



## **Informatik-Kolloquium**

**Forschungsprojekt  
von Majid Shahpiri Ziaratgahi**

Montag, den 02.08.2021, 17:00 Uhr,

BigBlueButton <https://webconf.tu-clausthal.de/b/jor-a6p-eeen>

### **“Influence of grid topology and cell size on taxi demand prediction”**

Ride-sharing services have grown up in recent times intending to better use of vehicles capacity, thereby presenting the option of reducing the travel time and cost, *CO2* emission, and ecological damages. One option for taxi and ride-sharing services providers to optimize their services is the prediction of passenger demand. Previous work applied several algorithms like the convolutional neural network (CNN) and long-short term memory (LSTM) to predict the passenger demand and considered additional features like weather, holiday, etc. However, we observed that previous work uses different grid cell sizes, which are applied without explanation. However, we observed that previous work uses different grid cell sizes, which are applied without explanation. Schleibaum et al. (2021) made a similar observation for estimating the time of arrival - a task also used in taxi and ride-sharing services - and showed that multiple works used suboptimal grid configurations. Based on that, our preliminary assumption is that the grid cell size and grid topology have an impact on prediction precision. In this work, we want to consider the grid topologies (square, triangle, and hexagon) and the various grid cell size to study their influence on CNN-based demand prediction. We construct multiple CNN models and use an LSTM model to evaluate the influence of the grid topology and size on demand prediction; additionally, we use error metrics like RMSE, MSE, MAE, MRE, and Cosine Similarity.

Betreuer der Arbeit: Prof. Dr. Jörg P. Müller und Prof. Dr. Rüdiger Ehlers (ISSE)