Insight Centre for Data Analytics
Enable
DCU Water Institute

PhD Position Available

PhD Reference   **DCUWI-3-2018**

Post title: PhD in Water IoT for catchment scale management

Background

DCU Water Institute is a technology focused, multidisciplinary research unit based in state-of-the-art facilities situated on the campuses of DCU which generates knowledge and informs decision making towards more sustainable water management. The DCU WI performs research, builds institutional capacity and provides advisory services under 4 thematic areas: energy, water & health, marine and sustainable agriculture. These themes are underpinned by technology developments in scientific and engineering domains and driven by policy and governance. The DCU WI has attracted funding through the SFI Enable project to develop a catchment management tool using data from a variety of sources to help protect communities and the associated environments from water shocks and stresses.

The Project

This is a collaborative project that will look at the use of data for catchment scale water management. It will explore opportunities in digitising integrated catchment management in Ireland through the full water cycle. Co-supervisors on the project include Dr Susan Hegarty (GIS), Prof. Noel O'Connor (data management and analytics) and Prof. Fiona Regan (water management).

As part of this project, a number of key areas have been identified as important for research and development. These include:

1. Engagement with stakeholders around access to data;

2. Develop a data storage and management platform;

3. Determine approaches that allow integrated catchment management and asset management and

4. Analysis of system response to shocks and stresses.

The project will focus on the establishment of good data management tools for water catchments. Data sources and types are many and varied therefore expertise in data analysis, modelling and geographical information systems are all desirable skills.

We are seeking a candidate with a BEng or BSc. in Computer Science or equivalent and an interest in environmental monitoring to work as part of a multidisciplinary team on an ambitious

project focused on the use of existing data from a range of stakeholders to evaluate the monitoring of water quantity for integrated catchment management.

Candidate Skillset:
The skills needed for the position include:
Mandatory Skills:
Computing skills:
- Good general software engineering skills (OOP, functional programming)
- Numerical and scientific computing experience
- Knowledge of algorithms and complexity
- Experience with the Python programming language
- Experience with numerical computing using numpy and scipy
- Experience with C/C++
- Familiarity with MATLAB
- Experience in Unix environments (Linux, shells, GNU tools, etc.)
- Knowledge of GPU computing

Mathematical skills:
- Linear algebra
- Multivariate calculus
- Probability and statistics
- Mathematical optimization

Desirable Skills:
Preferably experience in one of more of the following:
- Machine learning
- Computer vision
- Data analytics
- Data visualization
- Environmental science
- GIS

Other:
- Good communication skills
- English writing skills

Application:
Interested applicants should submit a Curriculum Vitae with cover letter explaining why you think you would be the best candidate for this research position. Applications should be sent to fiona.regan@dcu.ie by August 16th 2018

Informal queries: Prof. Noel O'Connor, Director, Insight Centre for Data Analytics
+353 1 700 5078 noel.oconnor@insight-centre.org

or
Prof. Fiona Regan (fiona.regan@dcu.ie) 01 7005765 Director, DCU Water Institute

Stipend: €18,000 per annum, tax free, plus university fees

Closing date: August 16th 2018

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