

## Project System Development (Bachelor/Master), winter term 2023/24

**Project:** Autonomous Parking

**Advisor:** Prof. Horsch, Rudi Scheitler

**Language:** English

**Capacity:** Bachelor 12, Master 4

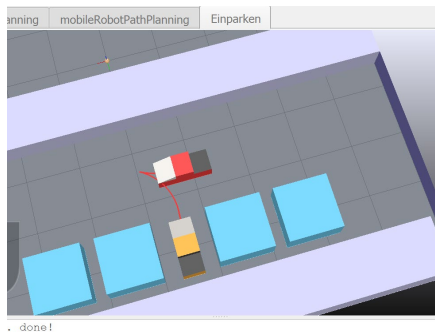
**Introduction:** Autonomous parking is a feature, which automotive manufacturers implement in their current car models. It can be seen as part of the overall strategy to implement autonomous driving.

### Project Goal:

In the project the students implement autonomous parking algorithms and test them out in simulation and on real hardware. For simulation purposes the educational version of the software CoppeliaSim from the swiss company Coppelia Robotics is used (see <https://www.coppeliarobotics.com/>), which provides API's to different programming languages so, that devices like a model car can be controlled by own software.

For real hardware model cars are provided in addition to a sensor, which are able "see" the surrounding of the car and is mounted on the top of the car. An embedded computer like a Raspberry Pi is controlling the car.

At the end the soft- and hardware system should be able to solve simple parking maneuvers.



Simulation of parking maneuvers with CoppeliaSim



Possibly used robot car in the project



Possible Sensor (lidar)

### Project Execution:

The whole project will be separated into subprojects, which will be executed by a group of 2-4 students. Master students are expected to implement own ideas to solve more complex scenarios.