

M.Sc. Thesis Internship “Choice Modelling for Mobility-as-a-Service”

Company: Centrum Wiskunde & Informatica (CWI) Amsterdam and De Verkeersonderneming
Supervisors: Prof. dr. Rob van der Mei and Dr. Elenna Dugundji
Location: CWI, Science Park 123, Amsterdam
Timeframe: Spring 2019 (6 months)



Background

Mobility-as-a-Service (MaaS) is a powerful and highly **promising new concept** in mobility and public transportation. The key idea behind MaaS is to offer travelers mobility solutions based on their individual travel needs. MaaS is fundamentally different from the traditional personally-owned modes of transportation, in the sense that MaaS offers mobility solutions that are consumed **as a service**. This is enabled by **combining transportation services** from public and private transportation providers through a unified gateway that creates and manages the trip, which users can pay for with a single account. Users can pay per trip or a monthly fee for a limited distance.

Travel planning typically begins in a **journey planner**. For example, a MaaS trip planner can show that the user can get from one destination to another by using a train/bus combination. The user can then choose their preferred trip based on cost, time and convenience. At that point, any necessary bookings (e.g., calling a taxi, reserving a seat on a long-distance train) would be performed as a unit. It is expected that this service should allow roaming, that is, the same end-user app should work in different cities, without the user needing to become familiar with a new app or to sign up to new services.

Research questions

Despite its enormous potential, many research questions need to be addressed. In this project, we focus on the following challenges:

1. What are the main factors that determine travelers' preferences with respects to transportation modes (e.g., bicycle, train, taxi, etc)?
2. How can we predict travelers' behavior and their choices between different transportations modes?
3. How to develop planning models and methods to determine 'optimal' routes from A to B based on individual preferences of customers?

To address these challenges, survey data will be made available to the project by De Verkeersonderneming. A powerful methodology for addressing these questions is the so-called discrete-choice modelling, a methodology used to analyze and predict choices between different discrete alternatives. This methodology will be the basis for the investigations.

Collaboration De Verkeersonderneming and Centrum Wiskunde & Informatica

The internship is part of a research collaboration between De Verkeersonderneming and the National Research Institute for Mathematics and Computer Science in the Netherlands (CWI) in the context of the research project DYNAFLOAT. You will receive an internship contract with CWI, but will also work at De Verkeersonderneming for once per week. You will be supervised by Prof. Rob van der Mei (CWI) and Dr. Elenna Dugundji (VU).

Requirements

1. The student should have a background in mathematical modeling and statistical analysis.
2. The student should be comfortable with computer programming and comfortable with exploring datasets in order to analyze and model historical trends.
3. The student should be able to take initiative and work independently.
4. The student should enjoy applying mathematical knowledge to real-world practical problems.

Compensation

The student will receive an internship contract via CWI and will receive standard internship compensation per month. For more details about the assignment, please phone or mail to Prof.dr. Rob van der Mei (mei@cw.nl, 06-13492229).