Insight SFI Research Centre for Data Analytics
PhD Position in E-Mobility for Intelligent Edge Computing in 5G Networks
Up to 4 years in duration

Background

The Insight 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), National University of Ireland, Maynooth (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.

Area of research: Machine Learning, Applied Optimization, Edge Computing, E-Mobility, 5G

The fifth-generation mobile technology (5G) has been developing to provide tremendous benefits to the whole society. 5G, aligned with the emerging concept of large-scale Internet of Things (IoT), is expected to provide seamlessly connection among people, things, and systems in a smart networked communication environment. This new paradigm will support and enable novel application scenarios and services to be deployed in the context of smart buildings, smart campus, and smart cities, by effectively sharing information among different entities in a fast and reliable manner. However, handling large volume of data streams from the IoT devices possesses new challenges for traditional network management and operation, such as network congestions and latency, which will inherently affect users' experience. To address these challenges, new IoT architecture and management models need to be designed to best leverage the existing computing resources at the edge networks while deploying AI technologies to maximise the network efficiency and efficacy.

This PhD project is to further explore the ideas of pushing AI to the edge networks in a 5G context. In particular, the candidate will investigate the impacts, challenges and opportunities of E-Mobility on data processing and computing at the level of edge and fog nodes in the Smart DCU initiative. The candidate will develop scalable machine learning models and simulation frameworks in realistic scenarios and use cases by leveraging 5G testbeds and E-scooters to be rolled out in the DCU campus. As part of the research outcomes, key technical and business KPIs will be demonstrated.

Eligibility:

The applicant for the post must have a minimum honours degree in BSc or BEng in Electronics Engineering, Computer Science or Applied Mathematics at a grade 2.1 or higher. The ideal candidate would have a research master's degree or equivalent in a relevant field with demonstrable project experience and publications in recent years. The applicant needs to have excellent verbal and communication skills in English.

English language requirements for non-native speakers of English is available here: https://www.dcu.ie/registry/english.shtml

Essential Skills:
- Background in Machine Learning/Deep Learning/Applied Optimization
- Hands-on experience in data analytics skills
- Strong mathematical analytical and modelling skills
- Strong programming skills in Python, Matlab, C, C++, R
- Good programming skills in Linux environment
- Strong interpersonal communication skills

Desirable skills:
- Knowledge of 5G architecture, mobile edge computing and IoT applications
- Good at setting up simulation environment for proof-of-concept
- Previous work/project experience in a cloud-based environment, e.g. AWS
- Previous work/project experience as a software developer
- Previous project experience in Intelligent Transportation Systems, Smart Cities
- Publication activities in relevant disciplines will be a big plus

Funding:

4-year PhD studentship is available which will cover the cost of postgraduate fees and will provide an annual tax-free stipend of €18,500 for up to four years.

Application Procedure:

Informal enquiries about this position can be made to: Dr. Mingming Liu mingming.liu@dcu.ie

All expressions of interest, to include CV and 1 page cover letter detailing relevant experience (please check the list of essential and desirable skills in preparing this letter) in **PDF only**, are to be submitted by email to: mingming.liu@dcu.ie

Please clearly state the role that you are applying for in your application and email subject line:
2004 PhD Position in E-Mobility for Intelligent Edge Computing in 5G Networks

Interviews will be carried out around the **12th March 2020.**

Application deadline: 2nd March 2020

W: insight-centre.org