PhD Studentship in Dynamic Travel Behaviour Modelling

UCL MaaSLab (www.maaslab.org) invites applications for a 3-year PhD studentship to focus on the development of long-, mid- and short-term dynamic travel behaviour models. The PhD scholarship is part of the H2020 funded HARMONY Project.

Background

This PhD scholarship is part of the H2020 funded research and innovation project of MaaSLab entitled HARMONY (Holistic Approach for Providing Spatial & Transport Planning Tools and Evidence to Metropolitan and Regional Authorities to Lead a Sustainable Transition to a New Mobility Era).

HARMONY envisages developing a new generation of harmonised spatial and multimodal transport planning tools which comprehensively model the dynamics of the changing transport sector and spatial organisation, enabling metropolitan area authorities to lead the transition to a low carbon new mobility era in a sustainable manner. Small-scale demonstrations with Autonomous Vehicles (AVs) and drones take place to understand in real-life their requirements and collect data to be used for modelling. The HARMONY model suite is designed to assess the multidimensional impacts of the new mobility concepts (i.e. on-demand mobility, Mobility as a Service) and technologies (AVs and drones). The model suite integrates: 1. land-use models (strategic), 2. people and freight activity-based models (tactical), and 3. multimodal network (operational) models allowing for vertical planning. This integrated approach is necessary for authorities to understand if policies are sustainable, while also contribute to meeting COP22 targets, social equality and wellbeing. The HARMONY model suite is also linked to the EC's EU-wide model TRIMODE to further identify the impact of the concepts and technologies on the TEN-T level. HARMONY's concepts and the model suite are applied and validated on six EU metropolitan areas on six TEN-T corridors: 1. Rotterdam (NL), 2. Oxfordshire (UK), 3. Turin (IT), 4. Athens (GR), 5. Trikala(GR), 6. Upper Silesian-Zaglebie Metropolis (PL).

Project Partners: UCL (co-ordinator), Technical University of Delft, University of the Aegean, Institute of Communications and Computer Systems (ICCS), University of Wolverhampton, TRT, Aimsun, Enide, Significance, Airbus Defense and Space, Arrival, MobyX, Urban Center – Milan, Griff, Rotterdam Municipality, Oxfordshire County Council, Trikala Municipality, Transport for Athens (OASA), Metropolitan area of Upper Silesia.

Aim

This PhD scholarship will focus on the development of the tactical activity based models of the HARMONY model suite.

The proposed PhD topic includes the development of advanced dynamic travel behaviour models that take into account the dynamics of new mobility services and technologies. In your PhD you will be expected to master a broad range of theory including choice models, econometrics, machine learning and big data in order to tackle the challenges the new mobility services impose on travel demand models. The project provides an opportunity to conduct cutting edge methodological advancements. During your PhD you will work closely with public transport authorities, transport planning companies and AV automakers. You will be comfortable with interfacing with professionals from other disciplines and as your PhD unfolds become an expert on travel demand models applied to the Transport sector.

Person specification:

The project is well-suited to a highly-quantitative individual with strong mathematical, data handling and computing skills. Students should have a bachelor's or master's degree in engineering, computer science, data science, mathematics, physics, geography or a closely-related discipline, awarded with first-class or upper second-class (2:1) honours, or an overseas qualification of an equivalent standard from a recognised

higher education institute. For those applicants with a first or 2:1, possession of a master's degree in engineering, computer science, economics, geography or related disciplines is highly desirable. Candidates without a master's degree may be admitted in exceptional cases where suitable research or professional, experience can be demonstrated.

- Excellent analytical and computing skills. Passionate about modelling, programming, data analysis, and conducting research.
- A MSc degree in transport engineering/planning, computer science, data science, mathematics, physics, geography or a closely-related discipline.
- Candidates without a master's degree may be admitted in exceptional cases where suitable research or professional experience can be demonstrated.
- Knowledge of relevant programming languages or statistical software (such as Python, C++, R, MATLab etc.)
- Ability use own initiative, prioritise workload, and be a fair team player
- Good interpersonal and communication skills (oral and written)
- A high level of attention to detail in working methods
- Interest in the challenges of the Transport sector of the 21st century

Details

- Title: PhD Studentship in Dynamic Travel Behaviour Modelling
- Supervisor: Dr. Maria Kamargianni, Lecturer in Energy & Transport, Head of MaaSLab UCL EI (second supervisor to be confirmed)
- Stipend: £22,441 for 2019-20 (the stipend is considerably higher compared to standard stipend that is usually offered). Increases based on UCL recommended rates will be applied for the second and third years of the PhD
- Fees: The student will be responsible for paying their own fees, which for 2019-20 are set at the UCL standard rate of £5,210 for EU/UK students and £20,570 for international (non-EU) students. These fees will increase year on year in line with UCL's standard rate
- Travel expenses: The student shall participate in the HARMONY project meetings and dissemination activities that will take place around Europe. These travel expenses will be covered extra by the project (not by the stipend).
- Start Date: September/October 2019
- Funding Duration: 3 years
- Eligibility: Please check https://www.ucl.ac.uk/prospective-students/graduate/research/requirements

Application Procedure

Stage 1 - Pre-application documents **- (1) CV, (2) academic transcripts, and (3) 1-page personal statement** outlining motivation, interest and eligibility for the post - should be emailed directly to Teresa Dawkins: bseer-phd-admin@ucl.ac.uk

Stage 2 - Following the interview, the successful candidate will be invited to make a formal application to the UCL Research Degree programme. Further guidance will be provided. http://www.ucl.ac.uk/prospective-students/graduate/research/degrees/sustainable-resources-mphil-phd

Informal enquiries on the content of the research topic should be emailed to Dr Maria Kamargianni, m.kamargianni@ucl.ac.uk

Deadline for application: 14 April 2019
Interviews week starting: 22 & 23 April 2019