

# Oracle Labs, Australia: Research Assistant Position

## Architecture Summarisation Of Large Enterprise Applications

**Position:** 6-month, full-time tenable during June 2018 to May 2019 with the Program Analysis group.

**Project Details:** Current Java Enterprise applications are difficult to analyse precisely using static analysis tools as the applications use frameworks that are configured at runtime. These configuration files are embedded in the deployment units and can be viewed to contain metadata associated with the application. The aim of the internship is to identify techniques that enable the representation of this data along with other relevant architectural knowledge so that it can be integrated with existing static analysis tools. One possible approach is to generate appropriate summaries as pre-computed facts which can then improve the accuracy and efficiency of the static analysis. The internship will also evaluate the technique by extracting data from production applications and integrating it with Parfait, our industrial-strength static analysis tool.

**Supervisors:** Jörn Guy Süß and Paddy Krishnan

Jörn Guy is a Principal Research Engineer for Oracle Labs, working in the Program Analysis Group. He is currently working in the Wafer project, which applies cross-language static analysis to detect vulnerabilities in web applications. His main research interests focus on frameworks, DSLs, model-driven approaches, software testing and program comprehension.

Paddy Krishnan is a senior researcher at Oracle Labs in Brisbane, Australia. His current research interests are in the areas of program analysis, software security and automatic test generation. His work at Oracle has focused on finding vulnerabilities in the JDK and Java web applications.

**Oracle Labs**, the research arm for Oracle, focuses 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. For more information, visit <http://labs.oracle.com/locations/australia> Oracle internships give students valuable industry experience and the chance to work on cutting-edge research projects with real-world applications.

**About this position:****Duties** You will:

- Work independently to research or develop a state-of-the-art solution to accelerating static analysis of large enterprise web applications.
- Meet with your supervisor daily for guidance and to discuss ways to solve the problem
- Attend team meetings and give updates on your work
- Present your findings and outcomes to the group.

**Prerequisites:**

- For students currently enrolled in a PhD or research-based Masters degree in Computer Science or Software Engineering.
- Experience with Enterprise Java is required.
- Experience with declarative programming (e.g., Prolog, Haskell) would be advantageous.
- Demonstrated ability to work independently and collaboratively.

**Benefits:**

- These positions are paid at current industry rates.
- Travel & visa costs associated with overseas applicants will be reimbursed.
- Ongoing learning is incorporated into our every week to keep us at the cutting edge.
- International speakers frequently present their research to us.

Contact Paddy Krishnan [paddy.krishnan@oracle.com](mailto:paddy.krishnan@oracle.com) for more details. The position will commence interviewing immediately and remain open until filled.