# Thesis Project

## Tailored algorithms for relaxed barrier function based MPC

**Description:**

Model Predictive Control (MPC) is a flexible and powerful scheme for high-performance control. It has become recently attractive in autonomous driving. Still, novel approaches are required to make MPC applicable in such realtime applications; in particular, fast optimization algorithms are a key ingredient.

In this project, we would like to employ tools based on robust control techniques to design novel optimization algorithms specifically tailored for MPC applications, in particular relaxed barrier function based MPC. The focus of this work lies on the implementation in Matlab/Simulink; carrying out tests at the real car is also possible.

This project will be carried out in cooperation with the Porsche Engineering GmbH (PES) in Mönsheim. If you are interested, please contact me at fabian.pfitz@porsche-engineering.de.

**Prerequisites:**

- Courses (ideally): *Optimal Control*
- Experience in MATLAB

**Supervisors:**

- **Fabian Pfitz**  
  Room 2.243
- **Simon Michalowsky**  
  Room 3.244

**Area:**

- Model Predictive Control

**Properties:**

- Type: **MA**

**Beginning:**

In principle at any time. Please approach me via email in case of interest in the topic.

Weitere Informationen: [http://www.ist.uni-stuttgart.de/lehre/bama/index.html](http://www.ist.uni-stuttgart.de/lehre/bama/index.html)

Aushang vom September 17, 2018