4th Year
Designed By
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DriveWise

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Project Description

Aim

DriveWise is a personal black box system with a mobile app that monitors driver actions, safety, and fuel efficiency using data from a vehicle's Electronic Control Unit (ECU). The goal is to provide real-time data retrieval, analysis, and safe storage while giving users full access to their vehicle's information.

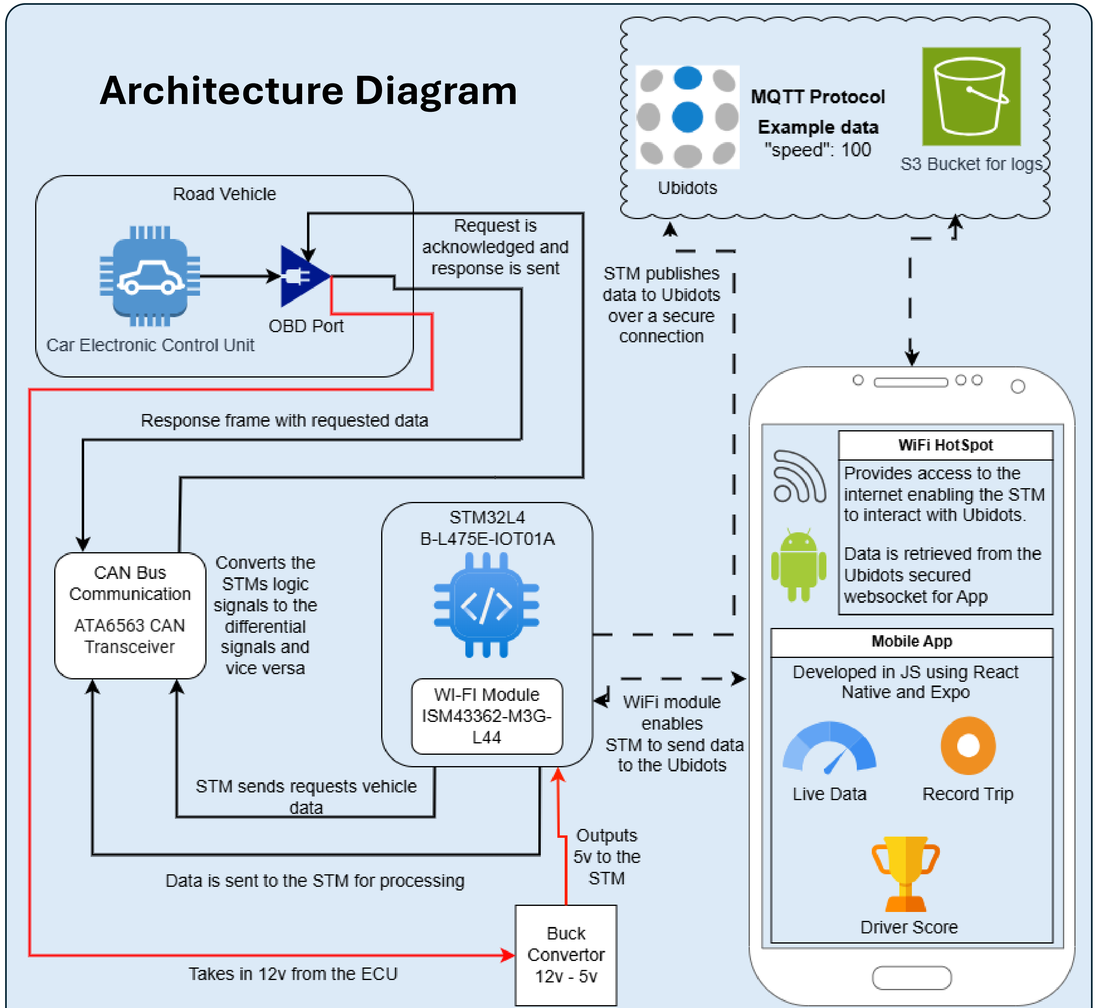
Summary

DriveWise provides drivers with insights into their vehicle's performance, safety, and fuel efficiency. It connects to the vehicles OBD-II port and uses an STM32L475E microcontroller to gather real-time data from the ECU via CAN, tracking metrics like speed, RPM, and engine temperature.

DriveWise pulls data directly from vehicle sensors for accurate insights. It analyses this data to generate a safety and fuel efficiency score, helping drivers improve their habits. All logs are securely stored in AWS S3 Cloud for easy access.

This project highlights an important issue: vehicle owners often lack full control over their car's data, reinforcing the idea that they should have access to it.

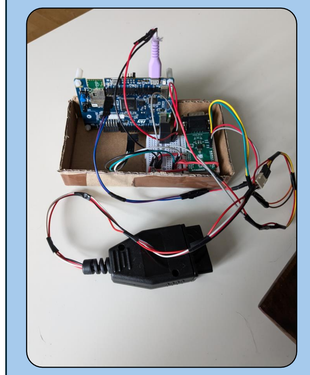
Architecture Diagram



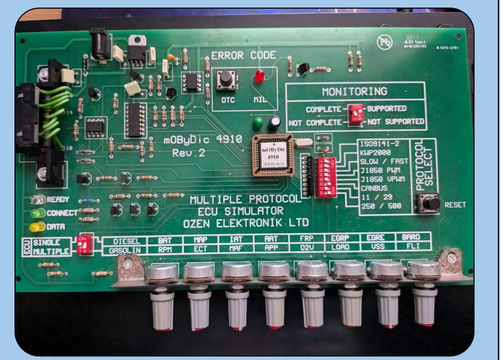
Technologies Used

Software	Hardware	Tools
React Native	Ozen Elektronik ECU Simulator	STM32CubeIDE
C / JavaScript	STM32 B-L475E-IOT01A	AWS S3
Expo	ATA6563	Visual Studio Code
MQTT Library	DC-DC Converter	GitHub
FreeRTOS	OBD-II Male Connector	Ubidots

Hardware & Prototyping



This is my final prototype. It took 3 iterations to get here. It fits into the OBD compartment using Velcro to stay put during driving.



I used this ECU simulator to do more rapid prototyping.

Output