

Master Thesis Topic

Incorporating eye-tracking data for the improvement of experimental design

Background

The Smart Advisor for Sustainable Integrated Mobility (SASIM) aims to communicate transparently the full costs of various forms of mobility to decision-makers. In the context of this project, the **MobiScore** indicator has been developed, which shows the intensity of external costs for each transportation mode in Munich.



The goal of this master thesis would be to **explore the relevance of different attributes on mode choices**, including the MobiScore, using eye movement data collected by means of eye-tracking glasses (Tobii Pro 2). The student will possibly be involved in two steps; to collect data through a limited sample of participants and to analyse them in a discrete choice modelling context.

Methodology

The Chair of Transportation Systems Engineering (TSE) has already designed a transportation mode choice survey including factors such as travel time, direct travel cost and external cost. The prospective student is expected to:

- Restructure the survey in order to include visual elements that will be deemed appropriate for the eye-tracking experiment.
- Collect and analyse data from the eye-tracking glasses based on a small number of participants.
- Develop models that explain the factors contributing towards the mode choices of the participants, especially with regard to the MobiScore.

During data collection and analysis, the master's student can investigate several research questions and apply innovative methodologies.

Expected key skills

1. Willingness to collect data and work independently over a period of 6 months.
2. Previous experience with data analysis packages (R, Python) or similar.
3. Ideally completed the course "Discrete Choice Methods for Transportation Systems Analysis" at TUM or similar.

For more information about MCube SASIM, please check:

<https://www.mcube-cluster.de/en/projekt/sasim/>

Starting date

End of November 2023 or later

How to apply:

Interested applicants should contact Dr. Christelle Al Haddad (christelle.haddad@tum.de) and/or Filippos Adamidis (filippos.adamidis@tum.de) by sending an email including a recent transcript of grades and the preferred starting date.