Incremental Static Analysis

Raphaël Monat

raphael.monat@inria.fr rmonat.fr

Goal

Traditionally, automatic program analyses do not reuse results they have previously established, although program verification is theoretically simpler than program analysis [3]. A program (or a slightly patched program) may be analyzed multiple times, for example when it is validated through a continuous integration pipeline. The goal of this internship is to explore the reuse of previous results on a same program, where different analyses (with different precisions) may be used. A starting point could be a theoretical study of this approach on loops, with an experimental evaluation within the Mopsa static analysis platform [4] if time permits.

Useful Prerequisites

• Background in formal methods, especially static analysis and abstract interpretation.

Location

The internship is proposed within Inria’s SyCoMoRES team, hosted in the CRIStAL laboratory, near Lille.

References

1. Decoupling the ascending and descending phases in Abstract Interpretation, Arceri, Mastroeni and Zaffanella

2. Incremental Abstract Interpretation, Seidl, Erhard, Vogler

3. Program analysis is harder than verification: A computability perspective, Cousot, Giacobazzi, Ranzato

4. The Mopsa Static Analysis Platform