

Michaël Cadilhac

CONTACT INFORMATION

Department of Computer Science
University of Oxford
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RESEARCH INTERESTS

Circuit complexity, language theory, formal logic, in relation with automata theory, algebraic language theory, computational complexity, computability, model-checking

RESEARCH BACKGROUND

University of Oxford, Oxford, UK

Postdoctoral researcher, current position since March 2017

- Topics: *algebraic theory of transducers* [5], *counting in descriptive complexity* [6]
- Supervisor: Prof. James Worrell

Universität Tübingen, Tübingen, Germany

Postdoctoral researcher, February 2014

- Topics: *algebraic theory of transducers* [8], *language-theoretic views of descriptive complexity* [12], *cost register automata* [18], *extreme uniformity in circuit complexity* [10]
- Supervisor: Dr. Andreas Krebs

Université de Montréal, Montréal, QC, Canada

Ph.D., Informatique et Recherche Opérationnelle, March 2013

- Thesis topic: *Automata with a semilinear constraint* [20]
- Area of study: automata theory
- Advisers: Prof. Pierre McKenzie, Prof. Alain Finkel (@ ENS Cachan)

Research assistant, March–December 2008

- Task: Mathematica programming to test conjectures in combinatorics
- Supervisor: Prof. Pierre McKenzie

Université Paris Diderot, Paris, France

M.Sc., Logique Mathématique et Fondements de l'Informatique, July 2007

- Thesis topic: *Uniform guided random walks for conformance testing* [25]
- Area of study: model-checking
- Advisers: Ass. Prof. Fatiha Zaidi (@ LRI)

École pour l'Informatique et les Techniques Avancées, Paris, France

Engineer's degree, Calcul Scientifique et Image, July 2007

- Main project: VAUCANSON, a C++ library for weighted automata
- Areas of study: automata theory, generic programming
- Supervisors: Prof. Jacques Sakarovitch (@ Télécom ParisTech), Dr. Akim Demaille

B.S., July 2005

- Thesis topic: *Comparative study of thread usage in fault-tolerant message passing* [27]
- Area of study: grid computing
- Advisers: Ass. Prof. Thomas Héroult (@ LRI)

TEACHING
EXPERIENCE

University of Oxford, Oxford, UK

Summer 2017 — T.A. for *Computer Architecture*
Topics: Low-level C programming, assembly, processor design

Universität Tübingen, Tübingen, Germany

Winter 2016 — Organizing *Seminar on advanced automata theory*
Topics: Recent research topics in automata theory

Summer 2015 — Teaching *Second course in formal language theory*
Topics: Logics on words, abstract families, bounded languages, rational and recognizable sets

Winter 2014 — Teaching *Special chapters in theoretical computer science*
Topic: From formal power series to linear recurrence sequences: advances on Skolem's problem

Université de Montréal, Montréal, QC, Canada

Summer 2011 — T.A. for *Introduction to theoretical computer science*

Winter 2011 — T.A. for *Introduction to theoretical computer science*

Summer 2010 — T.A. for *Introduction to theoretical computer science*

Summer 2009 — T.A. for *Introduction to theoretical computer science*

Topics: automata, grammars, Turing machines, decidability, NP-completeness

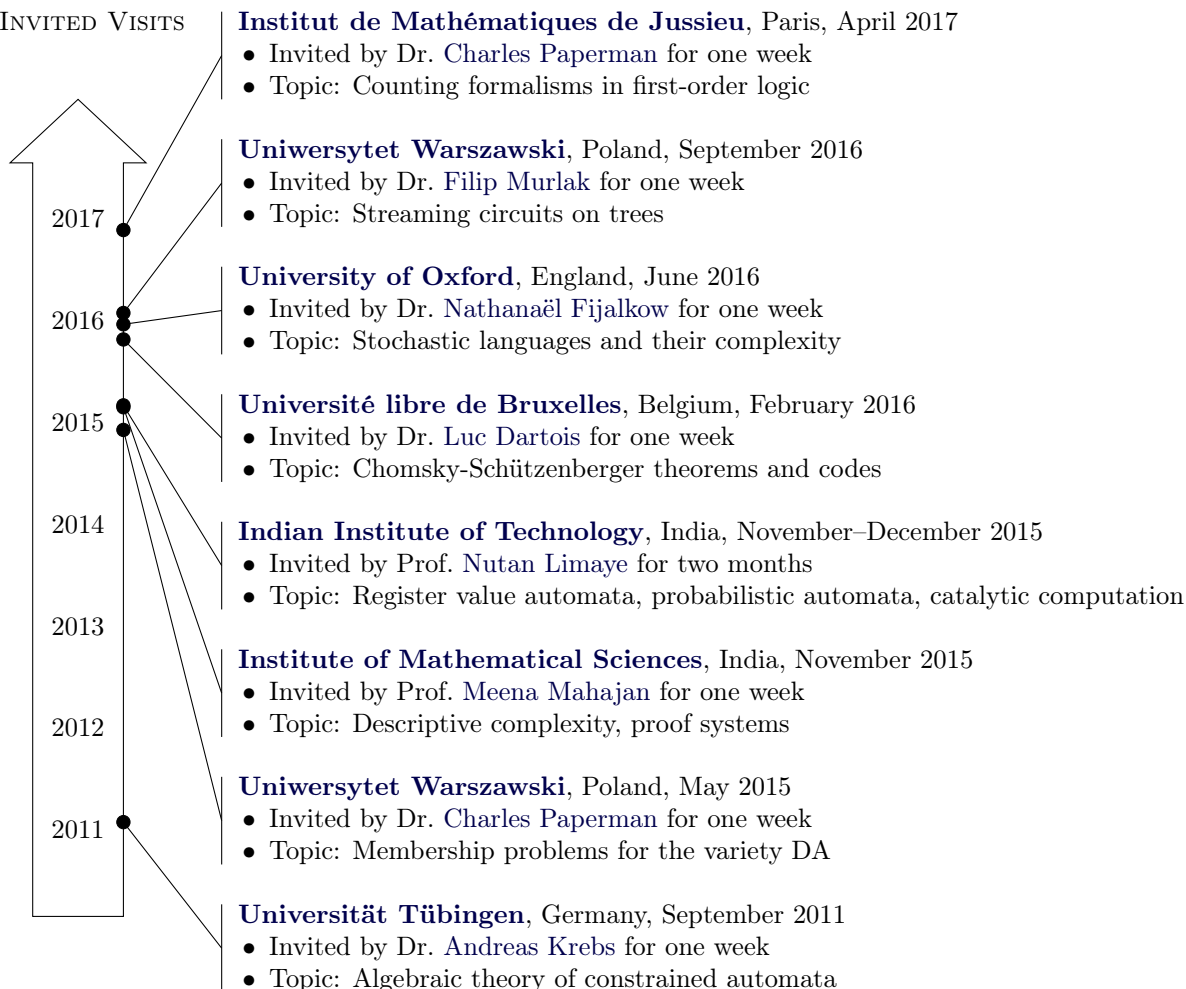
École pour l'Informatique et les Techniques Avancées, Paris, France

Autumn 2006 — Teaching a crash course on computer architecture

Autumn 2006 — Teaching and grading the basics of C/Unix programming

Winter 2005 — T.A. for M6800 assembly classes

INVITED VISITS



JOURNAL
PUBLICATIONS

- [1] Michaël Cadilhac, Andreas Krebs, and Pierre McKenzie. “The Algebraic Theory of Parikh Automata”. In: *Theory of Computing Systems (to appear)* (2017).
- [2] Michaël Cadilhac, Alain Finkel, and Pierre McKenzie. “Unambiguous constrained Automata”. In: *Int. J. Found. Comput. Sci.* 24.7 (2013), pp. 1099–1116. DOI: 10.1142/S0129054113400339.
- [3] Michaël Cadilhac, Alain Finkel, and Pierre McKenzie. “Bounded Parikh Automata”. In: *Int. J. Found. Comput. Sci.* 23.8 (2012), pp. 1691–1710. DOI: 10.1142/S0129054112400709.
- [4] Michaël Cadilhac, Alain Finkel, and Pierre McKenzie. “Affine Parikh automata”. In: *RAIRO - Theor. Inf. and Applic.* 46.4 (2012), pp. 511–545. DOI: 10.1051/ita/2012013.

CONFERENCE
PUBLICATIONS

- [5] Michaël Cadilhac, Olivier Carton, and Charles Paperman. “Continuity and Rational Functions”. In: *44th International Colloquium on Automata, Languages and Programming, ICALP 2017, Warsaw, Poland (to appear)*. 2017.
- [6] Michaël Cadilhac and Charles Paperman. “A Crevice on the Crane Beach: Finite-Degree Predicates”. In: *Logic in Computer Science - 32nd Annual ACM/IEEE Symposium, LICS 2017, Reykjavik, Iceland (to appear)*. 2017.
- [7] Michaël Cadilhac, Andreas Krebs, and Klaus-Jörn Lange. “A Language-Theoretical Approach to Descriptive Complexity”. In: *Developments in Language Theory - 20th International Conference, DLT 2016, Montréal, Canada, July 25-28, 2016, Proceedings*. 2016, pp. 64–76. DOI: 10.1007/978-3-662-53132-7_6.
- [8] Michaël Cadilhac, Andreas Krebs, Michael Ludwig, and Charles Paperman. “A Circuit Complexity Approach to Transductions”. In: *Mathematical Foundations of Computer Science 2015 - 40th International Symposium, MFCS 2015, Milan, Italy, August 24-28, 2015, Proceedings, Part I*. 2015, pp. 141–153. DOI: 10.1007/978-3-662-48057-1_11.
- [9] Michaël Cadilhac, Andreas Krebs, and Nutan Limaye. “Value Automata with Filters”. In: *Seventh Workshop on Non-Classical Models for Automata and Applications - NCMA 2015, Porto, Portugal, August 28-29, 2015. Short papers*. 2015, pp. 12–22.
- [10] Michaël Cadilhac, Andreas Krebs, and Pierre McKenzie. “Extremely uniform branching programs”. In: *Sixth Workshop on Non-Classical Models for Automata and Applications - NCMA 2014, Kassel, Germany, July 28-29, 2014. Proceedings*. 2014, pp. 73–83.
- [11] Michaël Cadilhac, Andreas Krebs, and Pierre McKenzie. “The Algebraic Theory of Parikh Automata”. In: *Algebraic Informatics - 5th International Conference, CAI 2013, Querolles, France, September 3-6, 2013. Proceedings*. 2013, pp. 60–73. DOI: 10.1007/978-3-642-40663-8_7.
- [12] Michaël Cadilhac, Alain Finkel, and Pierre McKenzie. “Unambiguous Constrained Automata”. In: *Developments in Language Theory - 16th International Conference, DLT 2012, Taipei, Taiwan, August 14-17, 2012. Proceedings*. 2012, pp. 239–250. DOI: 10.1007/978-3-642-31653-1_22.
- [13] Michaël Cadilhac, Alain Finkel, and Pierre McKenzie. “On the Expressiveness of Parikh Automata and Related Models”. In: *Third Workshop on Non-Classical Models for Automata and Applications - NCMA 2011, Milan, Italy, July 18 - July 19, 2011. Proceedings*. 2011, pp. 103–119.
- [14] Michaël Cadilhac, Alain Finkel, and Pierre McKenzie. “Bounded Parikh Automata”. In: *Proceedings 8th International Conference Words 2011, Prague, Czech Republic, 12-16th September 2011*. 2011, pp. 93–102. DOI: 10.4204/EPTCS.63.13.
- [15] Michaël Cadilhac, Thomas Héroult, Richard Lassaigne, Sylvain Peyronnet, and Sébastien Tixeuil. “Evaluating Complex MAC Protocols for Sensor Networks with APMC”. In: *Proceedings of the 6th International Workshop on Automated Verification of Critical Systems*. Vol. 185. Electr. Notes Theor. Comput. Sci. 2007, pp. 33–46.
- [16] Michaël Cadilhac, Thomas Héroult, and Pierre Lemarinier. “Message Relaying Techniques for Computational Grids and their Relations to Fault Tolerant Message Passing for the Grid”. In: *Proceedings of the 2nd CoreGRID Workshop on GRID and Peer to Peer Systems Architecture (D.SA.02)*. 2005, pp. 43–63.

- OTHER WRITINGS
- [17] Michaël Cadilhac. “Review of: The Golden Ratio and Fibonacci Numbers by Richard A. Dunlap”. In: *SIGACT News* 47.4 (2016), pp. 15–17. DOI: [10.1145/3023855.3023861](https://doi.org/10.1145/3023855.3023861).
 - [18] Michaël Cadilhac, Andreas Krebs, and Nutan Limaye. “Value Automata with Filters”. In: *CoRR* abs/1510.02393 (2015).
 - [19] Michaël Cadilhac. “Review of graph structure and monadic second-order logic: a language-theoretic approach by Bruno Courcelle and Joost Engelfriet”. In: *SIGACT News* 45.3 (2014), pp. 24–25. DOI: [10.1145/2670418.2670426](https://doi.org/10.1145/2670418.2670426).
 - [20] Michaël Cadilhac. “Automata with a semilinear constraint”. PhD thesis. 2013.
 - [21] Michaël Cadilhac. “Review of proofs and algorithms by Gilles Dowek (translation by Maribel Fernandez)”. In: *SIGACT News* 44.4 (2013), pp. 35–37. DOI: [10.1145/2556663.2556670](https://doi.org/10.1145/2556663.2556670).
 - [22] Michaël Cadilhac. “Review of handbook of weighted automata, edited by Manfred Droste, Werner Kuich and Heiko Vogler”. In: *SIGACT News* 43.3 (2012), pp. 32–37. DOI: [10.1145/2421096.2421103](https://doi.org/10.1145/2421096.2421103).
 - [23] Michaël Cadilhac. “Review of combinatorics: a guided tour by David R. Mazur”. In: *SIGACT News* 42.3 (2011), pp. 34–36. DOI: [10.1145/2034575.2034583](https://doi.org/10.1145/2034575.2034583).
 - [24] Sebastiaan Terwijn. *Éléments de théorie de la calculabilité*. French translation of *Syllabus Computability Theory* by Michaël Cadilhac. 2008.
 - [25] Michaël Cadilhac. *Uniform guided random walks for conformance testing*. Master 2 and ÉPITA report. 2007.
 - [26] Michaël Cadilhac. *Cover automata for finite languages, a survey*. Tech. rep. LRDE seminar, Paris, France, 2005.
 - [27] Michaël Cadilhac. *Comparative study of programming methods regarding threads in fault-tolerant message passing*. Bachelor’s degree report. 2005.