



Abschlussvortrag Research Track

Freitag, den 03.06.2022, 09:00 Uhr,
<https://webconf.tu-clausthal.de/b/jor-a6p-eeen>

Forschungsprojekt:

Merlin Korth

“The Influence of Grid Cell Size on Taxi Demand Prediction”

Taxi demand prediction has the potential to increase the usage of ride-sharing and customer satisfaction by predicting the number of taxis needed at a certain place and time. When reviewing the related work, we observed that in taxi demand prediction the city is usually divided into square grids with various grid cell sizes. However, from our perspective, it is not clear how the grid cells are configured the way they are and a systematic comparison of the influence of grid cell size as regards their influence on urban demand prediction accuracy is lacking.

In this paper, we compare the influence of three grid cell sizes—250, 500, and 1000 meters—on the prediction accuracy of different types of taxi demand prediction approaches; in particular, we select a convolutional neural network, a recurrent neural network, a long short-term memory network, and a graph neural network from the literature. The prediction accuracy is evaluated using the New York City TLC taxi trip record dataset and the metrics mean average, mean relative, and mean squared error. The results indicate an influence of the grid cell size on the prediction accuracy and show that approaches with a grid cell of size 1000m and 500m achieve a higher prediction accuracy than smaller grid cell sizes like 250m.

Gutachter: Prof. Dr. Jörg P. Müller und Prof. Dr. Rüdiger Ehlers (ISSE)