Reinforcement learning path planning for trackdrive Driverless

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

Trackdrive is the driverless event where we drive the track of autocross but 10 laps instead of one. At this point, our algorithm draws the track on the first lap and makes some small adjustments every lap if needed to really match the cones. We don't drive racing lines for the moment though which means we're losing lap time.

For this thesis, the goal would be to have reinforcement learning draw the optimal racing line of the circuit. It would work as follows:

- The first lap: the car draws the circuit

- Second lap: the car drives with the same algorithms but in the background the reinforcement learning is optimizing the perfect racing line for the track drawn at the first lap

- Third lap onwards: the path planning of the car changes to the racing line made by the reinforcement learning algorithm

PROFILE

- Experience in Object-Oriented Programming

- Knowledge of C++

- Some knowledge of machine learning is preferred but not required

- Interested in machine learning is a must

- Well-organized

- Communicative

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