

The logo for GadgEon, with 'Gadg' in blue and 'Eon' in orange.

Engineering Smartness

CAN TO ETHERNET CONVERTER FOR AUTONOMOUS CARS

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Version 1



CAN to Ethernet Converter For Autonomous Cars



Research arm of a global automotive leader wanted an intermediate solution for testing and fine tuning their algorithms for autonomous cars. They wanted a solution to collect data from multiple radars on a car and aggregate all data to a PC for analysis.

Solution Description

- Developed a gateway for collecting data from multiple radars on the CAN bus and aggregate them over UDP protocol to a PC. PC runs algorithms that analyse the data to make decisions.
- Aggregate data from several radars on the front and rear of the car
- Converts the data to PEAK format for transmission to PC over UDP
- Accept configuration commands over ethernet
- Provision for firmware update over Ethernet for the Gateway

Outcome and Benefits Delivered

- Developed the solution in a quick time frame of 2 months based on an off the shelf hardware. This enabled the customer to resume their R&D activities without any delay under real world conditions.
- Firmware update over the network enabled deployment of new features without any hassles to access physical hardware.



The Solution / System Description

- Our customer was an R&D enterprise who bridges the gap between fundamental research and product development. They wanted to apply artificial intelligence to make cars in the future that are safer, more accessible and more environment friendly.
- The project scope involved the development of a CAN to Ethernet Converter which will be used in the autonomous car.

Gateway Firmware

Technology Stack: C, UDP, Bare metal, NXP MPC5748G

Developed a firmware on NXP MPC5748G for CAN to Ethernet conversion with following features

- Read Radar Data from several CAN buses with up to 400Kbps data rate on each bus
- Format the data to PEAK Ethernet frame format and add timestamp to the Ethernet frame.
- Send the data to a personal computer via Ethernet using UDP communication. Firmware acts as a UDP client.
- Provide services to update the device firmware through Ethernet from PC

Linux Application

Technology Stack: C, UDP server

Developed a command line application to test all the features of the Gateway

- Receive the Ethernet frames from the device and display or save the data. Linux PC acts as a UDP server.
- Upgrade the device firmware over ethernet interface

THANK YOU



For More Details, Let's Connect



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