

**Research Centre**

Insight SFI Research Centre for Data Analytics

Post title

Research Assistant In Applied Machine Learning
And Optimization For Shared E-Mobility System

Post duration

Fixed Term Contract up to 11 months

Dublin City University

Dublin City University (DCU) is a leading innovative European University. It is proud to be one of the world's leading Young Universities and is among the world's top 2% globally. DCU is known as Ireland's University of Impact, with a mission to 'transform lives and societies' and focuses on addressing global challenges in collaboration with key national and international partners and stakeholders.

DCU has over 20,000 students in five faculties spread across three academic campuses in the Glasnevin-Drumcondra area of North Dublin. Thanks to its innovative approach to teaching and learning, the University offers a 'transformative student experience' that helps to develop highly sought-after graduates. DCU is currently No. 1 in Ireland for Graduate Employment Rate, and for graduate income (CSO).

DCU is a research-intensive University and is home to a number of SFI-funded Research Centres. The University participates in a range of European and international research partnerships. DCU is also the leading Irish university in the area of technology transfer as reflected by licensing of intellectual property.

As a 'People First' institution, DCU is committed to Equality, Diversity and Inclusion - a University that helps staff and students to thrive. The University is a leader in terms of its work to increase access to education, and is placed in the world's Top 10 for reducing inequalities in the Times Higher Education Impact Rankings.

The Insight SFI Research Centre for Data Analytics

The Insight SFI Research Centre for Data Analytics (<http://www.insight-centre.org>) is an SFI funded Research Centre which brings together researchers from University College Dublin, NUI Galway, University College Cork, and Dublin City University, as well as other partner institutions, Trinity College Dublin (TCD), University of Limerick (UL), Maynooth University (MU) and Tyndall National Institute. It creates a critical mass of more than 400 researchers from Ireland's leading

ICT clusters to carry out research on a new generation of data analytics technologies in a number of key application domain areas, such as Health and Human Performance, Smart Communities, Internet of Things, Enterprise and Services and Sustainability and Operations.

The €150m Centre is funded by Science Foundation Ireland and a wide range of industry and European Union partners. Insight's research focus encompasses a broad range of data analytics technologies from machine learning, decision analytics and social network analysis to linked data, recommender systems and the sensor web. Together, with more than 220 partner companies, Insight researchers are solving critical challenges in the areas of Connected Health and the Discovery Economy.

The Project

This is a two-year SFI funded project with a key research objective to address large-scale machine learning and optimization challenges in the context of shared e-mobility systems, including shared e-scooters, e-bikes, and e-cars. This project not only aims to investigate how data collected from these shared e-mobility tools can be effectively modelled, but also to provide novel solutions to optimally orchestrate these objects, by means of large-scale applied machine learning algorithms and mathematical optimization methods, to maximise personalised benefits for each commuter in daily lives in the mobility as a service ecosystem. Real world mobility data will be collected and accessed through the Smart DCU programme under the necessary approval and agreements.

The Role

This position is for a research assistant researcher who will be recruited on a fixed term contract basis to be responsible for research design, model, tool and prototype development, performance evaluation and validation of the machine learning systems and the optimization strategies to be developed over the course of the project. A postdoctoral researcher who will also be recruited for the whole cycle of the project will be working closely with the full-time research assistant. Both researchers will collaborate deeply with the PI for the specified research tasks.

Principal Duties and Responsibilities

Specific duties include:

- Develop machine learning models and algorithms for some specific research tasks.
- Validate algorithms and models on the available datasets from different scenarios.
- Develop a system prototype to demonstrate the benefits of the algorithms and models.
- Provide support to the postdoctoral researcher working on the same project.
- Provide support to the Principal Investigator (PI) in some specific research tasks.
- Participate in Insight Centre activities.
- Carry out administrative work associated with the programme of research as necessary
- Liaise with both external and internal stakeholders, including academics, undergraduate and postgraduate students, external supervisors, and host placement schools.
- Preparation of project outputs, interim and final reports as required by the project schedule.
- Deliver research outputs according to project schedules.
- Other tasks relevant to successfully implementing the assigned research programme.
- Attend and present results at project progress meetings.

Qualifications, Skills and Experience Required

Applicants should have an undergraduate degree or master's degree in electronic engineering, mechatronic engineering, applied mathematics, computer science, or related discipline with good analytical and programming skills in mathematical modelling, data science and machine learning. In addition, it is desirable that the candidate has experience and interests in e-mobility systems.

- Excellent written and oral proficiency in English (essential).
- Excellent written and verbal communication and interpersonal skills.
- Proven ability to prioritize workload and work to strict deadlines.
- Ability to work in a team and to take responsibility to contribute to the overall success of the team.
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- Proven programming skills in using MATLAB/Simulink and Python.
- Good knowledge of machine learning, deep learning, reinforcement learning techniques, packages, and frameworks.
- Previous experience in writing papers and publications (preferable).
- Strong research interests in shared e-mobility systems (preferable).

Essential Training

The postholder will be required to undertake the following essential compliance training: Orientation, Health & Safety and Data Protection (GDPR). Other training may need to be undertaken when required.