

Thomas Pani

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Education

TU Wien **Vienna, AT**
Doctoral Program in Computer Science *02/2014–Present*

Advisors: Georg Weissenbacher & Florian Zuleger (started under Helmut Veith)
Tentative thesis title: *Automated Complexity Analysis of Parameterized Shared-Memory Programs*

TU Wien **Vienna, AT**
Diplom-Ingenieur (comparable to MSc), with highest distinction *01/2014*

Thesis: *Loop Patterns in C Programs*, Advisor: Prof. Helmut Veith

Professional Experience

Wolfgang Pauli Institute **Vienna, AT**
Researcher *02/2018–Present*

- Working on automated complexity analysis of shared-memory concurrent programs.
Implementation: Coachman (in OCaml).
Supervised by Georg Weissenbacher and Florian Zuleger.

Google **Mountain View, CA, USA**
PhD SWE Intern, Data Center Software team *05/2018–08/2018*

- Developed a tool for systematic inconsistency detection in machine health data using formal methods.
Implemented using various Google frameworks (Bigtable, Dremel, Flume, Protobufs, RecordIO) and the Z3 SMT solver in C++.

TU Wien **Vienna, AT**
Research and teaching assistant (“Universitätsassistent”) *02/2014–01/2018*

- Created VeriFolio, a machine learning-based portfolio software verification algorithm.
With Yulia Demyanova, supervised by Helmut Veith and Florian Zuleger.
- Created Kripke Builder, an interactive frontend for manipulating kripke structures and evaluating temporal logic formulae.
- Taught and assisted various courses within the group’s research focus.

TU Wien **Vienna, AT**
Project assistant *03/2011–01/2014*

- Created Sloopy, a Clang-based tool for predicting empirical hardness of automated program analysis of loops in C programs.
Supervised by Helmut Veith and Florian Zuleger.

TU Wien **Vienna, AT**
Undergrad teaching assistant *10/2009–02/2012*

- TA for the object-oriented programming course. Led exercise groups and designed exercises.

Siemens **Vienna, AT**
Software engineering intern *08/2008, 08/2009–09/2009*

- Implemented a tool in Perl to quickly inject large amounts of configurable test data into a read-optimized directory service.

Raiffeisen Informatik GmbH **Vienna, AT**
System administration intern *09/2008*

Publications

- [1] Thomas Pani, Georg Weissenbacher, and Florian Zuleger. "Rely-Guarantee Reasoning for Automated Bound Analysis of Lock-Free Algorithms". In: *Formal Methods in Computer Aided Design, FMCAD 2018*. 2018.
- [2] Yulia Demyanova, Thomas Pani, Helmut Veith, and Florian Zuleger. "Empirical software metrics for benchmarking of verification tools". In: *Formal Methods in System Design 50.2-3* (2017).
- [4] Yulia Demyanova, Thomas Pani, Helmut Veith, and Florian Zuleger. "Empirical Software Metrics for Benchmarking of Verification Tools". In: *Computer Aided Verification, CAV 2015, Proceedings*. 2015.
- [5] Thomas Pani, Helmut Veith, and Florian Zuleger. "Loop Patterns in C Programs". In: *ECEASST 72* (2015).
- [6] Thomas Pani. "Loop Patterns in C Programs". Master's thesis. TU Wien, Jan. 2014.

Awards

FMCAD 2018 Graduate Student Forum

Best student contribution 11/2018

FMCAD 2017 Graduate Student Forum

Best student contribution 10/2017

Faculty of Computer Science, TU Wien

Best diploma thesis 12/2014

TU Wien

Participation in TU Wien's high potential program TUtheTOP academic year 2012/13

TU Wien

Academic excellence scholarship academic years 2008/09, '09/10, '10/11

Professional Activities

External reviewer

FMCAD'17, STACS'17, FMCAD'16, ESSOS'16

Vienna Summer of Logic

Local co-organizer 07/2014

Vienna Science Ball

Member of the organizing committee 2015–Present

Vienna March for Science

Member of the organizing committee 04/2017

Further Experience

Software Projects.....

Coachman: A complexity analyzer for concurrent heap-manipulating programs. <https://github.com/thpani/coachman>

Verifolio: A machine learning-based portfolio software verification tool. <http://forsyte.at/software/verifolio/>

Kripke Builder: Interactive frontend for manipulating kripke structures and evaluating temporal logic formulae. <http://forsyte.at/kripke/>

Sloopy: A Clang-based tool to determine difficulty of automated program analysis for loops in C programs. <http://forsyte.at/~pani/sloopy/>

pemuwrapper: TCP/IP control wrapper around PEMU, a Cisco PIX emulator. Now merged into the GNS3 network simulator. <http://www.gns3.net/>.

HDAPSicon: Monitor for IBM's Active Protection System (automatic disk head parking) [unmaintained]. <http://thpani.net/projects/hdapsicon.html>.

Academic Teaching.....

TU Wien

Vienna, AT

Research and teaching assistant ("Universitätsassistent")

02/2014–01/2018

- Formal Methods in Computer Science
Assisted this course (exercises, exams) regularly since summer term 2014.
- Information Design
Assisted this course in summer terms 2014, 2015, and 2016. Main instructor in summer term 2017.
- From Design to Software 1 & 2
Semester projects. Students gain practical experience in the software engineering domain.
Assisted these courses regularly since summer term 2013.

TU Wien

Vienna, AT

Undergrad teaching assistant

10/2009–02/2012

- TA for the object-oriented programming course in winter terms 2009, 2010, 2011.
Led exercise groups and designed exercises.

Non-academic Teaching.....

Austrian Red Cross, Lernhaus Schwendergasse

Vienna, AT

Volunteer

09/2012–Present

- Tutor for socially disadvantaged children and teenagers (ages 6–14).

Nursing School Tulln

Tulln, AT

Teacher

03/2011–02/2014

- Taught a course on computer science and statistics.

Skills

Languages.....

German (native), **English** (fluent), **Spanish** (basic)

Programming.....

Proficient: C, C++, C#, Java, JavaScript, OCaml, PHP, Python, Shell · CSS, SQL, XML

Familiar: Assembly, Eiffel, Haskell, Perl, Ruby, Smalltalk

Certifications.....

Cisco Systems, Inc

Cisco Certified Network Associate (CCNA)

06/2006

CompTIA, Inc

CompTIA A+ Certification

06/2004