ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Institute for
Dynamic Systems and Control

IDSC

Institut für Dynamische Systeme
und Regelungstechnik

Semester Thesis / Master Thesis

IDSC-CO-DM-06

BOSCH

Machine Learning for Velocity Estimation

Description:

The CO_2 emissions of hybrid electric vehicles (HEV) can be decreased significantly with the use of powerful control algorithms such as model predictive control (MPC). However, MPC depends on the availability of predictive data of the future driving mission of the vehicle.

Modern GPS systems can be used to reliably estimate the elevation profile of the upcoming route but the future vehicle velocity depends strongly on the traffic condition. Therefore, often only crude forecasts of the velocity are at hand. Data-driven methods such as machine learning can be used to provide more accurate estimations of future vehicle behavior.

You will work with a large collection of data, measured during various car trips. After pre-processing the data, you will train and implement different state-of-the-art machine learning approaches. The goal of this project is to come up with a predictor that can forecast the future vehicle velocity, given past and current onboard measurements.

You should have a strong background in machine learning and hands-on experience with large data sets. On top of that you need to be motivated to work your way through already existing code.

Prerequisites:

Theoretical knowledge and working experience in machine learning. Good programming skills (preferably in MATLAB). Initiative and pleasure to work as a team.

Contact:

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To apply for this project, please send me your CV and your transcript of records.