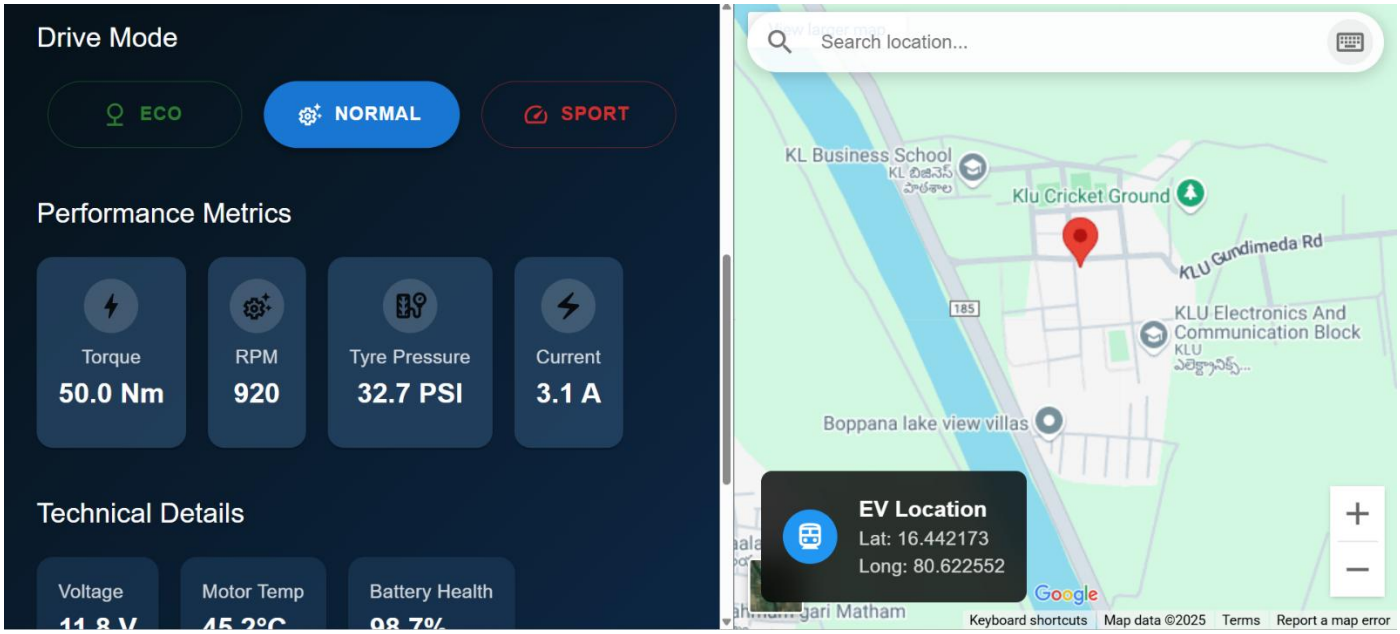


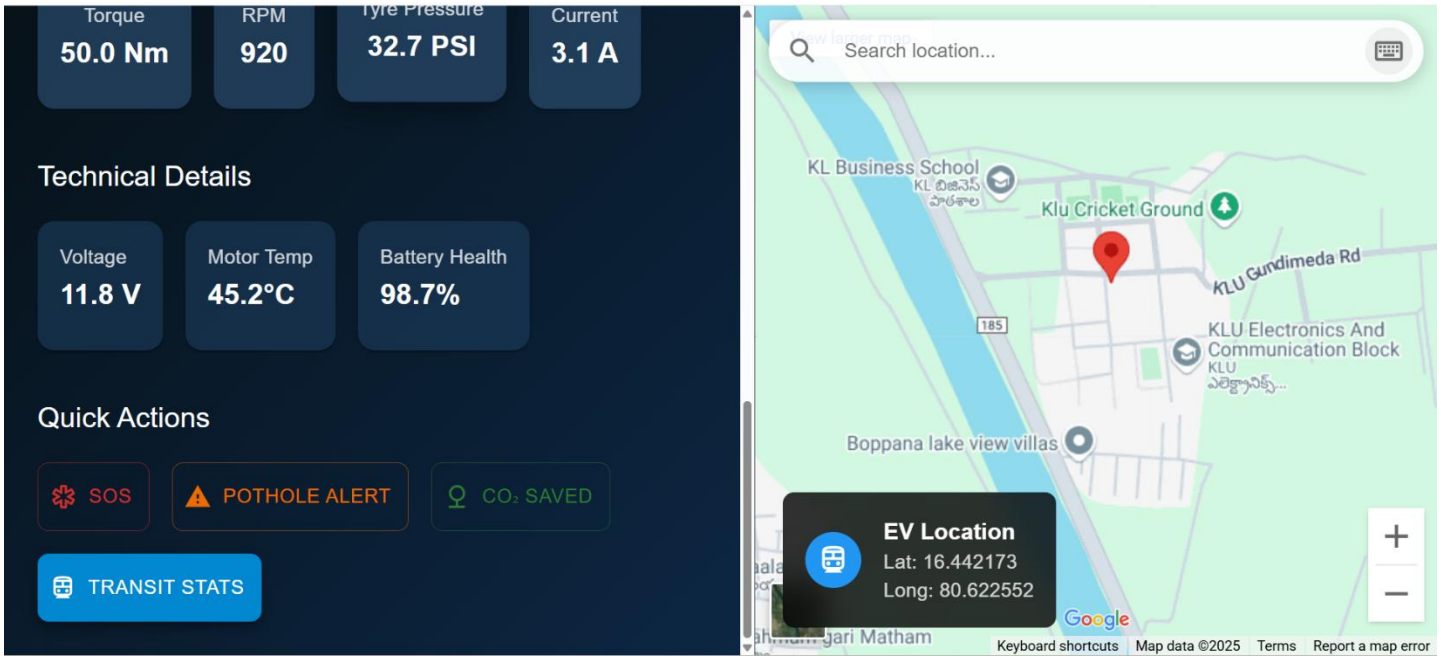
Figure: 4 Firebase Realtime Database Interface for ESP32-Based Smart Vehicle Monitoring System

Dash Board:



Link : https://smartevdiagnosticsystem.netlify.app/





The left section of the interface showcases a dynamic Electric Vehicle (EV) dashboard, displaying critical metrics such as speed, battery charging status, state of charge (SoC), estimated range, and ambient temperature. The right section integrates a real-time map view, showing the current geographical location of the vehicle (Lat: 16.442173, Long: 80.622552) using Google Maps API. This interface enables seamless monitoring and geolocation tracking of the smart EV via a web application powered by the ESP32 and Firebase Realtime Database.