

# Long-Horizon Vehicle Motion Planning and Control Through Serially Cascaded Model Complexity

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## Abstract

We propose the implementation and experimentation of a motion planning and control framework for autonomous vehicles based on nonlinear model-predictive control. The work is mainly based on [Laurense and Gerdes, 2022]. The code is available publicly at this GitHub repository.

## 1 Introduction

- Overview of the paper
- Problem statement
- Literature review (?)
- Report outline

## Overview of the paper

## 2 Methodology

- Concept of MPC for vehicle control
- Concept of serially cascaded models

## 3 Implementation

- Tools and libraries
- Description of implementation process

- Modifications or adaptations wrt the paper

## 4 Experimental Setup

- Simulation setting (track etc.)
- Different configuration scenarios

## 5 Results

- Guess what

## 6 Conclusion

- Take-away message
- Pitfalls and future work

## References

[Laurense and Gerdes, 2022] Laurense, V. A. and Gerdes, J. C. (2022). Long-horizon vehicle motion planning and control through serially cascaded model complexity. *IEEE Transactions on Control Systems Technology*, 30(1):166–179.