

Fabian GRUBER

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I am a PhD student in the Inria team CORSE (Compiler Optimization and Runtime SystEms) and the Université Grenoble Alpes.

I work on performance debugging, that is analysing an applications performance and finding hotspots and bottlenecks.

The main focus of my work has been on:

- Disassembling optimized binaries and re-constructing higher-level information.
- Program instrumentation using dynamic binary translation with tools such as QEMU and DynamoRIO.
- Performance evaluation of modern x86 and ARM CPUs, as well as reverse engineering parts of their instruction pipelines.
- Work with the machine description system of the LLVM compiler infrastructure (tablegen).

EXPERIENCE

WINTER SEMESTER 2018	Teaching assistant at Université Grenoble Alpes CLASS: <i>Programming Language Semantics and Compiler Design</i> for Yliès Falcone.
04.2018	Second Research visit at COLORADO STATE UNIVERISTY Worked on using techniques from polyhedral compilation to give optimization feedback to progammers
SPRING 2018	PPoPP 2018 Web Chair Maintained the conference website (https://ppopp18.sigplan.org).
10.2017 - 11.2017	Research visit at COLORADO STATE UNIVERISTY Worked on reverse engineering performance aspects of modern OoO x86 & ARM CPUs with Louis-Noel Pouchet.
WINTER SEMESTER 2016	Teaching assistant at Université Grenoble Alpes CLASS INF 302: <i>Langages & Automates</i> (formal languages & automata) for Yliès Falcone.
10.2016 - CURRENT	PhD at INRIA & Université Grenoble Alpes ADVISOR: Fabrice Rastello, Inria CO-ADVISOR: Ylies Falcone, Université Grenoble Alpes Work on performance debugging & performance analysis. Work with a dynamic binary instrumentation framework on top of the QEMU CPU emulator for re-constructing call graphs & inter-procedural loop forests from optimized binaries as well as tracking data dependencies. Using this information code transformations are proposed using a polyhedral optimizer.

10.2014 - 09.2016	Research Engineer at INRIA <i>Compiler & Runtime Systems Team (CORSE)</i> Worked on the TIREX project, for a machine-code level compiler IR exchange format. Wrote LLVM based tools for instruction level code analysis & hybrid alias analysis (both static & dynamic/instrumentation based) alias analysis..
SUMMER 2010	Internship at Christian Doppler Laboratory SE-Flex-AS Software Development & Quality Assurance
10.2006 - 06.2007	Civilian service at nursing home "Bezirksalten- und Pflegeheim Ried im Innkreis" Nurse & custodial duties

PUBLICATIONS

2015	Runtime Pointer Disambiguation, OOPSLA 2015, DOI: 10.1145/2814270.2814285 Péricles Alves, Fabian Gruber, Johannes Doerfert, Alexandros Lamprineas, Tobias Grosser, Fabrice Rastello and Fernando Magno Quintão Pereira
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EDUCATION

AUGUST 2014	Master of Science in SOFTWARE ENGINEERING/INTERNET COMPUTING, Vienna University of Technology <i>graduated with distinction</i> Thesis: "Invokedynamic for the CACAO JVM" Advisor: Ao.Univ.Prof. Dipl.-Ing. Dr.techn. Andreas KRALL
AUGUST 2011	Bachelor of Science in SOFTWARE & INFORMATION ENGINEERING Vienna University of Technology Thesis: "Native machine code generation" Advisor: Ao.Univ.Prof. Dipl.-Ing. Dr.techn. Martin Anton ERTL
JULY 2006	Grammar School: "BG/BRG Ried im Innkreis"

LANGUAGES

GERMAN:	Native language
ENGLISH:	Fluent
FRENCH:	Working proficiency
ITALIAN:	Basic Knowledge
KOREAN:	Basic Knowledge

INTERESTS AND ACTIVITIES

Hiking, cooking, video games (playing & making them), currently trying to learn Korean