Project Overveiw

Case study

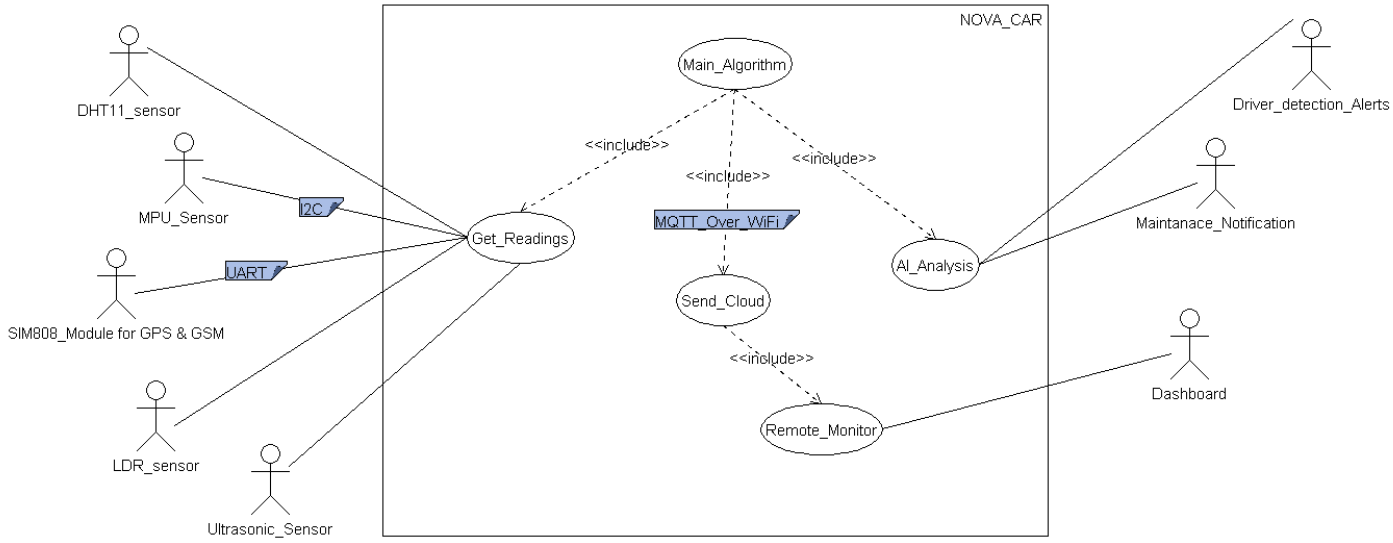
NOVA CAR

The system is an AIoT-based vehicle monitoring solution aimed at enhancing vehicle safety, security, and predictive maintenance. It integrates multiple sensors with an ESP32 microcontroller as the central processing unit, leveraging AI for on-device inference and IoT for remote connectivity.

The main functions are:

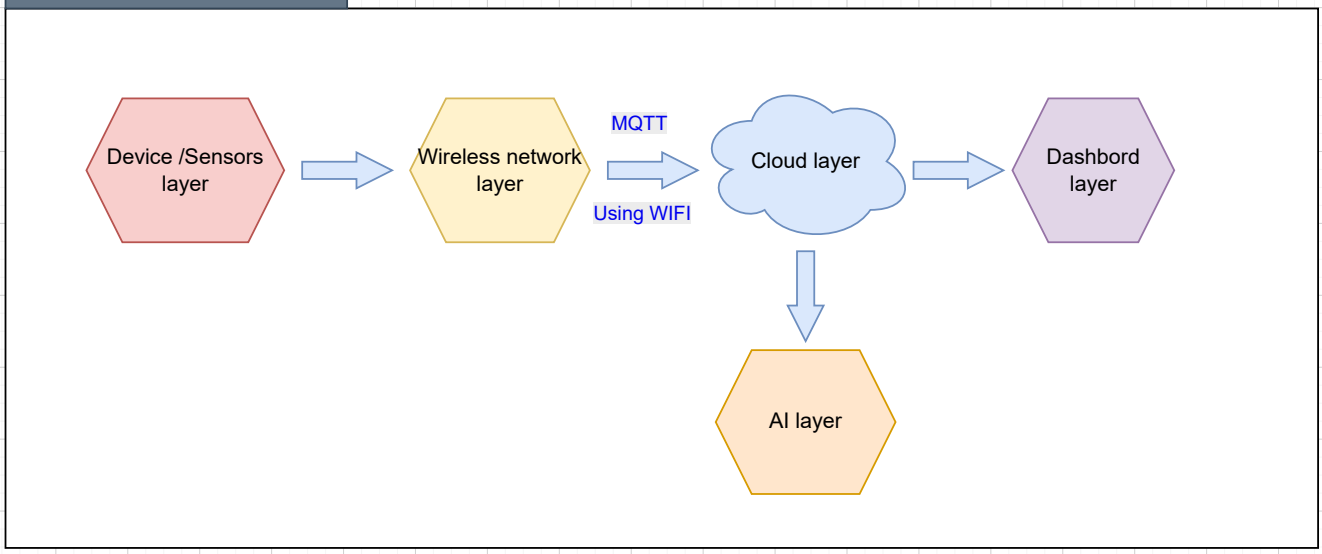
- Real-time vehicle location tracking using GPS and IMU
- sensor fusion
- Cabin environment monitoring (temperature and humidity)
- Engine health monitoring using vibration and temperature
- data with on-device ML inference
- Critical event alerting via SMS
- Driver door proximity detection
- Front headlight status monitoring
- Driver state monitoring using camera and ML inference
- Telemetry publishing to a remote MQTT broker

Use Case digram

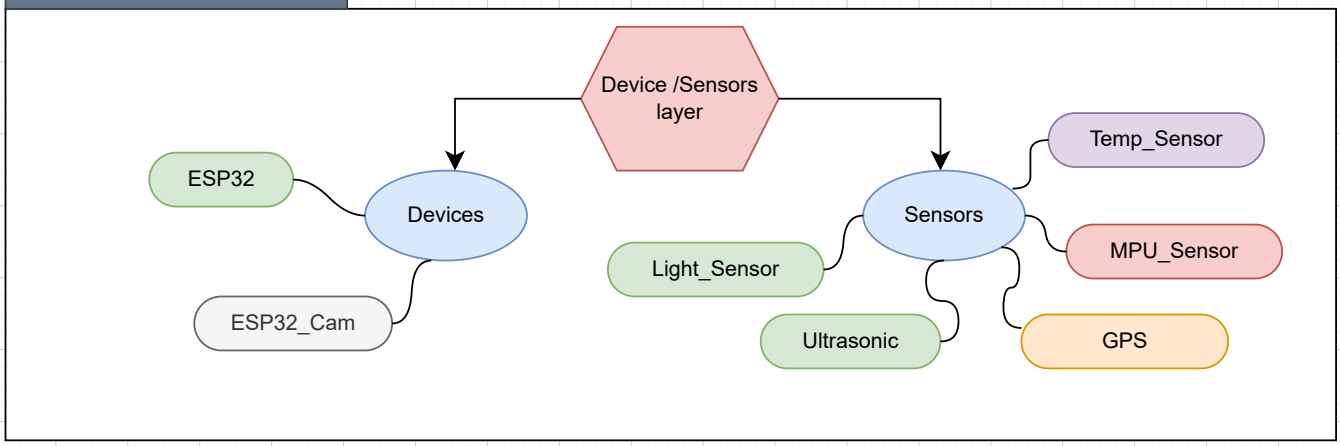


Project Architecture

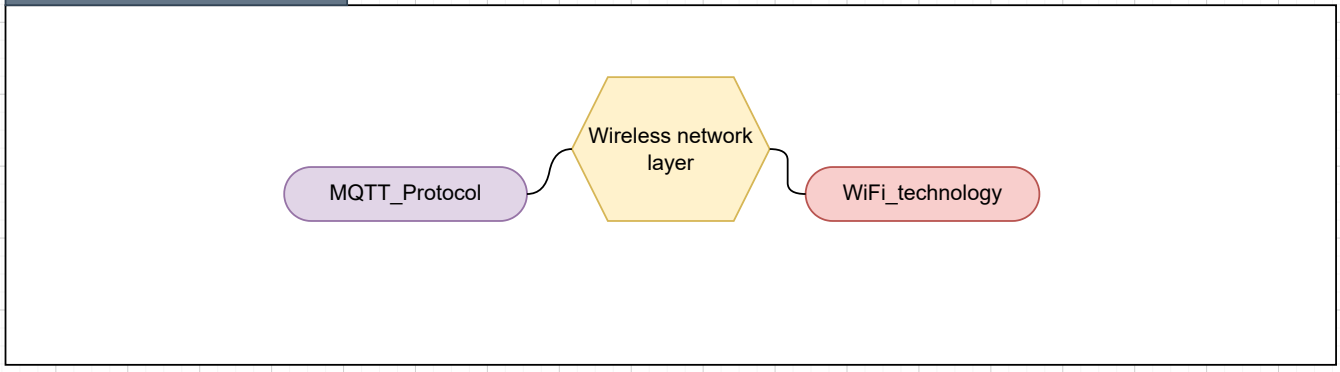
Sysyem End To End Architecture

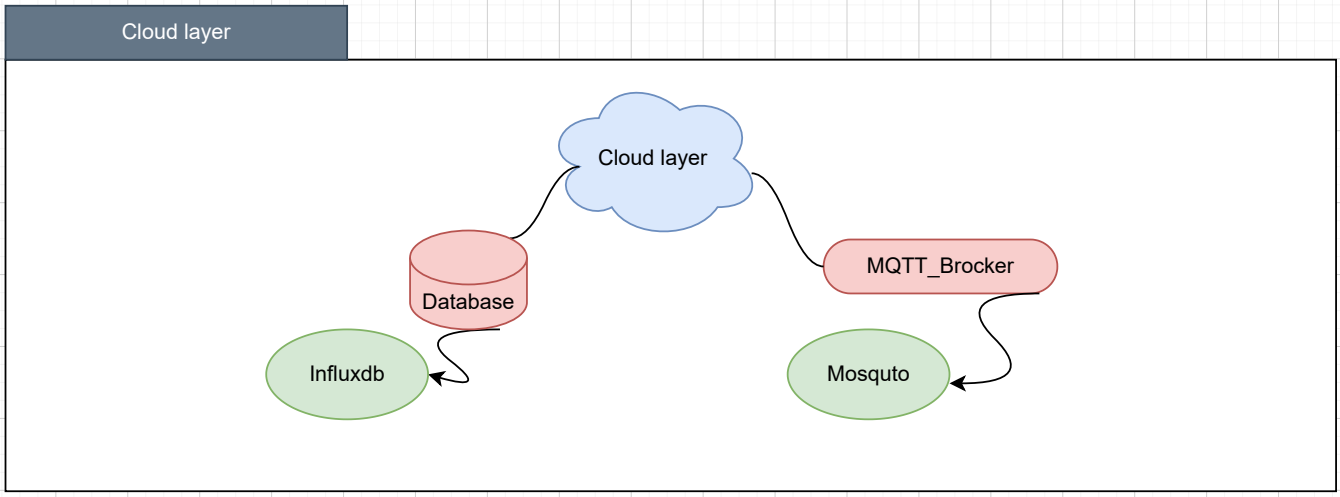


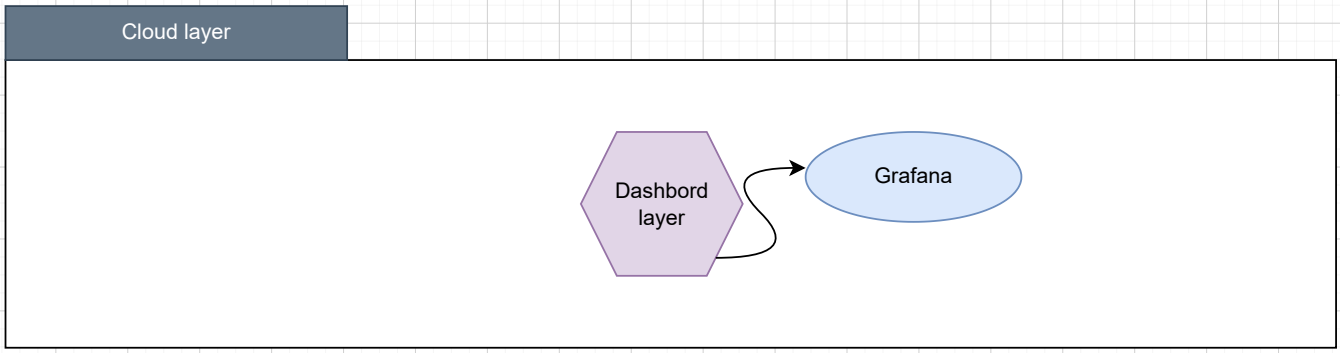
Device / Sensor layer

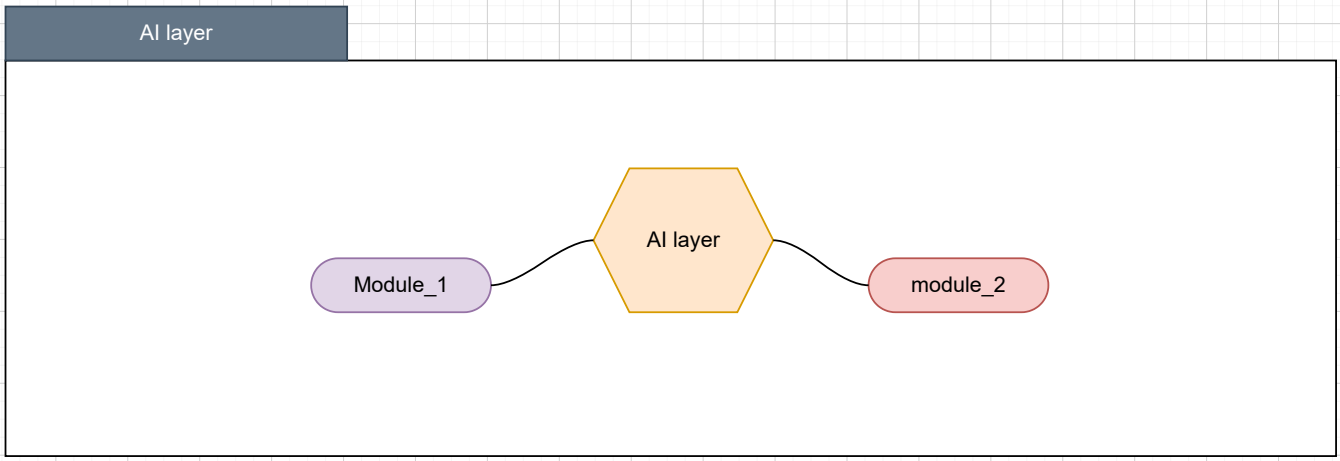


Wireliess Network layer




Cloud layer
Cloud layer
Database
MQTT_Brocker
Influxdb
Mosquto


Cloud layer
Dashbord layer
Grafana


AI layer
AI layer
Module_1
module_2

Software Architecture Digram