

# Drift Parking using Reinforcement Learning

## Project Summary

The goal of this project is to get an autonomous vehicle to perform [drift parking](#). This may, for example, be achieved through Reinforcement Learning (RL). Design, implementation and testing of the algorithm are done in simulation. Afterwards there also is the option of validating the developed method on a 1:10 scale model car.

## Project Type

- BA Thesis (3-6 months)
- MA Thesis (6 months)
- Praktikum / Internship (3-6 months)

## Required Qualifications

- Interest in RL, Neural Networks, Vehicle control
- Basic programming skills in Python

## Contact

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## Detailed Description

Drift Parking can be generalized as the problem of quickly stopping a moving vehicle such that it ends up in a very specific orientation and location.

During real-world competitions, this location is usually represented by a particularly tight parking spot. This technique may find



application in various other situations – including safety for autonomous vehicles. Therefore, in addition to the Guinness Book of World Records and various motor sport events, this problem has recently been picked up by autonomous driving researchers.

## References

- Liu, Ming, Bo Leng, Lu Xiong, Yize Yu, and Xing Yang. 2021. "Segment Drift Control with a Supervision Mechanism for Autonomous Vehicles" *Actuators* 10, no. 9: 219. <https://doi.org/10.3390/act10090219>.
- E. Jelavic, J. Gonzales, and F. Borrelli. "Autonomous Drift Parking using a Switched Control Strategy with Onboard Sensors". *IFAC-PapersOnLine* 50, no.1 (2017): 3714-3719.