Insight Centre for Data Analytics
PhD position, in Multi-Criteria Edge Computing-based High
Bitrate Multisensorial Data Management
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: Multi-Criteria Edge Computing-based High Bitrate Multisensorial Data Management

There is increasing pressure on using cloud computing capabilities not only for storing, but also processing large quantities of data. Often this data needs to be transferred across large distances to support its processing and analysis, which puts additional pressure on existing network infrastructure. Recently, edge computing paradigm was introduced in order to minimise this data transfer and enable processing of data as close to the user as possible, at the edge of the cloud. Moreover mobile edge computing enables support for mobility while performing this processing.

This project focuses on developing a multi-criteria data management approach for edge computing in order to enable high quality multi-sensorial media content distribution to mobile users. The goal is to provide a solution that considers not only performance criteria but also includes economic-based criteria within a multi-sensorial data management. Criteria may include actual storage, popularity, data value and usage that supports data availability with low latency to the users. Challenges include prioritising criteria, finding what data needs to be stored centrally and at the level of the edges, respectively, how much and what components of this multi-sensorial data can be pre-fetched and/or cached, and how high user perceived quality can be supported with increasing amounts of data. The project involves optimisation, modeling and network simulations.

Website: insight-centre.org

Eligibility:

BEng in Electronic Engineering, Mechatronic Engineering, Biomedical Engineering, Computer Science or other relevant discipline is expected.

To register for a DCU Postgraduate Research programme, a candidate must normally have obtained a primary degree classification equivalent to Lower Second Class Honours or above, from an approved University or an approved equivalent degree-awarding body, or have an approved equivalent professional qualification in an area cognate to the proposed research topic. See http://www.dcu.ie/registry/postgraduate/faq.shtml#q3

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

The successful candidate will also be expected to participate in Graduate Training:
Advanced training, in the form of accredited modules, known as 'Graduate Training Elements' or GTEs, are an important aspect of DCU's graduate research experience. Information on graduate training at DCU is available here: https://www.dcu.ie/graduatestudies/training.shtml

The successful student will be expected to undertake and pass a minimum of 20 credits of taught modules for the duration of their studies.

Mandatory Training

The successful candidate will be required to undertake the following mandatory training:
- Orientation
- Health & Safety
- Data Protection (GDPR)
- Other training may need to be undertaken when required

Stipend: This is a 4 year fully funded structured PhD position with a stipend of €18,500 per year (tax-free, tuition fees paid).

Start Date: The position commences in September 2020 or as soon as possible thereafter

Collaboration: The PhD will be hosted by DCU, but there will be close research collaboration with NUI Maynooth - Ireland.

Application Process
All expressions of interest, to include:
1. CV including relevant publications and contact details of 2 referees
2. 1 page cover letter detailing relevant experience and interest in this specific position (please check the list of essential and desirable skills in preparing this letter)
3. Copy of transcripts

in PDF only, are to be submitted by email to **Dr. Gabriel-Miro Muntean, Associate Professor,** gabriel.muntean@dcu.ie When you apply please use the following email subject line: **PhD in Edge MS Data Management**

Application End Date: 30/06/2020 Interviews will be carried out as soon as suitable candidates are identified.

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