

CAN-FD based sensor system

We are looking for two motivated master students Electronics and ICT Engineering Technology



Project description:

Formula Electric Belgium (**FEB**) is a team of highly motivated engineering students that build an electric formula student race car. Just like Formula 1 the team builds a brand-new car each year to compete in multiple international competitions during the race season. Formula Student is the largest international engineering and design competition in the world. The competition is characterized by combustion vehicles, electric vehicles and since recently also autonomous vehicles. Formula Electric Belgium strives towards innovations and the raw performance of technologies. It is for this reason that the team will focus on the autonomous/electric race cars. Research and development applications will be made by postgraduate students in collaboration with thesis students from the KU Leuven and bachelor students from Thomas More.

Thesis description:

Designing a great race car is only possible when you have good data to base your calculations on. Every year, the number of sensors in the car increase, and the demanded accuracy and speed increases as well. A new sensor system that can handle the digitalisation of the data and a reliable communication using the new CAN-FD standard will help improve the capacity of the current communication channels on the car.

Thesis objective:

A great sensor system is highly flexible and can handle a lot of different requirements for the sensors. Ideally, a single PCB is designed that can change its settings on the fly to handle different sensors (input voltage range selection, voltage measurements, frequency measurements). This data should be digitised and sent to the rest of the car using the CAN-FD standard. Next to the sensors, these systems should be able to control some actuators in the car (like the brake light, cooling fans, safety actuators). Lastly, the CAN-FD messages should be designed to handle multiple 'sensor nodes' on a single CAN-FD bus, in an easily extendable format.

Profile:

- Interested in embedded systems (ARM)
- Teamplayer
- C/C++
- Interested in PCB design
- Knowledge of Altium Designer is an advantage

What do you gain?

- A unique engineering- and team experience where hard work and team atmosphere are central.
- Work with innovative technologies in a realistic environment/application.
- Create added value for your curriculum and the team