

# INTERNSHIP + THESIS POSITION: ROBUST TRAJECTORY PLANNING FOR AUTOMATED VEHICLES

## About the company

2getthere realizes automated transit applications, operating on either segregated infrastructure, dedicated lanes or in mixed traffic. The systems are based on over 30 years of experience with automated vehicles in different demanding environments. The first applications were Automated Guided Vehicles in warehousing environments indoors, serving as a basis for the development of port applications (ECT container terminal) and eventually automated people transit applications.

2getthere's first transit system was developed in 1995. Pilot projects were realized at Amsterdam Airport Schiphol (1997) and business park Rivium (1999). The extended Rivium system was equipped with 2nd generation vehicles in 2006 and is still operational today. The first permanent automated taxi system, at Masdar City (Abu Dhabi) opened to the general public in 2010.

Currently the company is engaged in the delivery of the third generation Rivium project with upgraded vehicles and autonomous shuttles at Brussels Airport Zaventem.

## About the assignment

At 2getthere we are currently refining the third generation of vehicles. As these vehicles will interact with other road users, robust planning capabilities are required to safely plan a trajectory in between static and dynamic obstacles. We are looking for an intern and/or thesis student to work on trajectory planning, with special emphasize on the interaction between a high-level trajectory planner and low-level tracking.

We would prefer a student working on this topic for both an internship and thesis. The internship assignment would involve setting up a simulation environment, integrating the existing low-level controllers with newly developed planning algorithms. For the thesis, the student can research different methods for generating reference trajectories robust against tracking errors and/or perception uncertainty. We aim to get the algorithms implemented and tested on our full-scale test vehicle.

Slight deviations from this topic can be discussed.

## Preferred qualifications

- Background in control theory and optimization
- Proficient in MATLAB and Simulink
- Bonus points for familiarity with Linux, C++, Python, experience with motion planning, MPC
- Preferred starting data around July-September

For further questions or applying, please contact Rob Ruigrok ([rob@2getthere.eu](mailto:rob@2getthere.eu)). When applying, please provide a short motivation, up to date CV and a transcript of your current degree program.

