Driverless State Estimation

OUR PROJECT

Formula Electric Belgium is a student-run electric race team which competes in Formula Student, the world's largest competition for engineering students. We aim to push the limits of performance, innovation and sustainability within electric racing every year, which is only possible with the help of our Thesis students. These pioneers are responsible for performance-defining innovations within the team, and we would love for you to join our team of highly ambitious and motivated engineers. As a Thesis student, you will research, design, prototype and test your innovations alongside the full-time members which make sure the team pushes itself and the car to new heights.

AIM AND OBJECTIVE

State estimation is the most important algorithm in our driverless system, as the car must always have an accurate estimation of its position and velocity. The current state estimation algorithm relies on an external library and only uses a Lidar sensor and an Inertial Measurement Unit to estimate the car's state.

This thesis will focus on designing a new state estimation algorithm that integrates additional sensors to improve reliability and precision. Currently unused sensors on the car, such as wheel speed measurements and a steering angle sensor, can be incorporated, and if deemed beneficial, additional sensors such as a ground speed sensor, RTK GNSS, or a pitot tube may also be considered. The thesis will also develop a method to quantitatively evaluate and compare different state estimation approaches under realistic driving conditions.

PROFILE

- Interest in state estimation and sensor fusion
- Motivated team player with strong communication skills
- Eager to conduct in-depth research and thoroughly explore a technical topic.

RETURNS

- Unique experience within a racing team
- Genuine work experience to carry with you into your career
- Exposure to cutting edge technology and software

INTERESTED?

Send us your contact details and field of interest to

recruitment@formulaelectric.be