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(Editors)

Software Optimization

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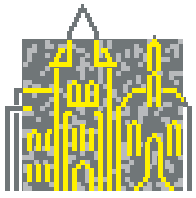

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Gesellschafter:

- Gesellschaft für Informatik e.V. – Bonn
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- Universität Kaiserslautern
- Universität Karlsruhe
- Universität Stuttgart
- Universität Trier
- Universität des Saarlandes

Motivation

The area of Software Optimization, in the context of compilers called *Code Optimization*, is not in a good state. Although there is continuing research on this topic, it is largely incremental in nature. There has been little progress in the foundational areas. The relationship to language semantics has not been substantially clarified, and metrics have not been developed to determine the profitability of program transformations, except in very specific instances. The same holds for attempts to mechanize the program transformation task – the needed specification and generation mechanisms are lacking. New architectural concepts undermine traditional separations between machine-dependent and machine-independent optimizations, casting doubts upon established transformations and requiring the creation of new ones. New languages with dynamic program reconfiguration shift tasks from compile time to run time.

The time has come to step back from current research and to lay out a longer-term research agenda that identifies both the nature of the contemporary and future contexts for optimization and the important problems that need to be addressed. To identify that agenda, this Vision Seminar on Software Optimization will be held in Dagstuhl.

Areas to be represented are the following:

- Semantics preservation
- Program Analysis
- Theory of Program Transformation
- Transformation Mechanisms
- Program Representations
- Metrics, Profitability
- Architecture Awareness
- OS Awareness
- Profiling, Benchmarking
- Feedback-Directed Optimization
- Influence of Language Design
- Interaction with SW-Engineering
- Run-Time Adaptation
- Run-Time Optimization
- Transform. SW Development
- Industry Needs Assessment
- General Expertise

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