

Dominik Wagner

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Research Interests

- Probabilistic programming
- Semantics of programming languages
- Automated reasoning and verification of (higher-order) programs

Education

DPhil (PhD) in Computer Science Oct 2018 – present

University of Oxford, Magdalen College, Oxford

- Supervisor: Prof. Luke Ong

MSc in Mathematics and Foundations of Computer Science Oct 2017 – Sep 2018

University of Oxford, Magdalen College, Oxford, with Distinction

- Thesis: “**Resolution for Higher-Order Constrained Horn Clauses**”
Supervisor: Prof. Luke Ong
- Selected coursework: Lambda Calculus and Types; Computer-aided Formal Verification; Automata, Logic and Games; Categories, Proofs and Processes; Model Theory

Preparatory phase of the Saarbrücken Graduate School of Computer Science May – Sep 2017

Saarland University, Saarbrücken

BSc in Computer Science (minor: Mathematics) Apr 2014 – Apr 2017

Saarland University, Saarbrücken, Grade: 1.0 (best on a scale from 1.0 to 5.0)

- FdSI Bachelor Award for best overall performance (up to 3 recipients/semester)
- Thesis: “**Design and Implementation of a CDCL(LA) Calculus**”
Supervisor: Prof. Christoph Weidenbach
- Selected coursework: Automated Reasoning I/II; Computational Logic I/II; Artificial Intelligence

Research and Development Experience

Student Assistant Nov 2014 – Sep 2017

Max Planck Institute for Informatics, Saarbrücken

- Development of a modern CDCL-based SAT-solver used in the ground linear arithmetic solver SPASS-SATT¹
- Focus on redundancy deletion and generation of unsatisfiability proofs
- Experience in writing highly efficient C-code using debugging/profiling tools like gdb, valgrind, gprof, etc.
- SPASS-SATT won the tracks “QF_LIA” and “Best Newcomer” in the SMT Competition 2018
- Supervisor: Prof. Christoph Weidenbach

¹<https://www.mpi-inf.mpg.de/departments/automation-of-logic/software/spass-workbench/spass-satt/>

Publications

C.-H. Luke Ong and **Dominik Wagner**. HoCHC: A refutationally complete and semantically invariant system of higher-order logic modulo theories. In *34th Annual ACM/IEEE Symposium on Logic in Computer Science, LICS 2019, Vancouver, BC, Canada, June 24-27, 2019*, pages 1–14, 2019.

Presentations

“HoCHC: A refutationally complete and semantically invariant system of higher-order logic modulo theories”. At *34th Annual ACM/IEEE Symposium on Logic in Computer Science, LICS 2019, Vancouver, June 2019*.

“HoCHC: A refutationally complete and semantically invariant system of higher-order logic modulo theories.” At *6th Workshop on Horn Clauses for Verification and Synthesis, HCVS 2019, Prague, April 2019*.

Poster on unsatisfiability proofs as implemented in SPASS-SATT. At *International Summer School on Satisfiability, Satisfiability Modulo Theories, and Automated Reasoning, Lisbon, Portugal, June 2016*.

Academic Service

Reviewer: LICS 2019

Student volunteer: FLoC 2018, POPL 2019, ETAPS 2019

Awards and Funding (selection)

FdSI Bachelor Award 2017
Best overall performance in the BSc programme of Saarland University (up to 3 recipients/semester)

Scholarship holder of the German Academic Scholarship Foundation 2015 – 2018
Financial and academic support (e.g. summer academies) of less than 0.5% of German students

Scholarship holder of the German Academic Exchange Service 2017 – 2018
Full study abroad scholarship awarded to approx 1,200 German students

Teaching

Fundamentals of Algorithms and Data Structures winter 2016/17
Saarland University, Teaching Assistant
Delivery of tutorial sessions, preparation of sample solutions, grading of assignment sheets and exams

Mathematical Preparatory Course Sep/Oct 2016/17
Saarland University, Mentor
Voluntary support of the course mentoring a small group of students beginning their first year

Programming Skills

Imperative languages: Java, C (*used in the implementation of a modern SAT solver*)
Functional languages: Haskell, OCaml, SML
Interactive theorem provers: Coq
Tools: git, gdb, valgrind, etc.