Faculty of Management, Economics and Social Science
Chair of Information Systems for Sustainable Society (Prof. Ketter)

Master Thesis

"Evaluation of Multimodal Routing on Real World Data"

To reach sustainable mobility, the mobility behaviour of all travellers needs to adapt. A common idea is that the usage of Public Transport is the most efficient solution. However, Public Transport cannot guarantee to be always available everywhere, as this would be inefficient. Additionally, there can be disruptions of service due to many reasons. In all these cases, a combination of supplementary transportation modes and Public Transport could help alleviate the issues and bridge gaps. For an efficient use of many different modes, users need information on how they can route efficiently with their resources. There exist different approaches to efficiently calculate these so-called multi-modal routes. The task is to implement one or more competitive routing algorithms that support multi objective routing. Then, using this implementation, the routing should be evaluated on real world data leveraging a combination of real time public transport data and shared mobility data to compute routes and estimate the costs associated with these routes. Using this approach, you can show what impact the addition of different modes of shared mobility has on the reach of the public transport network.

Key tasks and objectives of the thesis

- Implement R5 and an alternative competitive routing algorithm
- Evaluate the routing based on a set of trips for important statistics
- Show the effect of adding shared mobility modes to the routing calculation

Topics

- Smart Urban Mobility
- Multimodal Routing
- Data Analytics

Methods

- Implementation
- Data Analytics

Sources (Starting point)

- Pereira, R. H. M., Saraiva, M., Herszenhut, D., Braga, C. K. V., & Conway, M. W. (2021). r5r: Rapid Realistic Routing on Multimodal Transport Networks with R^5 in R. *Findings*. https://doi.org/10.32866/001c.21262
- Conway, M. W., Byrd, A., & van der Linden, M. (2017). Evidence-Based Transit and Land Use Sketch Planning Using Interactive Accessibility Methods on Combined Schedule and Headway-Based Networks. Transportation Research Record, 2653(1), 45–53. https://doi.org/10.3141/2653-06

Contact

Philipp K. Peter

Tel.: +49-221-470 89058,
Philipp.peter@wiso.uni-koeln.de