

Master Thesis / Bachelor Thesis (2019)

Spline Based Algorithm for Urban Driving

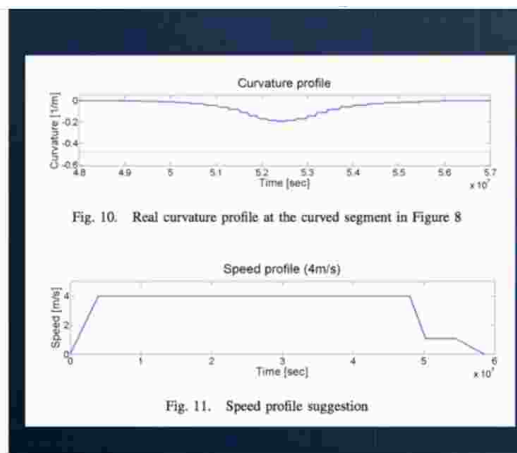
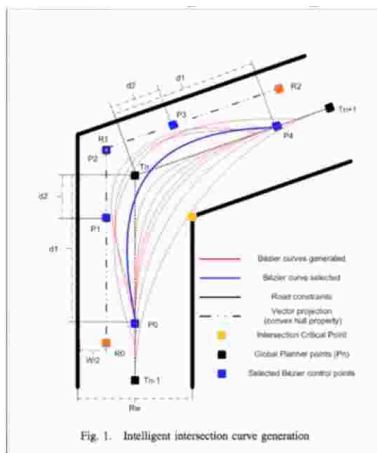
In this thesis, it is proposed to implement a local planning algorithm, based in Spline models, that can deal with dynamic environments.

The information from the current environment will be provided by a perception module in a form of a time series of corridors (drivable areas).

The goals of the thesis are:

1. Developed a Spline based model for autonomous cars in urban environments. The algorithm should fulfill the car restrictions (accelerations, velocities) and optimize the confort for the passengers (reduce lateral and longitudinal accelerations).
2. Test that the approach works in some typically urban scenarios, like 90 degrees turns or entry/exit of roundabouts.
3. One of the main problems of the spline based approaches, is that the speed/curvature profile is usually too simple. A smooth algorithm on top of the spline or a new approach should be also developed.

This thesis will be developed in simulation, and can be also tested in real vehicles.



We are happy to answer questions regarding the topic, reference literature or alternative topics. In this case please contact the supervisor below for further information.

Requirements: Knowledge of C++ or Python
 Knowledge of ROS (Robot Operating System)
 Independent, diligent and structured way of working

Keywords: Autonomous Vehicles, Motion Planning, Dynamic Environments

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