



Bus network configurations to complement evolving metro networks

General description

Urban rail serves are the backbone of metropolitan public transport networks. The development of new metro lines should be accompanied with the re-design of the remaining public transport network given the expected consequences for passenger demand and level-of-service. This is especially true in the case of megacities that are currently undergoing dramatic developments, such as Bangalore, India. The Bangalore metro network consists of 45 km with a daily ridership of ~400,000 trips. The city also has 6,500 buses operating on a much wider network across the city and having a daily ridership of ~3.5 million trips. As the metro network evolves further to reach 200 km by 2030, it is likely that some of the longer-distance bus trips shift to the metro, thereby reducing bus demand on overlapping corridors. Analysing alternative configurations of redesigning the bus network to complement the metro network while meeting their core bus user demand can provide valuable insights to Bangalore and many other cities developing their metro systems.

Assignment description

Ticketing data, including the origin and destination of bus and metro users is available for this project. The relative travel patterns of both buses and metro can be derived for overlapping corridors of operation using these data sets which can further be used for bus network redesign. The master graduation project will involve one or more of the following activities, all in relation to the case of bus network re-configuration for Bangalore:

- Deriving origin-destination demand patterns for bus and metro along overlapping corridors
- Establishing relative bus and metro demand and supply indicators to assess trip length distributions, peak and off-peak variations, level of complementarity, cost incurred on travel etc.
- Investigating the impacts of bus network re-configuration in meeting the travel needs of users

Candidate background

T&P or TIL students who have knowledge and interest in public transport planning and have good programming skills, in particular with Python and affinity with managing large databases and large-scale computational requirements.

Research group

The Smart Public Transport Lab of the Transport & Planning Department,
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External support

The project will be performed in cooperation with Bangalore Metropolitan Transport Corporation (BMTCL), the city bus agency planning and operating services in Bangalore, India.

