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-SATT[1]
- 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/`

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.

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

Automata, Logic and Games Michaelmas Term 2019
University of Oxford, Teaching Assistant

Fundamentals of Algorithms and Data Structures winter 2016/17
Saarland University, Teaching Assistant

Mathematical Preparatory Course Sep/Oct 2016/17
Saarland University, Mentor