

# Design and implementation of a reliable long-range communication system for vehicle telemetry

## 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

We are looking for a student to research and implement a fast, reliable communication protocol to monitor the car during testing days. Currently, our car connects via Wi-Fi or an MQTT server over 4G, but Wi-Fi's range is too short for large tracks, and the 4G-based MQTT system is unreliable. The student will propose and develop an alternative solution that ensures long-range connectivity, high reliability, low latency, and sufficient bandwidth for real-time telemetry. They will test the solution under track conditions, compare its performance with existing methods, and provide documentation for integration and maintenance. This project will enhance our ability to monitor and optimize the car during testing.

To achieve this aim, the project focuses on the following key objectives:

- Range and coverage of the system
- Reliability of the system
- Low latency connection
- Bandwidth of the system

### PROFILE

- Willingness to learn new technologies
- Education in software development
- Experience with C++ and/or ROS is a bonus
- Interest in communication protocols and wireless applications
- Experience with electronics is a 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](mailto:recruitment@formulaelectric.be)