

# Simon Robillard

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## Education

- 2014–2019 **PhD program**, *Chalmers University of Technology*, Gothenburg, Sweden.  
Under the supervision of Laura Kovács.
- 2012–2014 **Master informatique**, *Université d'Orléans*, France.  
Master's degree in Computer Science
- 2009–2012 **Licence informatique**, *Université d'Orléans*, France.  
Bachelor's degree in Computer Science
- 2007–2009 **DEUST Webmaster et gestionnaire réseau**, *Université de Limoges*, France.  
2-year university diploma, Webdesign and network management
- Spring 2008 **English Language Institute, Advanced Level**, *College of Dupage*, Glen Ellyn, Illinois, USA.  
English program for non-native speakers
- 2006 **Baccalauréat économique et social, mention "Très bien"**, *Lycée Maurice Genevoix*, France.  
High school diploma in social sciences, with highest honors

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## Research interests

- Automated & interactive theorem proving
- Software verification
- Functional programming
- High-level parallel programming

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## Languages spoken

French Mother tongue  
English Fluent  
Swedish Intermediate  
Spanish Beginner

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## Experience

- July 2019–present **Post-doctoral researcher**, *IMT Atlantique*, Nantes, France.
- Post-doctoral position with the INRIA project team STACK.
- August–November 2017 **Visitor**, *Vrije Universiteit*, Amsterdam, Netherlands.
- Research visit leading to a collaboration on the topic of extending the superposition calculus to support first-order logic with datatypes and codatatypes.
- April–September 2014 **Intern**, *LIFO*, Orléans, France.
- LIFO is the Computer Science department of the University of Orléans. Its different teams work on graph theory, algorithms, computing models, system security, machine learning and software verification.
  - Research on the topic of automated program refinement based on the Bird-Mertens algebra of programming.
- October 2013–March 2014 **Research assistant**, *LIFO*, Orléans, France.
- Research on the topic of verified parallel data structures and programs.
  - Technical survey of Dafny, a verification language using the SMT solver Z3 to discharge proof obligations. Comparison with the Why3 platform.
- June–September 2013 **Intern**, *LIFO*, Orléans, France.
- Formally verified implementation of a parallel data structure.
  - Case study for a framework generating correct-by-construction parallel programs.
- November 2012–May 2013 **Research assistant**, *LIFO*, Orléans, France.
- Development and unit testing of shared libraries in OCaml.
  - Reorganization of the compilation process of a large OCaml library using Opam.
  - Development of a Swing GUI for an OCaml program.
- April–June 2012 **Intern**, *MAPMO*, Orléans, France.
- MAPMO is the Mathematics department of the University of Orléans. Its research priorities are mathematical analysis, probability theory and mathematical modeling.
  - Development of a Swing GUI for a scientific simulation.
- April–May 2009 **Intern**, *Inovasol*, Plérin, France.
- Inovasol is a company specializing in the sale of photovoltaic systems.
  - Design and development of a commercial website.
- May 2008 **Intern**, *GREMI*, Orléans, France.
- GREMI is a research unit with a focus on plasma and laser processing techniques.
  - Development of an internal website to manage a database of publications.

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## Publications

### Journals

Maverick Chardet, H el ene Coullon, Simon Robillard. Toward safe and efficient reconfiguration with Concerto. In *Science of Computer Programming*, vol. 203. Elsevier, 2021.

### Conferences

Uwe Waldmann, Sophie Tourret, Simon Robillard, Jasmin Blanchette. A Comprehensive Framework for Saturation Theorem Proving. In *10th International Conference on Automated Reasoning (IJCAR 2020)*, pp. 316-334. Springer, 2020.

Robin E bmann, Tobias Nipkow, Simon Robillard. Verified Approximation Algorithms. In *10th International Conference on Automated Reasoning (IJCAR 2020)*, pp. 291-306. Springer, 2020.

Bernhard Gleiss, Laura Kov acs, Simon Robillard. Loop Analysis by Quantification over Iterations. In *22nd International Conference on Logic for Programming, Artificial Intelligence and Reasoning (LPAR 22)*, vol. 57, pp. 381-399. EasyChair, 2018.

Jasmin Blanchette, Nicolas Peltier, Simon Robillard. Superposition with Datatypes and Codatatypes. In *9th International Joint Conference On Automated Reasoning (IJCAR 2018)*, pp. 370-387. Springer, 2018

Laura Kov acs, Simon Robillard, Andrei Voronkov. Coming to Terms with Quantified Reasoning. In *Proceedings of the 44th ACM SIGPLAN Symposium on Principles of Programming Languages (POPL 2017)*, vol. 52, no. 1, pp. 260-270. ACM, 2017.

Wolfgang Ahrendt, Laura Kov acs, Simon Robillard. Reasoning About Loops Using Vampire in KeY. In *20th International Conference on Logic for Programming, Artificial Intelligence and Reasoning (LPAR 20)*, pp. 434-443. Springer, Berlin, Heidelberg, 2015.

Simon Robillard. Catamorphism Generation and Fusion Using Coq. In *16th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC)*, pp. 180-185. IEEE, 2014.

Frédéric Loulergue, Simon Robillard, Julien Tesson, Joeffrey Legaux and Zhenjiang Hu. Formal Derivation and Extraction of a Parallel Program for the All Nearest Smaller Values Problem. In *ACM Symposium on Applied Computing (SAC)*, pp. 1577-1584. ACM, 2014.

Frédéric Loulergue, Virginia Niculescu and Simon Robillard. Powerlists in Coq: Programming and Reasoning. In *First International Symposium on Computing and Networking (CANDAR)*, pp. 57-65. IEEE, 2013.

## Workshops

Simon Robillard. An Inference Rule for the Acyclicity Property of Term Algebras. In *Proceedings of the 4th Vampire Workshop*, vol. 53, pp 20-32. EasyChair, 2018.

YuTing Chen, Laura Kovács, Simon Robillard. Theory-specific reasoning about loops with arrays using Vampire. In *Proceedings of the 3rd Vampire Workshop*, vol. 44, pp 16-32. EasyChair, 2017.

Laura Kovács, Simon Robillard. Reasoning About Loops Using Vampire. In *Proceedings of the 1st and 2nd Vampire Workshops*, vol. 38, pp. 52-62. EasyChair, 2016

## Theses

Simon Robillard. *Deductive Program Analysis with First-Order Theorem Provers*. Thesis for the Degree of Doctor of Philosophy. Chalmers University of Technology, 2019.

Simon Robillard. *Analysis of Iterative or Recursive Programs Using a First-Order Theorem Prover*. Thesis for the Degree of Licenciate of Engineering. Chalmers University of Technology, 2016.

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## Teaching experience

### Université de Nantes

- 2019–2020 **Modeling and Verifying Concurrent Systems**
- Master's course on temporal logics LTL and CTL, covering semantics as well as model checking algorithms
  - Course responsible: Claude Jard

### IMT Atlantique

- 2019–2020 **Algorithmics and Discrete Mathematics**
- Bachelor's course (for first-year students) on graph theory, algorithms and programming, largely project-based
  - Course responsible: Bastien Passet

### Chalmers University of Technology

- 2017–2018 **Mathematical Modelling and Problem Solving**
- Bachelor's course on applications of mathematics, intended to bridge the gap between theoretical classes and concrete areas of use, such as engineering or natural sciences
  - Course responsible: Dag Wedelin

- 2015–2018 **The Computer Scientist in Society**
- Master's course on scientific literature, academic writing and presentation skills
  - Course responsables: Peter Damaske, John Hughes

- 2015–2018 **Testing, Debugging and Verification**
- Master's course on tools and techniques for a rigorous approach to software development, including unit testing, property-based testing and verification-aware programming (Dafny)
  - Course responsables: Atze van der Ploeg, Srinivas Pinisetty

- 2015–2018 **Discrete Optimization**
- Master's course on mathematical optimization and its applications, with a focus on discrete problems
  - Course responsables: Peter Damaske, Ashkan Panahi, John Wiedenhoeft

2015–2016 **Algorithms**

- Master's course presenting various classes of algorithms (greedy algorithms, dynamic programming, divide and conquer...), and notions of complexity, with a focus on adapting these algorithmic techniques to new problems
- Course responsible: Peter Damaske

### Supervision

2015–2016 **YuTing Chen**

Master's thesis

As co-supervisor (main supervisor: Laura Kovács)

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### Summer school and seminar attendance

August 3-12, 2016 **Dependable Software Systems Engineering**  
Markttoberdorf, Germany

October 27-31, 2014 **Verification Technology, Systems & Applications**  
Luxembourg

July 10-12, 2014 **SAT/SMT Summer School 2014**  
Semmering, Austria

November 24-30, 2013 **Oberwolfach Seminar: Mathematics for Scientific Programming**  
Oberwolfach, Germany

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### Professional activities

#### Conference presentations

2015, 2018 International Conference on Logic for Programming, Artificial Intelligence and Reasoning (LPAR)

2018 Internation Joint Conference on Automated Reasoning (IJ-CAR)

2017 Symposium on Principles of Programming Languages (POPL)

2014 International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC)

#### Seminar & workshop presentations

2020 68NQRT seminar, IRISA/Inria Rennes

2015, 2016, 2017, 2018 Vampire Workshop

2015, 2016, 2018 Workshop on Automated Inductive Theorem Proving (WAIT)

2017 VeriDis meeting

- 2015, 2016 KeY Symposium
- 2015 LIFO seminar, Université d'Orléans
- 2015 Workshop on Tools for Automatic Program Analysis (TAPAS)
- 2015 Software Engineering group seminar, TU Darmstadt

## Reviews

- 2021 EACSL Annual Conference on Computer Science Logic (CSL)
- 2020 International Conference on Computer-Aided Verification (CAV)
- 2019 Symposium on Principles of Programming Languages (POPL)
- 2018, 2020 International Joint Conference on Automated Reasoning (IJ-CAR)
- 2016, 2018 International Symposium on Formal Methods (FM)
- 2016, 2017 International Conference on Software Engineering and Formal Methods (SEFM)
- 2017 Static Analysis Symposium (SAS)
- 2017 Conference on Intelligent Computer Mathematics (CICM)
- 2017 International Andrei P. Ershov Informatics Conference (PSI)
- 2016 Annual Conference on Computer Science Logic (CSL)
- 2016 International Symposium on Theoretical Aspects of Software Engineering (TASE)
- 2016 International Conference on integrated Formal Methods (iFM)

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## Referees

### **Laura Kovács** (lkovacs@forsyte.at)

- Full professor. Faculty of Informatics, TU Wien.
- Associate professor. Department of Computer Science and Engineering, Chalmers University of Technology.

### **Frédéric Loulergue** (frederic.loulergue@nau.edu)

- Professor. School of Informatics, Computing and Cyber Systems, Northern Arizona University.

### **Wolfgang Ahrendt** (ahrendt@chalmers.se)

- Professor. Department of Computer Science and Engineering, Chalmers University of Technology.