

Research Assistant position - Automatically Improving Quality of Static Program Analysis using Machine Learning

Duration: 6 months

Timeframe: To commence between June & November, 2016

Supervisor: Paddy Krishnan

A 6 month, full-time internship position is available in the Program Analysis group within Oracle Labs, Brisbane, Australia (<http://labs.oracle.com/locations/australia>).

The position is to commence between June and November, 2016, with a duration of 6 months.

These positions are paid at the current industry rates and travel costs associated with overseas applicants will be reimbursed.

The project involves exploring the role of machine learning to improve the results of static analysis in the context of security related properties. In many cases a precise specification of the desired security properties is not available. Thus, the developer of the analysis has to work in conjunction with the security experts to remove incorrect reports produced by a static analyser. The aim of this project is to apply machine learning techniques to automatically refine an existing analysis. This will be based on the feedback on the current set of results from the security experts. The project will extend the existing theory to be applicable to the relevant security domain and then implement techniques that are specific for this domain.

Oracle Labs is the research arm for Oracle, focusing on applied research that produces new technologies of interest to the company. Oracle Labs Australia, based in Brisbane, focuses on Program Analysis as it applies to a variety of domains, including bug-checking, security analysis, productivity tools, testing and more. The group is best known for its research on static code analysis that led to scalable and precise bug-checking algorithms embedded in the Oracle Parfait tool.

This 6 month internship is suitable for students who are currently enrolled in a PhD degree. Exceptional students enrolled in other research programs will also be considered. International research candidates are welcome to apply. These internships provide students with valuable industry experience whilst simultaneously allowing them to work on cutting edge research projects that have real world application.

Selection criteria:

- PhD student or Masters student enrolled in Computer Science, Software Engineering or a related area;
- Demonstrable understanding of machine learning techniques;
- Basic understanding in compiler construction, program analysis, programming language security will be an advantage;

- Demonstrable capacity to work independently and collaboratively.

To apply:

Please submit your resume (including Academic Transcripts) in PDF format, along with your publications and relevant experience to Juliette Hatton - juliette.hatton@oracle.com. Juliette will coordinate interviews and answer any general questions that you may have.