Project #2

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SUMMIT – **Su**stainable **M**ob**I**lity **M**odels for a Just **T**ransition
Ph.D Studentships

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SUMMIT - Integrating Activity Patterns into Macro Transportation Modelling
Principal Supervisor: Dr Brian Caulfield brian.caulfield@tcd.ie
Co-Supervisor: Professor Vinny Cahill - Vinny.Cahill@tcd.ie

Project Description
Traditionally traffic modelling examines how vehicles move within a network and ignores people's mobility constraints. This research will combine activity patterns into traditional macro transportation modelling with the vision of improving our understanding of how and when people travel. The research will be conducted in by the Summit team in conjunction with the Irish National Transport Authority, utilising the four-stage model that has been developed for the Greater Dublin area. The peak hour is given priority resulting in excess capacity in off-peak periods. This work will research how techniques such as adapting activity patterns or reserving capacity could enable to move less in these peak-periods and eliminate excess capacity and support access and inclusion in transport systems.

Candidate profile
We are looking for a PhD researcher with a background in engineering, computer science, mathematics or economics or other cognate disciplines with interest in sustainable cities, and mobility (/transport). The successful candidate will have excellent knowledge of (quantitative) research methods and be willing to develop and test new innovative methods and approaches.

The student will be supervised by an interdisciplinary supervisory team (Engineering, Computer Science, Economics and Psychology). S/he will also be expected to interact closely with other PhD students (and their supervisory teams) each of which will be working on other aspects of the larger SUMMIT project.

The PhD student will play an active role in dissemination and outreach/engagement activities (e.g. via social media, blogs, public seminars, public events etc.) while developing an excellent research publication profile (via single-authored and co-authored papers).

Enquiries by email to:
Dr Brian Caulfield - Brian.Caulfield@tcd.ie

Application Deadline
31st August 2021.

Application Web Page
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Project #3
SUMMIT – Intelligent Cooperative Journey Planning

Supervisors
Principal Supervisor: Dr Mélanie Bouroche - Melanie.Bouroche@tcd.ie
Co-Supervisor: Dr Brian Caulfield - Brian.Caulfield@tcd.ie

Project Description
The proliferation of mobility options (such as public and private transportation providers, ride/bike/car/scooter sharing, and active mobility) is creating an unprecedented opportunity for personalised, multi-modal mobility. This project will explore how a Mobility as a Service journey planner can learn to intelligently balance traveller requirements with the optimization of the overall mobility network. It will further investigate how adoption of offered plans can be exploited to inform short and mid-term demand prediction and management for inclusive mobility.

Candidate profile
We are looking for a PhD researcher with a background in computer science, engineering or other cognate disciplines with interest in sustainable cities and mobility/transport. The successful candidate will have a strong programming experience. Knowledge of distributed systems, artificial intelligence or optimisation is an advantage.

The student will be supervised by and interdisciplinary supervisory team (Computer Science, Engineering, and Business). S/he will also be expected to interact closely with other PhD students (and their supervisory teams) each of which will be working on other aspects of the larger SUMMIT project.

The PhD student will play an active role in dissemination and outreach/engagement activities (e.g. via social media, blogs, public seminars, public events etc.) while developing an excellent research publication profile.

Excellent communications skills (both verbal and written) and willingness and ability to work in an interdisciplinary team are essential.

Enquiries by email to:
Dr Mélanie Bouroche - Melanie.Bouroche@tcd.ie

Application Deadline
Rolling deadline until the studentship is filled; preference will be given to applications received before the 31st of August 2021.

Application Web Page
Apply by clicking here…

Project #4
SUMMIT – Influencing Personal and Societal Mobility Preferences
Supervisors
Principal Supervisor: Professor Owen Conlan - owen.conlan@tcd.ie
Co-Supervisor: Professor Anna Davies - daviesa@tcd.ie
Project Description
Personalised and scrutable recommendations based on individual preferences, e.g. their preferred modes of transport, financial considerations, and their attitude to the environment, can support and influence people in making complex decisions. However, individual choices are not made in a vacuum and interact with societal process and networks. Creating a just transition to sustainable mobility requires understanding context as well as engaging people in planning. This PhD will design supports for achieving just and sustainable personal and societal mobility.
Candidate profile
Minimum qualifications:

- A BSc or equivalent degree in Computer Science or a related field. Some experience of Geography and/or planning is desirable.

Preferred qualifications/experience:

- A Masters level degree or equivalent in Computer Science, Transport Geography, Planning or a related subject,
- Some prior research experience in socio-political and spatial aspects of environmental policy making,
- Some prior experience of collaborating and publishing on research projects.

Essential skills: Software design and development; artificial intelligence, e.g. data-driven approaches and explainable machine learning; knowledge modelling techniques and technologies, e.g. Semantic Web.
Desirable skills: Quantitative and qualitative evaluation methods; knowledge and understanding of transport planning processes; interest in mobility, sustainability and just transitions.
On completion of the PhD programme the candidate

- Will have demonstrated understanding of the multidisciplinary challenges related to offering personalised support to users in making contextually sensitive decisions, and have mastered the skills and methods of research in this field.
- Will have demonstrated capabilities of defining, designing and implementing appropriate research methodologies with academic integrity and made substantial contributions that extend the knowledge in the field(s);

Be able to communicate concepts and research outputs with their peers and the research community at large and with people outside the field.

Enquiries by email to:
Professor Owen Conlan - owen.conlan@tcd.ie
Application Deadline
31st August 2021.
Application Web Page
Apply by clicking here…

Project #5
SUMMIT – Understanding and Influencing Real-world Travel Mode Decisions
Supervisors
Principal Supervisor: Sam Cromie - sdcromie@tcd.ie
Co-Supervisors: Professor Owen Conlan - owen.conlan@tcd.ie
          Brian Caulfield - Brian.Caulfield@tcd.ie
Project Description
Transport mode selection models are good at predicting the influence of time, distance and cost on travel mode decisions, but these factors only account for over 70% of the variability in trip decisions. This research is focussed on understanding the other 30% and how to use this understanding to influence decisions towards more sustainable modes. The research will look at
- Individual differences in mode selection criteria & processes
- How contextual factors influence mode selection and interact with individual differences
- How decision support technologies can influence mode selection through personalisation and nudging

Candidate profile
Minimum qualifications:
- This is a multidisciplinary research topic with contributions from psychology, computer science, human geography, engineering, and economics. The student would need to have qualifications/expertise in **at least two of these** – most likely Psychology and Computer Science with strong statistical/mathematical skills.

Preferred qualifications/experience:
- A Masters level degree or equivalent in Computer Science, Applied Psychology or a related field
- Some prior research experience in a related field
- Some prior experience of collaborating and publishing on research projects.

Essential skills: Applied qualitative and quantitative research methods, Experimental design, statistical analysis, programming skills
Desirable skills:
- Expertise in one or more of the following: human factors, HCI, UX, behaviour analysis, decision science and/or behavioural economics;
- Knowledge and understanding of transport planning processes;
- Interest in mobility, sustainability and just transitions.

On completion of the PhD programme the candidate
- Will have demonstrated understanding of the multidisciplinary challenges related to real-world travel mode decisions, and have mastered the skills and methods of research in this field.
- Will have demonstrated capabilities of defining, designing and implementing appropriate research methodologies with academic integrity and made substantial contributions that extend the knowledge in the field(s);

- Be able to communicate concepts and research outputs with their peers and the research community at large and with people outside the field.

Enquiries by email to:
Professor Sam Cromie - sdcromie@tcd.ie or Professor Owen Conlan - owen.conlan@tcd.ie
Application Deadline
31st August 2021.
Application Web Page
Apply by clicking here…