

Implementation and validation of Model Predictive Control on a Formula Student Car

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

In the past two years, theses have been made around the modelling of a Formula Student car to try to predict how the car will react based on steering and throttle inputs. This way a certain path can be more closely followed than by using conventional PID-controllers.

Several models have been created and explored in the past two years. The goal of this year is to implement these different models and validate their accuracy in a real-life test instead of relying on simulations that might differ from reality in extreme cases. The balance between performance and accuracy of the model must be explored and a compromise might have to be made between the two of them. It's a nice bonus to figure out the accuracy of the simulation in comparison to the real tests.

The driverless system is written in C++ and heavily relies on the ROS (Robot Operating System) framework.

PROFILE

- Willingness to learn new technologies
- Education in Electromechanics or Software
- Experience with Vehicle Dynamics Models is a nice bonus
- Experience with C++ and ROS is a nice bonus

RETURNS

- Practical experience in a high-end engineering context
- Work with the newest technologies and innovative companies
- Developing your hard- and soft-skills in a company-like environment
- Participation in the biggest student competition in the world

INTERESTED?



Send us your contact details and field of interest to

recruitment@formulaelectric.be