

DR. MATTHIAS GRIMMER

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PERSONAL DATA

Full Name Matthias Grimmer
Address Michael-Hainisch-Straße 18
4040 Linz
Date of Birth March 2, 1989
Website www.matthiasgrimmer.com
Citizenship Austria



PROFESSIONAL EXPERIENCE

Senior Member of Technical Staff 01/2017 - present
Oracle, Austria

Since 2012, I am part of Oracle's project "Graal". We are working on the GraalVM, which is an ecosystem for compiling and running applications written in JavaScript, Ruby, R, JVM-based languages such as Java, Scala, Groovy, and Kotlin, as well as LLVM-based languages (project *Sulong*) such as C and C++. The GraalVM removes the isolation between programming languages and enables interoperability in a shared runtime.

- *Project Sulong*: I am the lead of project Sulong, which is a language implementation that can execute LLVM-based languages (e.g. C/C++ and Fortran) on the GraalVM.
Duration of the project: 2016 - present
- *Cross-Language Interoperability in a Multi-Language Runtime*: The GraalVM provides a mechanism for cross-language interoperability that enables efficient interaction between code in different languages. I invented this mechanism as part of my PhD thesis and successfully merged it into the GraalVM in 2016.
Duration of the project: 2014 - 2016

Researcher 12/2013 - 11/2015
Johannes Kepler University Linz, Austria

Research Assistant (Part-Time) 07/2012 - 12/2013
Johannes Kepler University Linz, Austria

Tutor of Mathematics (Part-Time) 10/2009 - 10/2011
Christine Humer - Die Nachhilfe GmbH, Ried im Innkreis, Austria

Softwaredeveloper (Internship) 08/2010 - 09/2010
RZL Software GmbH, Ried im Innkreis, Austria

Softwaredeveloper (Internship) 07/2009 - 09/2009
RZL Software GmbH, Ried im Innkreis, Austria

EDUCATION

PhD Study of Computer Science 12/2013 - 11/2015
Johannes Kepler University Linz, Austria
PhD Thesis: *Cross-Language Interoperability in a Multi-Language Runtime*
Supervisor: *Prof. Hanspeter Mössenböck*
Passed with distinction

Master Study of Computer Science - Software Engineering <i>Johannes Kepler University Linz, Austria</i> Master's Thesis: <i>A Runtime Environment for the Truffle/C VM</i> Supervisor: <i>Prof. Hanspeter Mössenböck</i> Passed with distinction	07/2012 - 12/2013
Bachelor Study of Computer Science <i>Johannes Kepler University Linz, Austria</i> Bachelor's Thesis: <i>Collaborative Language Boundary Between Java and Dynamic Languages</i> Supervisor: <i>Dr. Thomas Würthinger</i> Passed with distinction	09/2009 - 07/2012
Technical High School for Electronics <i>Braunau am Inn, Austria</i> Focus: <i>Computer Engineering</i> Passed with distinction	09/2003 - 07/2008

CIVIL SERVICE

Red Cross Austria <i>Obernberg am Inn, Austria</i>	09/2008 - 05/2009
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THESIS SUPERVISION

I am (co-)supervising several PhD, Master's, and Bachelor's theses. Supervising a thesis involves finding a suitable topic, developing a detailed project plan for the student, conducting regular technical discussions, and reviewing the written thesis and publications.

PhD Thesis Co-Supervision

- Sulong: Memory Safe and Efficient Execution of LLVM-Based Languages ongoing
Rigger Manuel
- Application of Genetic Programming for Code Compilation in Just-in-Time Compilers ongoing
Oliver Krauss

Master's Thesis Supervision

- Low-Overhead Debugging Support for Sulong ongoing
Jacob Kreindl
- Maxine Structured Assembler 05/2016
Reinhard Umgeher
- A Web Framework for Interactive Trace Visualization 05/2016
Stefan Rumzucker
- Graal AOT JS: A Java to JavaScript Compiler 07/2015
David Leopoldseder (joined Oracle Labs after his Master's study)
- Dynamic Visualization of Compiler Graphs 06/2015
Ingomar Wesp
- String Optimizations for Graal 05/2014
Robert Ebetsberger-Katerl
- Truffle/Clojure:
An AST-Interpreter for the Clojure Programming Language 02/2014
Thomas Feichtinger

Bachelor's Thesis Supervision

- Execution of Haskell on Top of Sulong ongoing
Emre Dursun
- A CUDA API for Truffle ongoing
Edvin Herac
- A Test Framework for SpiderMonkey Tests on Graal.js 08/2016
Jacob Kreindl
- Fuzz-Testing of Array Implementations in Graal.js 05/2016
Kevin Zeilinger
- Visualization of Huge Datasets in HTML 5 and JavaScript 10/2015
Markus Wagner
- A Clang IR Serialization Tool 10/2015
Jakob Stieblehner
- Cross-Language Interoperability between Java and a Simple Language 10/2015
Gabriel Schörghuber
- Big Data Visualization in Web Applications 10/2015
Philip Miesbauer
- Cross-Language Iterator Based on Truffle 10/2015
Jose Illescas
- Rule-based Validation Framework for Truffle-based AST Interpreters 10/2015
Lukas Ehrenfellner
- An Array-Implementation for a Simple Truffle Language Implementation 10/2015
Thomas Böhm
- A Compressed Logging Stream for Graal 10/2015
Karl Kronberger

TEACHING

Lectures

- Functional Programming in Java 8
- Dynamic Compilation and Run-time Optimization in Virtual Machines

Labs

- Grundlagen der Programmierung
- Softwareentwicklung 2
- Praktische Informatik 2

PERSONAL SKILLS

Programming Languages	Java, C#, C, Assembly (x86-32, x86-64), Ruby, JavaScript
Web Development	PHP, (X)HTML, CSS
Database	PL/SQL, NoSQL (MongoDB), Hibernate
Technology	Java Spring Framework, Jenkins
Language Capabilities	German (native), English (very good)

PUBLICATIONS

- Applying Optimizations for Dynamically-typed Languages to Java** 2017
Matthias Grimmer, Stefan Marr, Mario Kahlhofer, Christian Wimmer, Thomas Würthinger, Hanspeter Mössenböck
Proceedings of the 2018 ACM SIGPLAN Conference on Managed Languages and Runtimes

- Lenient Execution of C on a Java Virtual Machine - or: How I Learned to Stop Worrying and Run the Code** 2017
Manuel Rigger, Roland Schatz, Matthias Grimmer, Hanspeter Mössenböck
Proceedings of the 2018 ACM SIGPLAN Conference on Managed Languages and Runtimes
- Practical Partial Evaluation for High-Performance Dynamic Language Runtimes** 2017
Thomas Würthinger, Christian Wimmer, Christian Humer, Andreas Wöß, Lukas Stadler, Chris Seaton, Gilles Duboscq, Doug Simon, Matthias Grimmer
Proceedings of the 2017 ACM SIGPLAN Conference on Programming Language Design and Implementation
- Bringing Low-Level Languages to the JVM: Efficient Execution of LLVM IR** 2016
Manuel Rigger, Matthias Grimmer, Christian Wimmer, Thomas Würthinger, Hanspeter Mössenböck
Proceedings of the 2016 International Workshop on Virtual Machines and Intermediate Languages
- Trace-based Register Allocation in a JIT Compiler** 2016
Josef Eisl, Matthias Grimmer, Doug Simon, Thomas Würthinger, Hanspeter Mössenböck
Proceedings of the 2016 International Conference on Principles and Practices of Programming on the Java platform: Virtual Machines, Languages, and Tools
- Sulong - Execution of LLVM-Based Languages on the JVM** 2016
Manuel Rigger, Matthias Grimmer, Hanspeter Mössenböck
Proceedings of the 11th Workshop on Implementation, Compilation, Optimization of Object-Oriented Languages, Programs and Systems
- Cross-Language Interoperability in a Multi-Language Runtime** 2015
Matthias Grimmer
PhD thesis, Johannes Kepler University Linz
- High-Performance Cross-Language Interoperability in a Multi-Language Runtime** 2015
Matthias Grimmer, Chris Seaton, Roland Schatz, Thomas Würthinger, Hanspeter Mössenböck
Proceedings of the 11th Symposium on Dynamic Languages
- Memory-Safe Execution of C on a Java VM** 2015
Matthias Grimmer, Roland Schatz, Chris Seaton, Thomas Würthinger, Hanspeter Mössenböck
Proceedings of the 10th ACM Workshop on Programming Languages and Analysis for Security
- Dynamically Composing Languages in a Modular Way: Supporting C Extensions for Dynamic Languages** 2015
Matthias Grimmer, Chris Seaton, Thomas Würthinger, Hanspeter Mössenböck
Proceedings of the 14th International Conference on Modularity
- High-Performance Language Interoperability in Multi-Language Runtimes** 2014
Matthias Grimmer
Proceedings of the companion publication of the 2014 ACM SIGPLAN conference on Systems, Programming, and Applications: Software for Humanity
- TruffleC: Dynamic Execution of C on a Java Virtual Machine** 2014
Matthias Grimmer, Manuel Rigger, Roland Schatz, Lukas Stadler, Hanspeter Mössenböck
Proceedings of the 2014 International Conference on Principles and Practices of Programming on the Java platform: Virtual machines, Languages, and Tools
- An Efficient Approach for Accessing C Data Structures from JavaScript** 2014
Matthias Grimmer, Thomas Würthinger, Andreas Wöß, Hanspeter Mössenböck
Proceedings of the 9th International Workshop on Implementation, Compilation, Optimization of Object-Oriented Languages, Programs and Systems PLE

An Efficient Native Function Interface for Java

2013

Matthias Grimmer, Manuel Rigger, Lukas Stadler, Roland Schatz, Hanspeter Mössenböck

Proceedings of the 2013 International Conference on Principles and Practices of Programming on the Java Platform: Virtual Machines, Languages, and Tools

A Runtime Environment for the Truffle/C VM

2013

Matthias Grimmer

Master's thesis, Johannes Kepler University Linz

A handwritten signature in black ink that reads "Grimmer Matthias". The signature is written in a cursive style with a large initial 'G'.

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