Driverless algorithms on a self-developed ECU.

We are looking for motivated master students 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 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:

The ECU (Electronic Control Unit) is the brain of an electric race car. It receives data from all the sensors, and controls the actuators in the car. The Formula Electric team developed its own ECU last year. This ECU contains a Zynq 7020 that is running a modified Linux kernel and uses Programmable Logic to enhance the amount of can buses. For now, the driverless algorithms are running on an external desktop computer inside the car, passing information to the ECU. This computer is heavy and takes up a lot of space.
As the ECU is very powerful, the driverless computer can be implemented onto the ECU.

Thesis objective:

Analyse and benchmark the capabilities of the current ECU and adapt it so that it is powerful enough to run all the driverless algorithms, together with all the Vehicle Dynamics ECU processes. Different approaches (hardware acceleration, higher performance chip, Nvidia card, etc.) should be analysed and the best solution should be implemented.

Profile:

- Interested in driverless cars and electronics

- Interested in operating systems

- Clean electronic design

- Interested in FPGA

- Team player

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

Are you interested? Please send your resume with accompanying motivation to:
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