Proposal for MSc with IBM Dublin's Software Lab

Project Title

Monitoring and Analysing the Performance of Large Scale Enterprise Systems

Description

The Performance Engineering Lab (PEL) at University College Dublin has an opening for several ambitious MSc students to work on a collaborative project with IBM's Software Laboratory in Dublin. This is an exciting opportunity to gain industrial software engineering experience with the world's largest IT and consulting company, while also studying for a research-based MSc in the School of Computer Science and Informatics at UCD

These projects will focus on research topics related to Software Performance Engineering; in particular, research that will lead to the development of Data Analytics tools to automatically monitor and detect performance problems in large scale enterprise systems (e.g., cloud-based) or even for software-defined data centres (i.e., when the amount of activities logged is growing exponentially). The interns will be in charge of implementing tools or prototypes from discussions with engineers and researchers based in IBM and UCD, and will evaluate the feasibility and effectiveness of the proposed solutions.

Examples[1] of projects PEL have with IBM are:

- Efficiently distinguishing between meaningful and noisy events in a stream-based log dataset. In particular, the aim is to minimise false alarms by accurately determining if a given event reflects a 'real' abnormal system behaviour that requires intervention from a system administrator.
- Identifying the root cause of anomalies detected in large volumes of system log data. There are plenty of techniques available (e.g., using rules, models or patterns), but they do not always work well at the scale envisaged, and some re-coding of existing and novel techniques over the distributed environment will be required.
- Processing of real-time system logs, with a particular focus on the rapid identification of similar events and the effectiveness of the algorithms involved.
- Investigating the application of end user analysis of software product usage, i.e., the analysis will attempt to gain insight from patterns of product feature usage across different customer segmentations.

These MSc positions will be based in the Performance Engineering Lab at the UCD School of Computer Science and Informatics, with some significant time spent in IBM's Software Lab.

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[1] These examples do not necessarily reflect the exact topic of the MSc which will be agreed between the academic and industrial partners when the students are in place.

Ideal Skills Profile

- 1.1 or 2.1 Honours degree in Computer Science or a closely related field.

- Excellent software programming skills.

- Excellent written, communication and presentation skills.

- Experience in Java development is desirable.

Environment

The Performance Engineering Laboratory (PEL) combines engineering research in the areas of computer, multimedia, and data networks – in short, anything where performance issues arise and where the application of performance analysis can support the understanding or the design of the system.

PEL brings together researchers from different professional and cultural backgrounds. People in PEL come from a number of different countries: Ireland, Germany, Romania, France, China and more. Expert knowledge varies from post-graduate to experienced senior researchers and academic staff.

Conditions and Benefits

These 2-year MSc positions are fully funded by Lero, the Irish Software Engineering Research Centre through Science Foundation Ireland. The successful candidates will receive a tax-free salary stipend and full coverage of their UCD Research Master's fees. UCD student status gives access to UCD facilities and services (such as, clubs, concerts, sports centre, campus pubs, etc.). UCD is the leading Irish University and gives access to many other on-campus facilities.

Contact

Please send resume and a covering lettering explaining their interest in the position to:

Prof. John Murphy – j.murphy@ucd.ie

Application Deadline: applications are accepted anytime from now until the positions are filled.