Jasmin Christian Blanchette

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1 Personal Information

Address: Vrije Universiteit Amsterdam
Department of Computer Science
Section Theoretical Computer Science
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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
Senior Guest Researcher 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

- **MATRYOSHKA: Fast Interactive Verification through Strong Higher-Order Automation** 2017–2022
  €1 498 000
  European Research Council (ERC) Starting Grant
  Funding for a team of researchers over five years

- **CUIC: Contre-exemples utilisables par Isabelle et Coq** 2015–2017
  Inria Technological Development Action (ADT) €102 000
  Funding for a senior software engineer for two years

5.2 Participant

- **VOWS: Verification of Web-Based Systems** 2016–2018
  Engineering and Physical Sciences Research Council (EPSRC) £125 000
  Funding for a senior software engineer for two years
  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 lambda-free higher-order recursive path order**
   J. C. Blanchette, U. Waldmann, and D. Wand
   In J. Esparza and A. S. Murawski, editors, *Foundations of Software Science and Computation Structures (FOSSACS 2017)*, volume 10203 of *LNCS*, pages 461–479, Springer, 2017
2. **Friends with benefits: Implementing corecursion in foundational proof assistants**
   J. C. Blanchette, A. Bouzy, A. Lochbihler, A. Popescu, and D. Traytel
   In H. Yang, editor, *European Symposium on Programming (ESOP 2017)*, volume 10201 of *LNCS*, pages 111–140, Springer, 2017
3. **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
4. **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
5. **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
6. **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
7. **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

8. **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

9. **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

10. **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

11. **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

12. **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

13. **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

14. **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

15. **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

16. **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

17. **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

18. **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

19. **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

20. **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

21. **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

22. **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

23. **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

24. **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

25. **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

26. **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

27. **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

28. **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. **An Isabelle formalization of the expressiveness of deep learning (extended abstract)**
   A. Bentkamp, J. C. Blanchette, and D. Klakow
   In T. C. Hales, C. Kaliszyk, S. Schulz, and J. Urban, editors, *2nd Conference on Artificial Intelligence and Theorem Proving (AITP 2017)*, pages 22–23

2. **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

3. **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

4. **Toward Nitpick and Sledgehammer for Coq**
   J. C. Blanchette
   Coq Workshop (Coq 2015), 2015
5. **Model finding for recursive functions in SMT**
   A. Reynolds, J. C. Blanchette, and C. Tinelli
   In *QUANTIFY 2015*, 2015
6. **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`, 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`, 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_KBOs.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`, 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_RPOs.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`, 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`, 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`, 2008

Second Readership

- **Automation of higher-order logic**
  C. Benzmüller 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

Certified Programs and Proofs (CPP)	2018
Computer-Aided Verification (CAV)	2017
Conference on Automated Deduction (CADE)	2017, 2015
Artificial Intelligence and Theorem Proving (AITP)	2017
Interactive Theorem Proving (ITP)	2016[a]
Tests and Proofs (TAP)	2017, 2016, 2015[a]
International Joint Conference on Automated Reasoning (IJCAR)	2014
Frontiers of Combining Systems (FroCoS)	2013

[a] 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[a]
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[a], 2012
Practical Aspects of Automated Reasoning (PAAR)	2014, 2012

[a] co-chair

External Reviews

Software Engineering and Formal Methods (SEFM)	2017, 2009
Logica Universalis	2016
Formal Aspects of Computing	2016
Journal of Automated Reasoning	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
Mathematics in Computer Science	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
Mathematical Structures in Computer Science	2010
Science of Computer Programming	2010
International Colloquium on Theoretical Aspects of Computing (ICTAC)	2010

Editorship

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

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[a]
Information about Deduction: Models and Proofs, Dagstuhl Seminar	2015
Deduction and Arithmetic, Dagstuhl Seminar	2013[b]

[a] co-chair of workshops, tutorials, and system competitions
[b] 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^2)	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-Reasonning 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[a]
Grande Region Security and Reliability Day (GRSRD)	2015[a]
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

[a] 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[a]
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
Studiemøtet Elektronikk og Data, Sundvollen	2007[a]

[a] 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

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

Universität des Saarlandes, Saarbrücken, Germany
Lecturer in "Concrete Semantics with Isabelle/HOL" 2015

Freie Universität Berlin, Germany
Guest lecturer in "Computational Metaphysics" 2016

Université de Lorraine, Nancy, France
Invited lecturer at summer school on dependable software 2015

Technische Universität München, Germany
Competition master for "Functional Programming" 2012–2014
Substitute lecturer for "Functional Programming" 2012, 2011
Guest lecturer in "Pearls of Computer Science" 2011, 2009

Université de Sherbrooke, Canada
Teaching assistant for "Functional Programming" 2000
Grading assistant for "Assembly Language Programming" 1999

Supervision

Postdoctoral Engineer

Simon Cruanes: *Counterexamples for Isabelle and Coq* 2015–

Ph.D. Theses

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

M.Sc. Theses

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

B.Sc. Theses

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

Interns and Research Assistants

Heiko Becker: *Lambda-free higher-order Knuth–Bendix ordering*	2016
Matthieu Lequesne: *Integration of model finders in TLA$^+$ Proof System*	2016
Fabian Kunze: *Towards Sledgehammer for Coq*	2016
Philipp Hermann: *Formalization of tableaux*	2015
Aymeric Bouzy: *Nonprimitive corecursion*	2015
Maximilian Haslbeck: *Translation of Naproche to Isabelle*	2014
Martin Desharnais: *Properties of (co)datatypes*	2014
Mathias Fleury: *Integration of exotic automatic provers*	2014
Steffen Juilf Smolka: *Translation of machine-generated proofs*	2012–2013
Charles Francis: *Proof redirection*	2011
Yuan Gao: *Optimization using genetic algorithms*	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.