

**Matthias Florian Braun**

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## Profile

I'm a Ph.D. student at Universität Karlsruhe (TH), Germany. My main research interests lie in compiler construction, in particular code generation and register allocation. I'm also interested in programming languages, their paradigms and general system performance.

## Experience

**Teaching and Research Assistant, Universität Karlsruhe - since Mar 2008**

**Lead Developer of libFirm/cparser Compiler project - since 2009**

**Summer Internship, Apple — Jul – Oct 2013**

Work on register allocation in the llvm compiler.

**Summer Internship, Advanced Micro Devices — Feb – Apr 2009**

Work on register allocation for Graphics Processing Units.

**Student Assistant, Universität Karlsruhe — Jan 2006 – Feb 2008**

Development of SSA-based compiler intermediate languages.

**Student Assistant, Universität Karlsruhe — Mar – Aug 2005**

Teaching Assistant for the "Informatik 2" course.

**Working Student, Ontoprise Gmbh — Jan – Mar 2005**

Development of a commercial semantic annotation tool.

**Student Assistant, Universität Karlsruhe — Mar 2003 – Dec 2004**

Development of Ontomat - an annotation tool for the semantic web.

**Open Source Software Development — 1997–Present**

Participation and lead of development in open source projects including:

*Linux*: ESS1968 soundcard driver; *Crystal Space 3D Engine*; *Netpanzer* - a networked multiplayer strategy game; *Supertux* - an platform arcade game; *Lincity-NG* - a City-Simulation; *Evolution* - Carddav plugin

## Education

**Universität Karlsruhe (TH) — since Mar 2008** – Ph.D. candidate in Computer Science

**Universität Karlsruhe (TH) — Dec 2007** – Diplom (equiv. M.Sc.) in Computer Science. Thesis: “Heuristisches Auslagern in einem SSA-basierten Registerzuteiler” (Heuristic spillcode generation in an SSA-based register allocator).

## Publications

M. Braun, S. Hack:

*Register Spilling and Live-Range Splitting for SSA-Form Programs.*  
International Conference on Compiler Construction (CC 2009)

M. Braun, S. Hack:

*Preference-Guided Register Assignment.*  
International Conference on Compiler Construction (CC 2010)

M. Braun, S. Buchwald, S. Hack, R. Leißa, C. Mallon, A. Zwinkau:

*Simple and Efficient Construction of Static Single Assignment Form.*  
International Conference on Compiler Construction (CC 2013)

## Skills

**Language** – German (native), English (fluent), French (6 years in school), Latin (4 years at school)

**Computer** – Linux, MacOS, Windows, Office, Latex, software development tools (subversion, gcc, gdb, make, eclipse), SQL,  $\text{\LaTeX}$ , XML/XSLT/XML Schema, HTML/CSS

**Programming Languages** – excellent knowledge of C/C++, Java, C#, shell scripting; good knowledge of haskell, python, perl, php

**Technology** – Compiler Construction (Parsing, code generation, register allocation), Semantic Web (Ontologies, OWL), OpenGL programming