Research Assistant position - Call Graph Prototype

Duration: 6 months

Timeframe: To commence between June & November, 2016

Supervisor: Daniel Wainwright

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 within the period, 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 Oracle Parfait static analysis tool finds bugs in large codebases with high precision and outstanding speed. It analyses C, C++, and Java code and detects many defect types like buffer overruns and memory leaks. Parfait analyses each system module (executable, libraries, or object file) individually and incomplete information is shared across modules. Currently Parfait is being redesigned to process a function at a time to remove the module boundary and improve the quality of bug reports. The aim of this internship is to explore approaches to construct a global call graph to determine the order to process functions in the system. The successful candidate will develop a prototype, using techniques such as data-flow analysis, and pointer analysis, to produce a system call graph effective for static code bug checking.

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 or Masters degree. Exceptional students enrolled in other research programs will also be considered. International research candidates are also 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;

- Understanding in program analysis;

- Experience with graph databases will be an advantage;

- Experience in C++/Java 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.