Master's Thesis

# Data Mining: Exploration of cycling data obtained in a field trial

Accompanying the launch of the 9-Euro-Ticket, an interdisciplinary team of mobility experts of TUM is conducting the project Mobilität.Leben. During the project, more than 900 participants continuously document their mobility using an app. Thereby, a vast amount of spatiotemporal data is gathered. Processing and analyzing this treasury of data thoroughly is key to understanding underlying processes. Cycling is regarded on of the key modes of transports in sustainable urban mobility. Recording, analyzing and understanding collected data produces meaningful insights into its usage patterns. Finally, this approach facilitates the design of future urban environments and sustainable, active mobility centered transportation systems.

Within the scope of this thesis, the gathered cycling data is to be explored and analyzed systematically. This includes visualization as well as quantitative evaluation of spatial and temporal characteristics using state of the art GIS methodology and the process steps of KDD (knowledge discovery in databases). The aim of the thesis is to understand and interpret the present data.

The following working packages are part of the thesis:

- Literature research on the analysis of spatiotemporal mobility data, especially cycling and other modes of micromobility
- Processing of the data (selection, filtering, and representation as a database)
- Exploratory data analysis
- Objective interpretation of the dataset
- Depending on personal background, interest and skillset additional studies will be defined following initial application (e.g. correlation of cycling and POIs, analysis of cycling infrastructure, comparison to existing datasets like MID or the MVG bike-sharing dataset, …)

Requirements:

- Distinct interest and background knowledge in sustainable mobility
- Motivation to familiarize yourself with new topics
- Experience with data analysis in Python, QGIS or equivalent software (or the intention to get acquainted independently)
- Enrolment at TUM (data protection)

Further information: Project Mobilität.Leben, Mobilität.Leben dashboard

Please send your application including CV, grade report and letter of motivation to:

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