Success Stories in Automotive

RAPIDISE
QUALITY DELIVERED
A Joint Venture of
Napino & Teksun

Dashcam + LTE Edge AI Box

The LTE Edge AI Box project aims to enhance vehicle safety in the Japan market by developing an advanced emergency call system. The system is designed to automatically connect to an emergency call-center when a vehicular accident is detected, ensuring immediate support and communication for the occupants with Video Data Transmission and Comprehensive System Integration.

Tech Specifications:

- OS: Android
- System Components
  - LTE (4G) Communication
  - Wi-Fi and Bluetooth
- Integrated compact 2-camera unit (front and in-cabin).
- User Interaction
  - Voice Call Functions (Microphone and Speaker)
  - Dedicated SOS Button
- Smartphone Interfacing
- Video Recording Function

Dual Display IVI System for Truck OEM (Design to Production)

The primary objective of this project is to develop and implement a custom control system for Heavy Duty Trucks, focusing on Human-Machine Interface (HMI) and service layers for both the Head-Unit Cluster and Head-Up Display. The system is designed to operate on Android 10 or greater and aims to enhance vehicle control, monitoring, and data visualization through an intuitive human-controlled interface.

Tech Stack: (CAN Data Acquisition Module)

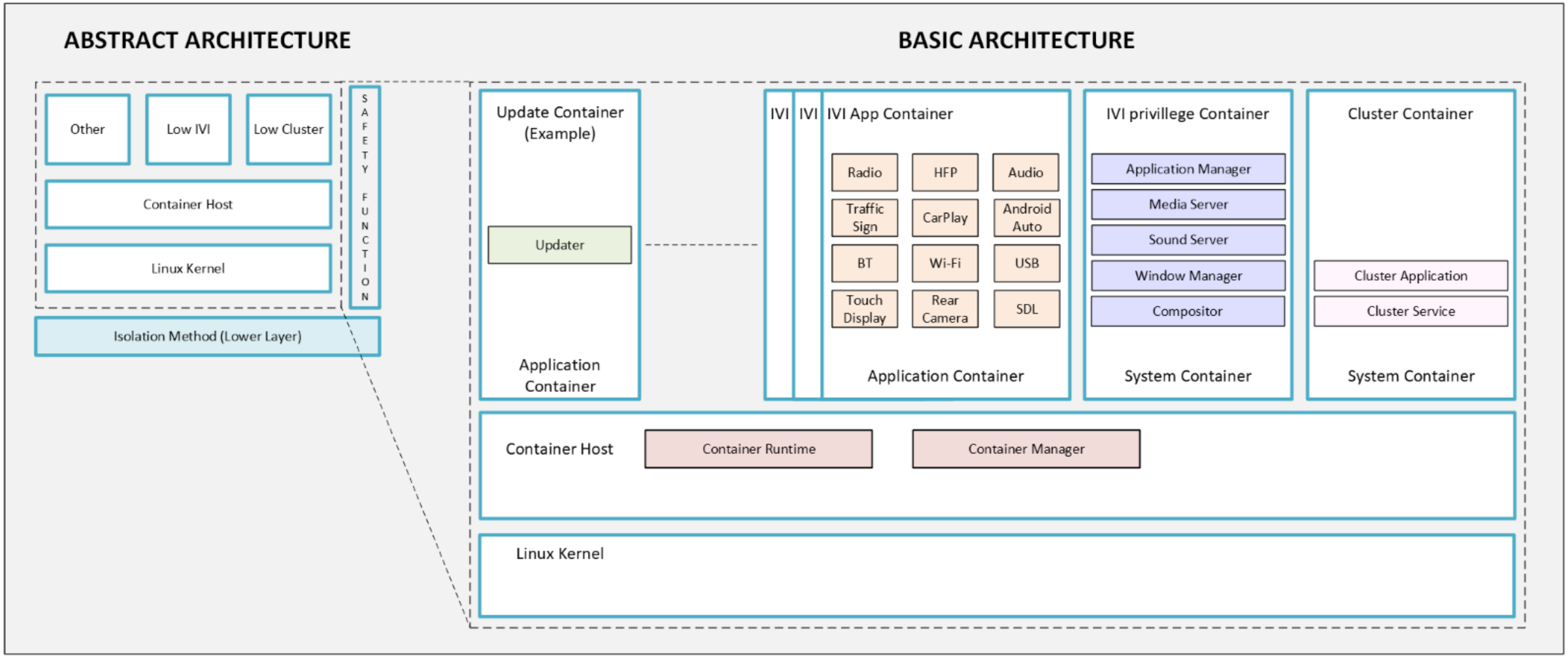
- OS : Android 10
- Linux Kernel : 5.4
- Language: C
- Android 10
- Quectel’s Android RIL Driver For Radio/Cellular Support
- NXP’s Inbuilt Drivers for CAN, USB, USB hub, Wi-Fi/BLE and Gigabit Ethernet.
- Custom Driver Development for Temperature, Accelerometer, Gyrometer, Magnetometer, Light Sensor.

Infotainment System (IVI)

Demo Video: DEMO.mp4

Connections Demo Video: Connections Demo Video.mp4

IVI Architecture



Face Recognition Combines Camera and Time-of-Flight sensor

2.5D face recognition combines camera and Time-of-Flight sensor technology for enhanced facial recognition. By capturing depth information alongside traditional 2D imagery, it achieves superior accuracy and security. This enables facial authentication even in low-light conditions, making it ideal for secure access control and device unlocking. Its ability to distinguish between real faces and 2D images ensures robust protection against spoofing attempts, setting a new standard in biometric security.

Key Features :

1. **Model Architecture:**
   a. Custom CNN model inspired from centernet architecture
   b. Detects keypoints and embeddings
   c. Light Weight for edge device | Less than 10 mb size
2. **Platform: Qualcomm 8155**
3. **Accuracy Details:**
   a. Accuracy: 96.2%
   b. Frames to Register new face: 2 frames
   c. Inference time: less than 1 sec

Tech Stacks:

Pre-Processing Libraries: Opencv | NumPy | Pandas
Seaborn Training Framework: TensorFlow

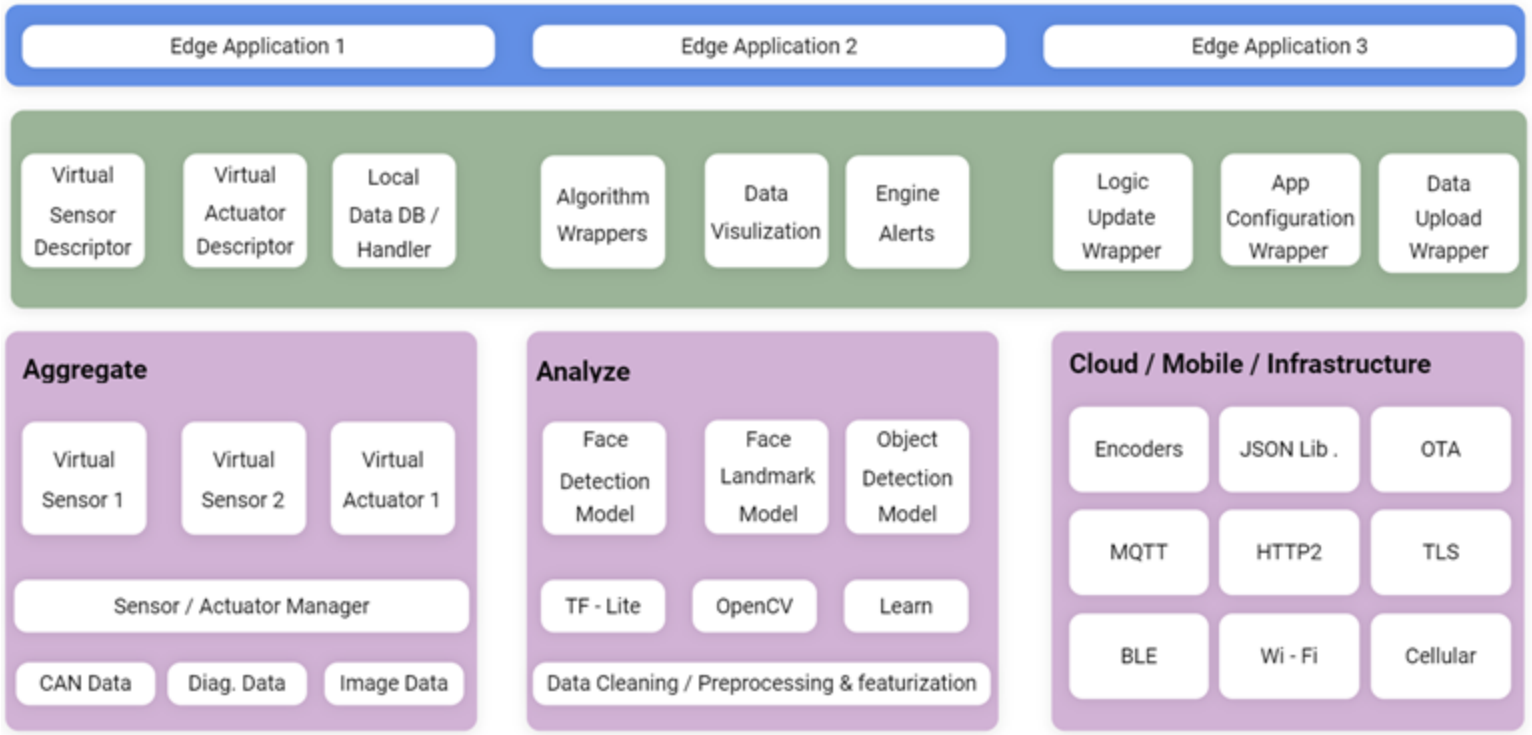
Model Optimization Tools: TensorFlow Lite
Runtime Framework: TensflowLite | nvidia |Android

Demo Video: Demo Video.mp4

Edge AI Framework for Automotive

Rapidise's Edge AI Framework enables modular development for Vehicle Telemetry solutions, providing real-time tracking of vehicle location, fuel consumption monitoring, and remote access to video data. Our framework incorporates advanced AI algorithms, enabling edge computing for faster processing and optimized performance. With our customizable dashboard and analytics, developers can gain valuable insights into vehicle behavior and operational efficiency.

- Architecture Development
- Low Level Driver Interfacing
- External Infrastructure Connectivity Management
- Data Visualization
- Soft Sensor Based Implementation to Provide abstraction and Security.
- Edge application development
- Custom SDK Development
- Remote Firmware and Logic Updates

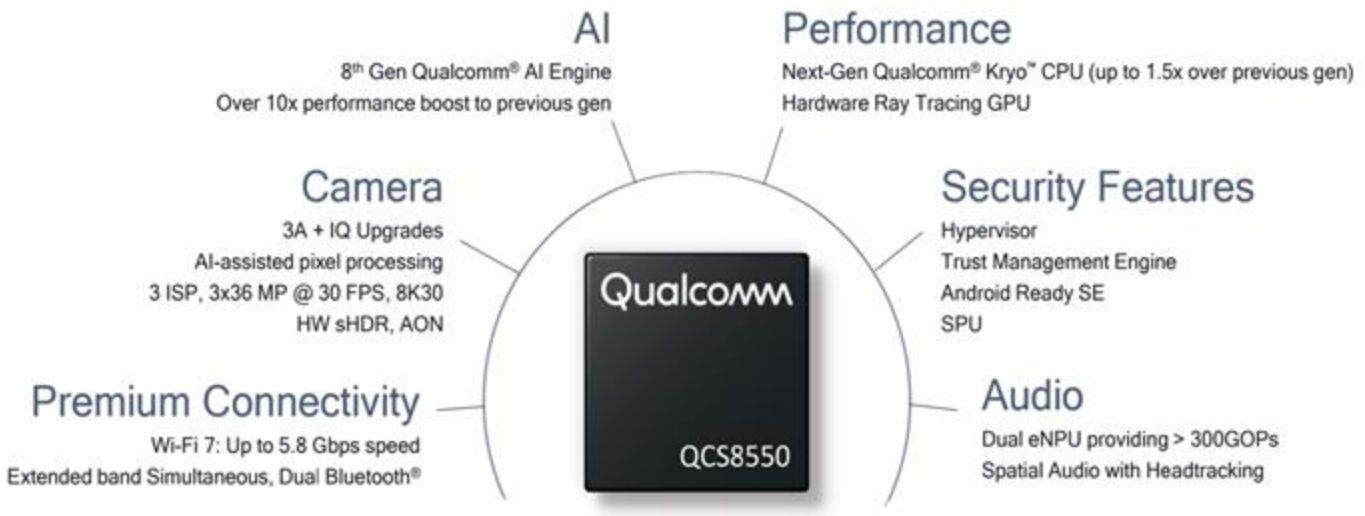


Low Light Camera based on QCS8550

Rapidise is developing a Low Light Camera with new age Image Sensor with better Performance then current industrial offerings. The Project is to make a Portable , Modular form factor that can help in making this Product scale across multiple industries such as Defense Vehicles, Drones, night Vision Scopes, Underwater Photography and other mission critical use case. The main Value addition is that we are working on this is to translate the existing optimized pipeline to the Qualcomm advanced Spectra 7 ISP.

Tech Specifications:

- Processor – **Qualcomm 8550 SOC**
- OS: Android 9.0
- System Components
  - LTE (4G) Communication
  - Wi-Fi 7
- QUAD Binning
- USB C display Port
- HDMI
- AI Algorithms
- 16 BIT 90 FPS



Next-generation premium SoC, delivering best-in-class system performance, exceptional intelligence, and premium imaging.