Statistical inferences of link counts and travel time on origin-destination flow estimation

Research Problem
Origin-destination (OD) matrices - accuracy of estimation depends on multiple sources of expensive data e.g. fully observed traffic counts and trajectory data. Many cities in Asia, Africa, and Latin America are lacking a complete dataset necessary for estimating OD flow. Hence, lessening data-dependency by utilising any other possibly available transportation data is important.

Research Questions
RQ1: How to estimate OD flow only using link count?
RQ2: How to predict missing link count from partially observed data?
RQ3: How to identify street-side parking spaces only using trajectory data?
RQ4.1: What is the statistical inferences between parking occupancy rate, travel time, and fully observed link count data?
RQ4.2: Can link counts be inferred from partially observed trajectory data?

Figure 1: Research questions with a flow diagram

Figure 2: SMARTS: Simulator for OD flow visualization

Figure 3: OD flows satisfy total counts collected at each link of the road network.

Figure 4: Close approximations in estimated travel time while compared to the measured travel times in the real world.

More Information
Subhrasanka Dey, PhD candidate
deyys@student.unimelb.edu.au
Room D419, Building 174
Department of Infrastructure Engineering
Supervisors: Prof. Stephan Winter, Dr. Martin Tomko

Discipline : Geomatics