

Funded PhD Project:

Scholarship title: **Efficient Monitoring of Large Scale Data-centers (EOLAS).**

- Reference code: SFI-17-rdefrein (provisional)
- Supervisor: Dr. Ruairí de Fréin (Dublin Institute of Technology, Ireland).
- Research Group: Communications Network Research Institute.
- School: Electrical and Electronic Engineering
- What is funded: The fellowship will fund one full-time PhD student; A stipend; University fees are paid by the research grant for the student for 4 years.
- Duration: 4 Years, Full Time
- Closing date and time: 3rd July 2017, 5pm GMT.
- Commencement date: The start date will be agreed in consultation with the supervision team (The target starting date is the 1st of October 2017).
- Funding Information: Science Foundation Ireland, Starting Investigator Research Grant/Career Development Award.

Project Description

- Background: Monitoring data-center status plays a critical role in Cloud data-center management: it provides the intelligence for data-center optimization. The problem is that distributed state monitoring is hard in large-scale dynamic data-centers. Existing periodic monitoring delivers bad intelligence, as it is very costly and not very accurate. The objective of EOLAS is to perform distributed event-based adaptive monitoring, that delivers faster, more accurate intelligence, using Software Defined Networking. EOLAS builds on Dr. de Fréin's preliminary results: monitoring IP; Signal Processing/Machine Learning algorithms. Our strategy is to improve Cloud state acquisition, monitoring, analysis and prediction, via the formulation and application of leading-edge Signal Processing, Machine Learning and Network Monitoring techniques. Improved monitoring will significantly improve monitoring intelligence and data-center performance.
- This research project sits at the intersection of Computer Networks, Machine Learning and Signal Processing, areas of intense interest for the global research and industrial community at present. In recent years, Dr. de Fréin has worked on developing and analyzing algorithms for scalable distributed network monitoring and service-level prediction in the Cloud, in collaboration with leading academic and industry partners, e.g. KTH Royal Institute of Technology (Stockholm), IBM (Dublin), Amadeus SAS

(Sophia Antipolis) etc. The successful candidate will be encouraged to collaborate through research collaborations, and through participation in national and international conferences.

- The PhD student will work in the context of an existing world-class team in this area in DIT, in the School of Electrical and Electronic Engineering, and will benefit from the ongoing research in the SFI CONNECT Research Center (<https://connectcentre.ie/>), which will provide additional stimuli.

Person Specification

- Eligibility: Applicants should have (or expect to attain, subject to final examination results) a First or Upper Second Class Honours Degree in Electronic Engineering, Computer Science, Mathematics, or a related discipline.
- Knowledge & Experience: The successful candidate should be self-motivated with the enthusiasm to develop technical skills across a range of disciplines, including Signal Processing, Network Simulation, Machine Learning and Computer Networking. The following experience is desirable:
 - Experience with Software Defined Networking;
 - Experience of working on large datasets;
 - Experience of applying Machine Learning/Signal Processing techniques to real-world data;
 - Experience of the evaluation of networking or management systems;
 - Simulation skills would be an advantage.
- Skills & Competencies
 - Strong analytical/mathematical skills;
 - Applicants whose first language is not English must submit evidence of competency in English;
 - Strong computer programming skills with a language such as MATLAB, Python, C++ etc.

TO APPLY:

Submit an electronic copy of Curriculum Vitae and a letter of interest with names and emails of two academic references to: Dr Ruairí de Fréin at ruairi.defrein@dit.ie

Further information

For any informal queries, please contact Dr. Ruairí de Fréin, ruairi.defrein@dit.ie

For queries relating to the application and admission process please contact the Postgraduate Admissions Office via email postgraduate@dit.ie or telephone +353 1 402 3434. Website: www.dit.ie