

# Jasmin Christian Blanchette

February 2017

## 1 Personal Information

Address: Vrije Universiteit Amsterdam  
Department of Computer Science  
Section Theoretical Computer Science  
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Home Page: [www.loria.fr/~jablanch](http://www.loria.fr/~jablanch) Email: [j.c.blanchette@vu.nl](mailto:j.c.blanchette@vu.nl)  
Languages: French, English, German, Norwegian, Swedish,  
intermediate-level Japanese, passive written Dutch

## 2 Academic Background

**Technische Universität München, Germany**  
Ph.D. in Computer Science (summa cum laude) 2008–2012  
Topic: *Automatic Proofs and Refutations for Higher-Order Logic*  
Supervisor: Tobias Nipkow  
Second Examiner: Koen Claessen

**Universitetet i Oslo, Norway**  
M.Sc. in Computer Science (avg. A) 2006–2008  
Topic: *Verification of Assertions in Creol Programs*  
Supervisors: Olaf Owe, Marcel Kyas, Johan Dovland

**Université de Sherbrooke, Canada**  
B.Sc. in Computer Science (avg. 4.23/4.3) 1997–2001

## 3 Work Experience

**Vrije Universiteit Amsterdam, Netherlands**  
Assistant Professor 2017–

**Max-Planck-Institut für Informatik, Saarbrücken, Germany**  
Research Group Leader 2015–

**Loria, Nancy, France**  
Guest Researcher 2017–

**Inria Nancy – Grand Est, France**  
Researcher 2015–2017

**Technische Universität München, Germany**  
Research Assistant 2008–2014

**Trolltech ASA, Oslo, Norway**  
Senior Software Engineer 2007–2008, 2004  
Documentation Manager 2004–2007  
Software Engineer 2000–2004

**Corel Corporation, Ottawa, Canada**  
Software Engineer Intern 1999

CAE Electronics Ltd., Montreal, Canada  
Software Engineer Intern

1998

## 4 Honors and Awards

Best paper award at International Joint Conference on Automated Reasoning (IJCAR) 2016  
Trophy at CADE ATP System Competition in higher-order nontheorem division 2015  
Heinz Schwärtzel-Dissertationspreis für Grundlagen der Informatik 2012  
Trophy at IJCAR ATP System Competition in higher-order theorem division 2012  
Nominated for Young Norwegian IT Researcher of the Year 2007  
Médaille Fernand-Seguin from Math/C.S. Department at Université de Sherbrooke 2001

## 5 Grants

### 5.1 Principal Investigator

- **MATRYOSKA: Fast Interactive Verification through Strong Higher-Order Automation** 2017–2022  
European Research Council (ERC) Starting Grant  
Funding for a team of researchers over five years € 1 498 000
- **CUIC: Contre-exemples utilisables par Isabelle et Coq** 2015–2017  
Inria Technological Development Action (ADT)  
Funding for a senior software engineer for two years € 102 000

### 5.2 Participant

- **VOWS: Verification of Web-Based Systems** 2016–2018  
Engineering and Physical Sciences Research Council (EPSRC)  
Funding for a senior software engineer for two years £ 125 000  
Principal investigator: Andrei Popescu (University of Middlesex London)

## 6 Publications

### Journal Articles

1. **A decision procedure for (co)datatypes in SMT solvers**  
A. Reynolds and J. C. Blanchette  
*J. Autom. Reasoning*, 58(3):341–362, 2017
2. **Soundness and completeness proofs by coinductive methods**  
J. C. Blanchette, A. Popescu, and D. Traytel  
*J. Autom. Reasoning*, 58(1):149–179, 2017
3. **Encoding monomorphic and polymorphic types**  
J. C. Blanchette, S. Böhme, A. Popescu, and N. Smallbone  
*Log. Meth. Comput. Sci.*, 12(4), 2016
4. **A learning-based fact selector for Isabelle/HOL**  
J. C. Blanchette, D. Greenaway, C. Kaliszyk, D. Kühlwein, and J. Urban  
*J. Autom. Reasoning*, 57(3):219–244, 2016
5. **Semi-intelligible Isar proofs from machine-generated proofs**  
J. C. Blanchette, S. Böhme, M. Fleury, S. J. Smolka, and A. Steckermeier  
*J. Autom. Reasoning*, 56(2):155–200, 2016

6. **Hammering towards QED**  
J. C. Blanchette, C. Kaliszyk, L. C. Paulson, and J. Urban  
*J. Formal. Reasoning*, 9(1):101–148, 2016
7. **Relational analysis of (co)inductive predicates, (co)inductive datatypes, and (co)recursive functions**  
J. C. Blanchette  
*Softw. Qual. J.*, 21(1):101–126, 2013
8. **LEO-II and Satallax on the Sledgehammer test bench**  
N. Sultana, J. C. Blanchette, and L. C. Paulson  
*J. Applied Logic*, 11(1):91–102, 2013
9. **Extending Sledgehammer with SMT solvers**  
J. C. Blanchette, S. Böhme, and L. C. Paulson  
*J. Autom. Reasoning*, 51(1):109–128, 2013
10. **Monotonicity inference for higher-order formulas**  
J. C. Blanchette and A. Krauss  
*J. Autom. Reasoning*, 47(4):369–398, 2011
11. **Proof pearl: Mechanizing the textbook proof of Huffman’s algorithm in Isabelle/HOL**  
J. C. Blanchette  
*J. Autom. Reasoning*, 43(1):1–18, 2009

## Conference Papers

1. **A decision procedure for (co)datatypes in SMT solvers**  
A. Reynolds and J. C. Blanchette  
In S. Kambhampati, editor, *International Joint Conference on Artificial Intelligence (IJCAI-16)*, pages 4205–4209, IJCAI/AAAI Press, 2016
2. **A verified SAT solver framework with learn, forget, restart, and incrementality**  
J. C. Blanchette, M. Fleury, and C. Weidenbach  
In N. Olivetti and A. Tiwari, editors, *International Joint Conference on Automated Reasoning (IJCAR 2016)*, volume 9706 of *LNCS*, pages 25–44, Springer, 2016
3. **Model finding for recursive functions in SMT**  
A. Reynolds, J. C. Blanchette, S. Cruanes, and C. Tinelli  
In N. Olivetti and A. Tiwari, editors, *International Joint Conference on Automated Reasoning (IJCAR 2016)*, volume 9706 of *LNCS*, pages 133–151, Springer, 2016
4. **Foundational extensible corecursion—A proof assistant perspective**  
J. C. Blanchette, A. Popescu, and D. Traytel  
In K. Fisher and J. H. Reppy, editors, *International Conference on Functional Programming (ICFP ’15)*, pages 192–204, ACM, 2015
5. **Mining the Archive of Formal Proofs**  
J. C. Blanchette, M. Haslbeck, D. Matichuk, and T. Nipkow  
In M. Kerber, editor, *Conference on Intelligent Computer Mathematics (CICM 2015)*, volume 9150 of *LNCS*, pages 1–15, Springer, 2015
6. **A decision procedure for (co)datatypes in SMT solvers**  
A. Reynolds and J. C. Blanchette  
In A. Felty and A. Middeldorp, editors, *Conference on Automated Deduction (CADE-25)*, volume 9195 of *LNCS*, pages 197–213, Springer, 2015
7. **Witnessing (co)datatypes**  
J. C. Blanchette, A. Popescu, and D. Traytel  
In J. Vitek, editor, *European Symposium on Programming (ESOP 2015)*, volume 9032 of *LNCS*, pages 359–382, Springer, 2015

8. **Experience report: The next 1100 Haskell programmers**  
J. C. Blanchette, L. Hupel, T. Nipkow, L. Noschinski, and D. Traytel  
In W. Swierstra, editor, *Haskell Symposium 2014*, pages 25–30, ACM, 2014
9. **Unified classical logic completeness: A coinductive pearl**  
J. C. Blanchette, A. Popescu, and D. Traytel  
In S. Demri, D. Kapur, and C. Weidenbach, editors, *International Joint Conference on Automated Reasoning (IJCAR 2014)*, volume 8562 of *LNCS*, pages 46–60, Springer, 2014
10. **Cardinals in Isabelle/HOL**  
J. C. Blanchette, A. Popescu, and D. Traytel  
In G. Klein and R. Gamboa, editors, *Interactive Theorem Proving (ITP 2014)*, volume 8558 of *LNCS*, pages 111–127, Springer, 2014
11. **Truly modular (co)datatypes for Isabelle/HOL**  
J. C. Blanchette, J. Hölzl, A. Lochbihler, L. Panny, A. Popescu, and D. Traytel  
In G. Klein and R. Gamboa, editors, *Interactive Theorem Proving (ITP 2014)*, volume 8558 of *LNCS*, pages 93–110, Springer, 2014
12. **Mechanizing the metatheory of Sledgehammer**  
J. C. Blanchette and A. Popescu  
In P. Fontaine, C. Ringeissen, and R. A. Schmidt, editors, *Frontiers of Combining Systems (FroCoS 2013)*, volume 8152 of *LNAI*, pages 245–260, Springer, 2013
13. **TFF1: The TPTP typed first-order form with rank-1 polymorphism**  
J. C. Blanchette and A. Paskevich  
In M. P. Bonacina, editor, *Conference on Automated Deduction (CADE-24)*, volume 7898 of *LNAI*, pages 414–420, Springer, 2013
14. **MaSh: Machine learning for Sledgehammer**  
D. Kühlwein, J. C. Blanchette, C. Kaliszyk, and J. Urban  
In S. Blazy, C. Paulin-Mohring, and D. Pichardie, editors, *Interactive Theorem Proving (ITP 2013)*, volume 7998 of *LNCS*, pages 35–50, Springer, 2013
15. **Encoding monomorphic and polymorphic types**  
J. C. Blanchette, S. Böhme, A. Popescu, and N. Smallbone  
In N. Piterman and S. Smolka, editors, *Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2013)*, volume 7795 of *LNCS*, pages 493–507, Springer, 2013
16. **More SPASS with Isabelle—Superposition with hard sorts and configurable simplification**  
J. C. Blanchette, A. Popescu, D. Wand, and C. Weidenbach  
In L. Beringer and A. Felty, editors, *Interactive Theorem Proving (ITP 2012)*, volume 7406 of *LNCS*, pages 345–360, Springer, 2012
17. **Nitpick: A counterexample generator for Isabelle/HOL based on the relational model finder Kodkod (system description)**  
J. C. Blanchette  
In A. Voronkov, G. Sutcliffe, M. Baaz, and C. Fermüller, editors, *Logic for Programming, Artificial Intelligence and Reasoning (LPAR-17) Short Papers*, volume 13 of *EPiC*, pages 20–25, EasyChair, 2013
18. **Foundational, compositional (co)datatypes for higher-order logic—Category theory applied to theorem proving**  
D. Traytel, A. Popescu, and J. C. Blanchette  
In *Logic in Computer Science (LICS 2012)*, pages 596–605, IEEE, 2012
19. **Automatic proof and disproof in Isabelle/HOL**  
J. C. Blanchette, L. Bulwahn, and T. Nipkow  
In C. Tinelli and V. Sofronie-Stokkermans, editors, *Frontiers of Combining Systems (FroCoS 2011)*, volume 6989 of *LNAI*, pages 12–27, Springer, 2011

20. **Nitpicking C++ concurrency**  
J. C. Blanchette, T. Weber, M. Batty, S. Owens, and S. Sarkar  
In *Principles and Practice of Declarative Programming (PPDP 2011)*, pages 113–124, ACM Press, 2011
21. **Extending Sledgehammer with SMT solvers**  
J. C. Blanchette, S. Böhme, and L. C. Paulson  
In N. Bjørner and V. Sofronie-Stokkermans, editors, *Conference on Automated Deduction (CADE-23)*, volume 6803 of *LNAI*, pages 207–221, Springer, 2011
22. **Generating counterexamples for structural inductions by exploiting nonstandard models**  
J. C. Blanchette and K. Claessen  
In C. G. Fermüller and A. Voronkov, editors, *Logic for Programming, Artificial Intelligence and Reasoning (LPAR-17)*, volume 6397 of *LNAI*, pages 117–141, Springer, 2010
23. **Relational analysis of (co)inductive predicates, (co)inductive datatypes, and (co)recursive functions**  
J. C. Blanchette  
In G. Fraser and A. Gargantini, editors, *Tests and Proofs (TAP 2010)*, volume 6143 of *LNCS*, pages 117–134, Springer, 2010
24. **Nitpick: A counterexample generator for higher-order logic based on a relational model finder**  
J. C. Blanchette and T. Nipkow  
In M. Kaufmann and L. C. Paulson, editors, *Interactive Theorem Proving (ITP 2010)*, volume 6172 of *LNCS*, pages 131–146, Springer, 2010
25. **Monotonicity inference for higher-order formulas**  
J. C. Blanchette and A. Krauss  
In J. Giesl and R. Hähnle, editors, *International Joint Conference on Automated Reasoning (IJCAR 2010)*, volume 6173 of *LNCS*, pages 91–106, Springer, 2010
26. **Nitpick: A counterexample generator for higher-order logic based on a relational model finder (extended abstract)**  
J. C. Blanchette and T. Nipkow  
In C. Dubois, editor, *Tests and Proofs (TAP 2009): Short Papers*, ETH Tech. Reports, 2009

## Workshop Papers

1. **Extending Nunchaku to dependent type theory**  
S. Cruanes and J. C. Blanchette  
In J. C. Blanchette and C. Kaliszyk, editors, *Hammers for Type Theories (HaTT 2016)*, volume 210 of *Electronic Proceedings in Theoretical Computer Science*, pages 3–12, 2016
2. **My life with an automatic theorem prover**  
J. C. Blanchette  
In L. Kovács and A. Voronkov, editors, *Vampire Workshops 2014 and 2015*, volume 38 of *EPiC*, pages 1–7, EasyChair, 2016
3. **Model finding for recursive functions in SMT**  
A. Reynolds, J. C. Blanchette, and C. Tinelli  
In V. Ganesh and D. Jovanović, editors, *SMT Workshop (SMT 2015)*, 2015
4. **Primitively (co)recursive definitions for Isabelle/HOL**  
L. Panny, J. C. Blanchette, and D. Traytel  
In T. Nipkow, L. Paulson, and M. Wenzel, editors, *Isabelle Workshop (Isabelle 2014)*, 2014

5. **A survey of axiom selection as a machine learning problem**  
J. C. Blanchette and D. Kühlwein  
In S. Geschke, B. Loewe, and P. Schlicht, editors, *Infinity, Computability, and Metamathematics: Festschrift Celebrating the 60th Birthdays of Peter Koepke and Philip Welch*, Tributes, College Publications, 2014
6. **Robust, semi-intelligible Isabelle proofs from ATP proofs**  
S. J. Smolka and J. C. Blanchette  
In J. C. Blanchette and J. Urban, editors, *Proof Exchange for Theorem Proving (PxTP 2013)*, volume 14 of *EPiC*, pages 117–132, EasyChair, 2013
7. **Redirecting proofs by contradiction**  
J. C. Blanchette  
In J. C. Blanchette and J. Urban, editors, *Proof Exchange for Theorem Proving (PxTP 2013)*, volume 14 of *EPiC*, pages 11–26, EasyChair, 2013
8. **Three years of experience with Sledgehammer, a practical link between automatic and interactive theorem provers**  
L. C. Paulson and J. C. Blanchette  
In G. Sutcliffe, S. Schulz, and E. Ternovska, editors, *International Workshop on the Implementation of Logics (IWIL-2010)*, volume 2 of *EPiC*, pages 1–11, EasyChair, 2012
9. **Intra-object versus inter-object: Concurrency and reasoning in Creol**  
E. B. Johnsen, J. C. Blanchette, M. Kyas, and O. Owe  
*Electr. Notes Theor. Comput. Sci.*, 243:89–103, 2009
10. **An open system operational semantics for an object-oriented and component-based language**  
J. C. Blanchette and O. Owe  
*Electr. Notes Theor. Comput. Sci.*, 215:151–169, 2008

## Workshop Abstracts

1. **Friends with benefits: Implementing foundational corecursion in Isabelle/HOL (extended abstract)**  
J. C. Blanchette, A. Bouzy, A. Lochbihler, A. Popescu, and D. Traytel  
In T. Nipkow, L. Paulson, and M. Wenzel, editors, *Isabelle Workshop (Isabelle 2016)*, 2016
2. **A verified SAT solver framework with learn, forget, restart, and incrementality**  
J. C. Blanchette, M. Fleury, and C. Weidenbach  
In T. Nipkow, L. Paulson, and M. Wenzel, editors, *Isabelle Workshop (Isabelle 2016)*, 2016
3. **Toward Nitpick and Sledgehammer for Coq**  
J. C. Blanchette  
Coq Workshop (Coq 2015), 2015
4. **Model finding for recursive functions in SMT**  
A. Reynolds, J. C. Blanchette, and C. Tinelli  
In *QUANTIFY 2015*, 2015
5. **Isabelle and security**  
J. C. Blanchette and A. Popescu  
Presented as poster at Grande Region Security and Reliability Day (GRSRD 2015), 2015

## Theses

1. **Automatic Proofs and Refutations for Higher-Order Logic**  
J. C. Blanchette  
Ph.D. thesis, C.S. Department, Technische Universität München, 2012

2. **Verification of Assertions in Creol Programs**  
J. C. Blanchette  
M.Sc. thesis, C.S. Department, Universitetet i Oslo, 2008

## Books

1. **Interactive Theorem Proving (ITP 2016)**  
J. C. Blanchette and S. Merz, editors  
volume 9807 of *LNCS*, Springer, 2016
2. **Hammers for Type Theories (HaTT 2016)**  
J. C. Blanchette and C. Kaliszyk, editors  
volume 210 of *Electronic Proceedings in Theoretical Computer Science*, 2016
3. **Tests and Proofs (TAP 2015)**  
J. C. Blanchette and N. Kosmatov, editors  
volume 9154 of *LNCS*, Springer, 2015
4. **Proof Exchange for Theorem Proving (PxTP 2013)**  
J. C. Blanchette and J. Urban, editors  
volume 14 of *EPiC*, EasyChair, 2013
5. **The Little Manual of API Design**  
J. Blanchette  
Trolltech, a Nokia company, [www21.in.tum.de/~blanchet/api-design.pdf](http://www21.in.tum.de/~blanchet/api-design.pdf), 2008
6. **C++ GUI Programming with Qt 4, Second Edition**  
J. Blanchette and M. Summerfield  
Open Source Software Development Series, Prentice Hall, 2008
7. **C++ GUI Programming with Qt 4**  
J. Blanchette and M. Summerfield  
Prentice Hall, 2006
8. **C++ GUI Programming with Qt 3**  
J. Blanchette and M. Summerfield  
Bruce Perens' Open Source Series, Prentice Hall, 2004

## Formal Proof Developments

1. **Abstract soundness**  
J. C. Blanchette, A. Popescu, and D. Traytel  
In G. Klein, T. Nipkow, and L. Paulson, editors, *Archive of Formal Proofs*,  
[isa-afp.org/entries/Abstract\\_Soundness.shtml](http://isa-afp.org/entries/Abstract_Soundness.shtml), 2017
2. **Formalization of Knuth–Bendix orders for lambda-free higher-order terms**  
H. Becker, J. C. Blanchette, U. Waldmann, and D. Wand  
In G. Klein, T. Nipkow, and L. Paulson, editors, *Archive of Formal Proofs*,  
[isa-afp.org/entries/Lambda\\_Free\\_KB0s.shtml](http://isa-afp.org/entries/Lambda_Free_KB0s.shtml), 2016
3. **Formalization of nested multisets, hereditary multisets, and syntactic ordinals**  
J. C. Blanchette, M. Fleury, and D. Traytel  
In G. Klein, T. Nipkow, and L. Paulson, editors, *Archive of Formal Proofs*,  
[isa-afp.org/entries/Nested\\_Multisets\\_Ordinals.shtml](http://isa-afp.org/entries/Nested_Multisets_Ordinals.shtml), 2016
4. **Formalization of recursive path orders for lambda-free higher-order terms**  
J. C. Blanchette, U. Waldmann, and D. Wand  
In G. Klein, T. Nipkow, and L. Paulson, editors, *Archive of Formal Proofs*,  
[isa-afp.org/entries/Lambda\\_Free\\_RP0s.shtml](http://isa-afp.org/entries/Lambda_Free_RP0s.shtml), 2016

## 5. Abstract completeness

J. C. Blanchette, A. Popescu, and D. Traytel  
In G. Klein, T. Nipkow, and L. Paulson, editors, *Archive of Formal Proofs*,  
[isa-afp.org/entries/Abstract\\_Completeness.shtml](http://isa-afp.org/entries/Abstract_Completeness.shtml), 2014

## 6. Sound and complete sort encodings for first-order logic

J. C. Blanchette and A. Popescu  
In G. Klein, T. Nipkow, and L. Paulson, editors, *Archive of Formal Proofs*,  
[isa-afp.org/entries/Sort\\_Encodings.shtml](http://isa-afp.org/entries/Sort_Encodings.shtml), 2013

## 7. The textbook proof of Huffman’s algorithm

J. C. Blanchette  
In G. Klein, T. Nipkow, and L. Paulson, editors, *Archive of Formal Proofs*,  
[isa-afp.org/entries/Huffman.shtml](http://isa-afp.org/entries/Huffman.shtml), 2008

## Second Readership

- **Automation of higher-order logic**

C. Benz Müller and D. Miller

In J. H. Siekmann, editor, *Computational Logic*, volume 9 of *Handbook of the History of Logic*, pages 215–254, Elsevier, 2014

## 7 Professional Activities

### Boards of Trustees

Conference on Automated Deduction (CADE Inc.) 2016–

### Steering Committees

Interactive Theorem Proving (ITP) 2015–2017

### Program Committees

#### Conferences

Computer-Aided Verification (CAV) 2017

Conference on Automated Deduction (CADE) 2017, 2015

Artificial Intelligence and Theorem Proving (AITP) 2017

Interactive Theorem Proving (ITP) 2016<sup>a</sup>

Tests and Proofs (TAP) 2017, 2016, 2015<sup>a</sup>

International Joint Conference on Automated Reasoning (IJCAR) 2014

Frontiers of Combining Systems (FroCoS) 2013

<sup>a</sup> co-chair

#### Workshops

International Workshop on the Implementation of Logics (IWIL) 2017, 2015, 2012, 2010

Automated Reasoning: Challenges, Applications, Directions,  
Exemplary Achievements (ARCADE) 2017

Satisfiability Modulo Theories (SMT) 2017, 2016

Hammers for Type Theories (HaTT) 2016<sup>a</sup>

Quantified Boolean Formulas (QBF) 2016

Workshop on Logical and Semantic Frameworks, with Applications (LSFA) 2015

International Workshop on Quantification (QUANTIFY) 2015

Deduktionstreffen 2015–2017

Proof Exchange for Theorem Proving (PxTP)	2017, 2015, 2013 <sup>a</sup> , 2012
Practical Aspects of Automated Reasoning (PAAR)	2014, 2012
	<sup>a</sup> co-chair

## External Reviews

<i>Logica Universalis</i>	2016
<i>Formal Aspects of Computing</i>	2016
<i>Journal of Automated Reasoning</i>	2016, 2014, 2012
International Joint Conference on Automated Reasoning (IJCAR)	2016, 2012
European Symposium on Programming (ESOP)	2016
Certified Programs and Proofs (CPP)	2016, 2015
International Conference on Formal Engineering Methods (ICFEM)	2015
Automated Reasoning with Analytic Tableaux and Related Methods (TABLEAUX)	2015
Logic for Programming, Artificial Intelligence and Reasoning (LPAR)	2015
Formal Methods (FM)	2014
Interactive Theorem Proving (ITP)	2014, 2013, 2009
International Static Analysis Symposium (SAS)	2014
<i>Mathematics in Computer Science</i>	2013
Tools and Algorithms for the Construction and Analysis of Systems (TACAS)	2011–2013
Symposium on Trends in Functional Programming (TFP)	2013
User Interfaces for Theorem Provers (UITP)	2012
International Conference on Formal Engineering Methods (ICFEM)	2011
Frontiers of Combining Systems (FroCoS)	2011
Proof Exchange for Theorem Proving (PxTP)	2011
Computer Science Logic (CSL)	2011, 2010
<i>Mathematical Structures in Computer Science</i>	2010
<i>Science of Computer Programming</i>	2010
International Colloquium on Theoretical Aspects of Computing (ICTAC)	2010
Software Engineering and Formal Methods (SEFM)	2009

## Editorship

Newsletter of the Association for Automated Reasoning (AAR)	2015–2017
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## Event Organization

Deduction beyond First-Order Logic, Dagstuhl Seminar	2017
Certified Functional (Co)programming with Isabelle/HOL, Tutorial at International Conference on Functional Programming (ICFP)	2017
Certified Functional (Co)programming with Isabelle/HOL, Tutorial at Conference on Automated Deduction (CADE)	2017
Interactive Theorem Proving (ITP)	2016
Conference on Automated Deduction (CADE)	2015 <sup>a</sup>
Information about Deduction: Models and Proofs, Dagstuhl Seminar	2015
Deduction and Arithmetic, Dagstuhl Seminar	2013 <sup>b</sup>

<sup>a</sup> co-chair of workshops, tutorials, and system competitions

<sup>b</sup> abstract collector and additional editor of the report

## Invited Conference Talks

Frontiers of Combining Systems (FroCoS) / Interactive Theorem Proving (ITP) / Automated Reasoning with Analytic Tableaux and Related Methods (TABLEAUX)	2017
Mathematical Aspects of Computer and Information Sciences (MACIS), Constraints and Combinations Track	2013

## Invited Workshop Talks

Vampire Workshop	2014
Artificial Intelligence for Formal Methods (AI4FM)	2013
Automation in Proof Assistants (AIPA) / Synthesis, Verification, and Analysis of Rich Models (SVARM)	2012
Proof Exchange for Theorem Proving (PxTP) / Proof Search in Axiomatic Theories and Type Theories (PSATTT)	2011
International Workshop on the Implementation of Logics (IWIL)	2010
Practical Aspects of Automated Reasoning (PAAR)	2010

## Invited Seminar Talks

Universality of Proof, Schloss Dagstuhl	2016
Workshop on Proofs, Justifications, and Certificates part of thematic trimester Current Issues in the Philosophy of Practice of Mathematics & Informatics (CIPPMI)	2016
Sino-German Frontiers of Science Symposium (SINOGFOS) organized by the Humboldt Foundation and the Chinese Academy of Science	2016
Semantic Representation of Mathematical Knowledge Workshop organized by the Wolfram Foundation and the Fields Institute	2016
Information about Deduction: Models and Proofs, Schloss Dagstuhl	2015
Deduktionstreffen, Gesellschaft für Informatik	2013
Deduction and Arithmetic, Schloss Dagstuhl	2013
Symbolic Methods in Testing, Schloss Dagstuhl	2013
Journées Languages, Types et Preuves (LTP) / Méthodes de Test, Vérification et Validation (MTV <sup>2</sup> )	2011

## Conference Presentations

Conference on Automated Deduction (CADE)	2015, 2013, 2011
International Joint Conference on Automated Reasoning (IJCAR)	2014, 2010
Tools and Algorithms for the Construction and Analysis of Systems (TACAS)	2013
Principles and Practice of Declarative Programming (PPDP)	2011
Interactive Theorem Proving (ITP)	2010
Logic for Programming, Artificial Intelligence and Reasoning (LPAR)	2010
Tests and Proofs (TAP)	2010, 2009

## Workshop and Seminar Presentations

Prague Inter-Reasoning Workshop (PiWo)	2016, 2014
Hammers for Type Theories (HaTT)	2016
Journées Géométrie du Calcul (GEOCAL) / Logique, Algèbre, Calcul (LAC) / Languages, Types et Preuves (LTP)	2015
Proof Assistants and Related Tools (PART)	2015
Workshop on Inductive Theorem Proving	2015 <sup>a</sup>
Grande Region Security and Reliability Day (GRSRD)	2015 <sup>a</sup>

Pre-CERI Workshop	2015
Proof Exchange for Theorem Proving (PxTP)	2013
Synthesis, Verification, and Analysis of Rich Models (SVARM)	2012, 2011
Programm- und Modell-Analyse (PUMA)	2012, 2011, 2009
Z3 Special Interest Group Meeting	2011
Deduction at Scale, Schloss Ringberg	2011
Formal Specification and Systems Verification (FSSV), JAIST	2010
Danmarks Tekniske Universitet / Technische Universität München (DTUM) Meeting	2008
Formal Aspects of Component Software (FACS)	2007

<sup>a</sup> poster session

## Other Presentations

ETH Zürich	2016
École Normale Supérieure (ENS) de Cachan	2016
Chalmers University of Technology, Gothenburg	2016, 2010
Max-Planck-Institut für Informatik & Max-Planck-Institut für Softwaresysteme, Saarbrücken	2015
IT-Universitetet i København (ITU)	2015
École polytechnique fédérale de Lausanne (EPFL)	2014
Max-Planck-Institut für Informatik, Saarbrücken	2014
Universität Innsbruck	2014
Inria Nancy – Grand Est	2014
Radboud Universiteit, Nijmegen	2014, 2012
Freie Universität Berlin	2013
Universitetet i Oslo	2013
Programm- und Modell-Analyse (PUMA) Day, Munich	2012 <sup>a</sup>
Max-Planck-Institut für Softwaresysteme, Kaiserslautern	2012
University of Cambridge	2011
NICTA, Sydney	2011
Karlsruhe Institute of Technology	2009
IBM Watson Research Center	2009
Charles University in Prague	2008
Studemøtet Elektronikk og Data, Sundvollen	2007 <sup>a</sup>

<sup>a</sup> poster session

## 8 Evaluations

### Ph.D. Committees

Hernán Vanzetto (Université de Lorraine, Nancy, France)	2014
Daniel Kühlwein (Radboud Universiteit, Nijmegen, the Netherlands)	2014

### Licentiate Committee

Dan Rosén (Chalmers University of Technology, Gothenburg, Sweden)	2016
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### Grant Proposal Reviewing

Agence Nationale de la Recherche (ANR) & Deutsche Forschungsgemeinschaft (DFG)	2015
Agence Nationale de la Recherche (ANR)	2014

## 9 Teaching and Supervising Experience

### Teaching

<b>Universität des Saarlandes, Saarbrücken, Germany</b>	
Lecturer in “Concrete Semantics with Isabelle/HOL”	2015
<b>Freie Universität Berlin, Germany</b>	
Guest lecturer in “Computational Metaphysics”	2016
<b>Université de Lorraine, Nancy, France</b>	
Invited lecturer at summer school on dependable software	2015
<b>Technische Universität München, Germany</b>	
Competition master for “Functional Programming”	2012–2014
Substitute lecturer for “Functional Programming”	2012, 2011
Guest lecturer in “Pearls of Computer Science”	2011, 2009
<b>Université de Sherbrooke, Canada</b>	
Teaching assistant for “Functional Programming”	2000
Grading assistant for “Assembly Language Programming”	1999

### Supervision

#### Postdoctoral Engineer

Simon Cruanes: <i>Counterexamples for Isabelle and Coq</i>	2015–
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#### Ph.D. Theses

Mathias Fleury: <i>Formalization of logical calculi</i>	
Main supervisor: Christoph Weidenbach	2015–
Anders Schlichtkrull: <i>Formalization of algorithms and logical calculi</i>	
Main supervisor: Jørgen Villadsen	2015–
Daniel Wand: <i>Extensions of superposition</i>	
Main supervisor: Christoph Weidenbach	2011–

#### M.Sc. Theses

Michaël Noël Divo: <i>Formalization of “Types and Programming Languages”</i>	2016–
Alexander Bentkamp: <i>Formalization of deep learning</i>	2016–
Mathias Fleury: <i>Formalization of ground logical calculi</i>	2015
Anders Schlichtkrull: <i>Formalization of resolution</i>	2015
Dmytro Traytel: <i>(Co)datatypes in higher-order logic</i>	2011–2012

#### B.Sc. Theses

Martin Desharnais: <i>Formalization of “Types and Programming Languages”</i>	2014
Anders Steckermeier: <i>Integration of Waldmeister</i>	2014
Lorenz Panny: <i>Primitive (co)recursive function definitions</i>	2013–2014
Steffen Juilf Smolka: <i>Isabelle proofs from machine-generated proofs</i>	2013

#### Interns and Research Assistants

Heiko Becker: <i>Lambda-free higher-order Knuth–Bendix ordering</i>	2016
Matthieu Lequesne: <i>Integration of model finders in TLA<sup>+</sup> Proof System</i>	2016
Fabian Kunze: <i>Towards Sledgehammer for Coq</i>	2016
Philipp Hermann: <i>Formalization of tableaux</i>	2015
Aymeric Bouzy: <i>Nonprimitive coreursion</i>	2015
Maximilian Haslbeck: <i>Translation of Naproche to Isabelle</i>	2014
Martin Desharnais: <i>Properties of (co)datatypes</i>	2014

Mathias Fleury: <i>Integration of exotic automatic provers</i>	2014
Steffen Juilf Smolka: <i>Translation of machine-generated proofs</i>	2012–2013
Charles Francis: <i>Proof redirection</i>	2011
Yuan Gao: <i>Optimization using genetic algorithms</i>	2010–2011

## 10 Software

**Sledgehammer** is an automatic proof tool integrated in Isabelle. It comprises about 17 500 lines of Standard ML, written from 2003 to 2016 by about ten researchers, initially under Lawrence Paulson’s lead. I took over its development in 2010 and have (re)implemented most of it. The tool partly inspired HOLyHammer.

**Nitpick** is a counterexample generator integrated in Isabelle. Like Isabelle, it is mostly used by researchers, but also by members of semi-commercial research organizations. It comprises about 14 000 lines of Standard ML, which I wrote between 2008 and 2010. I am now working on its successor, **Nunchaku**.

Isabelle’s new **(co)datatype module** is a specification mechanism for introducing (co)datatypes and (co)recursive functions in a definitional manner. It comprises about 30 000 lines of Standard ML and 7 000 lines of Isabelle. I have been developing it since 2011 with two colleagues and three undergraduates.

**Qt** is a highly popular dual-licensed class library for developing cross-platform graphical user interfaces. It consists of over 2 500 000 lines of C++ written over two decades. I contributed many C++ classes, extensive documentation, and three editions of a book, and acted as “API guru” in charge of reviewing all public interfaces.