Dipl.-Ing. Philipp Lengauer
Institut für Systemsoftware

Tel.: +43 732 2468-4362
Fax: +43 732 2468-7138
philipp.lengauer@jku.at

Bachelor's Thesis

Linz, 10. November 2014

An Instrumentation-based Reference Implementation for Ant Tracks: Graphical User Interface

Allocations and garbage collection (GC) can have considerable impact on application performance. However, tracing all allocations and deallocations in order to track down memory-related performance degradations usually impose severe overheads. Thus, state-of-the-art tools usually perform statistical analyses on heap dumps or instrument every allocation site and do not track deallocations at all.

Ant Tracks (*Accurate and Efficient Object Tracing for Java Applications, Lengauer et al., ICPE'15, Post Mortem Memory Profiling for Java Applications, Bitto, Master's Thesis, JKU*) is a new tool that solves this problem rigorously by building the tracing mechanism directly into the Hotspot Java Virtual Machine. It thus achieves a (yet unreached) very low overhead and level of detail. This project should build a reference implementation providing functionality as close as possible to Ant Tracks and that is purely built on instrumentation.

The goal of this thesis is to develop an analysis tool that provides similar functionality compared to the tool built upon Ant Tracks. It must be able to show overviews for memory consumption (in bytes and objects) and GC times, as well as detailed heap statistics for any point in time such as type and allocation site distributions. It is not the goal of this thesis to develop the agent that generates the data this tool works with.

Supervisor: Dipl.-Ing. Philipp Lengauer
Student: ?