

# Deep Reinforcement Learning for Trajectory Drifting

## Project Summary

The goal of this project is to design a Reinforcement Learning (RL) algorithm based on Neural Networks (NN) in order to make a vehicle drift along arbitrary trajectories. The algorithm should be implemented in simulation and on a scale 1:10 model drift car available in the Autonomous Systems Lab.

## Project Type

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

## Required Qualifications

- Prior experience with Neural Networks
- Basic programming skills in Python

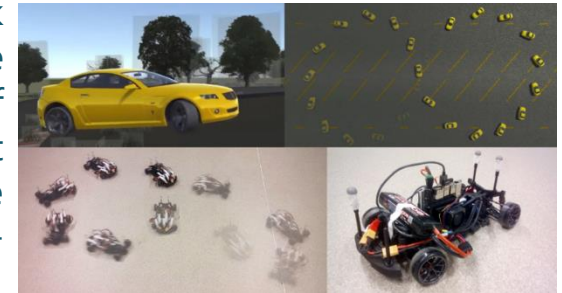
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## Detailed Description

Significant progress is being made in the field of autonomous vehicles (AVs). This is usually based on a driving style that is overly careful or conservative.

However, the task of driving at the physical limits of the car is difficult to automate. The goal of this project is to imple-



ment a controller using RL that is able to follow general trajectories while drifting. The controller is trained and implemented based on a simulator and an already available scale 1:10 model drift car.

## References

- J. Y. Goh, T. Goel, and J. C. Gerdes, "A controller for automated drifting along complex trajectories," in Symposium on Advanced Vehicle Control, 2018.
- M. Cutler and J. P. How, "Autonomous drifting using simulation-aided reinforcement learning," in International Conference on Robotics and Automation, 2016.
- F. Domberg, et al. "Deep Drifting: Autonomous Drifting of Arbitrary Trajectories using Deep Reinforcement Learning." in International Conference on Robotics and Automation, 2022.