



**Dipl.-Ing. Philipp Lengauer**  
Institut für Systemsoftware

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

## Master's Thesis

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### Heap and Object Lifetime Visualization In A Memory Monitoring System

AntTracks is a memory-monitoring tool for Java applications. It uses a modified version of the Hotspot virtual machine to generate a trace containing mainly object allocation events and object movement events. A dedicated post-processing tool can analyze this trace and compute object deallocations, as well as the entire heap state. This heap state contains the location of all objects, information about every object (e.g., type, size, allocation site) as well as references between objects.

The goal of this thesis is to rebuild the current heap visualization in a more efficient manner (the current implementation puts too much pressure on CPU and memory) as well as extending it to visualize individual objects over time.

The current implementation shows a pixelmap to visualize objects and can only show one state at a time. This capability must be extended to also show the properties of individual objects as well as the movements of those objects over time. Additionally, a heuristic should be derived (and experimentally evaluated) to determine the GC impact of individual objects or object groups, i.e., what contribution a specific object group has on the overall GC time.

The master thesis must be submitted not later than 13.09.2017.

Supervisor: Dipl.-Ing. Philipp Lengauer

Student: Christina Rammerstorfer, BSc