The influence of changing trip length on the Network Fundamental Diagram

Problem description

A recent development in the field of traffic flow theory is the Network Fundamental Diagram (NFD). This diagram shows the (car-)speed in an *area* (e.g., a city center) as function of the number of vehicles. Control strategies are developed which maximize the internal flows, and thereby assume the outflow of an area is also maximized.

Assignment

Earlier work showed that there is a strict relation between the flow in an area and the outflow out of an area. The requirement for this relation to hold is that the trip length is unchanged. In this study, this is further studied. Using a microsimulation of a town (Rotterdam), the NFD is made. Since all trajectories are available, the trip length per zone can also be determined.
Additional analysis include the accuracy of estimation of the NFD with a limited number of observations (detectors and/or trajectories of a fraction of the vehicles).

Embedding / collaboration

There are many parties interested in the result of this study. During the thesis, work can be done at a consulting company (Grontmij) or at other international universities (Lyon, France).

Required skills and interests:

– Interests: traffic flow theory
- Interests: traffic simulation
– Good programming skills
– Good analytical skills

Supervision

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