

VACANCY INTERNSHIP PROJECT

We are looking for students interested in carrying out their master thesis project at DAT.Mobility and VORtech

Data fusion and transport model calibration using OpenDA and OmniTRANS

Problem description

Ever since the emergence of big data, it plays an increasingly important role in both construction (parameter estimation) and application (forecasting) of strategic, tactic and operational transport model systems. In the Netherlands, the numerical models available in OmniTRANS (<http://www.dat.nl/en/products/omnitrans/>) are widely used to build such transport model systems. Although some parameter estimation methods and tools are readily available within OmniTRANS, most models and applications rely on exogenously estimated sets of parameters and/or interfaces with (big) data using custom Ruby scripts. The openDA platform (<http://www.opendata.org/>) contains several data fusion and parameter estimation methods for numerical models and as such could be a more generic solution for construction and application of OmniTRANS based model systems using big data.



Internship assignment

Research focuses on the various OmniTRANS models and applications in which big data (could) play a role. The goal is to define and construct a test case in which big data and openDA are used to kalibrate and/or apply numerical models within OmniTRANS. Below, a (non-extensive) list of possible datasets, models and estimation methods is displayed:

- Using loop detector data together with some light form of route generation, route choice models and nudging or optimal interpolation to estimate flows, speeds and densities in networks where OD-demand information is poor or unavailable.
- Estimate the representativeness of floating car data (TomTom, Here or Be-Mobile) using loop detector and/or interpolated data together with a traffic assignment model and some data fusion method.
- Using OV-chipcard data to estimate stop choice model and line choice model parameters within the public transport assignment model using a parameter estimation method.
- Using floating car data, loop detector data and other sources (e.g. the current weather forecast) together with a traffic assignment model and e.g. ensemble Kalman filtering for state estimation and short term forecasting of traffic flows, speeds, travel times and densities.

Research group / information

DAT.Mobility Deventer / Vortech Delft

Daily supervisors: Ir. Luuk Brederode (DAT.Mobility, Delft University) / Dr. Nils van Velzen (Vortech, Delft University)

When interested in this internship assignment on data fusion and transport model calibration, please contact Ir. Luuk Brederode (lbrederode@DAT.nl, 0627369830)