

CONTACT INFORMATION

Department of Computer Science
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RESEARCH INTERESTS

Circuit and computational complexity, formal logic, automata theory, with applications in games & machine learning, algebraic geometry, and formal verification

EDUCATION

Université de Montréal, Montréal, QC, Canada

Ph.D., Computer Science and Operations Research, March 2013

- Topic: Automata with a semilinear constraint [22]
- Advisors: Prof. Pierre McKenzie, Prof. Alain Finkel (@ ENS Cachan)

Université Paris Diderot, Paris, France

M.Sc., Mathematical Logic and Theoretical Computer Science, July 2007

- Topic: Uniform guided random walks for conformance testing [27]
- Advisor: Asst. Prof. Fatiha Zaidi (@ LRI)

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

Engineer's degree, Scientific Computing and Image Processing, July 2007

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

B.S., July 2005

- Topic: Comparative study of thread usage in fault-tolerant message passing [29]
- Advisor: Asst. Prof. Thomas Héroult (@ LRI)

PROFESSIONAL EXPERIENCE

University of Oxford, Oxford, UK

Postdoctoral researcher & research associate at University College, since March 2017

- Topics: algebraic theory of transducers [8], counting in descriptive complexity [9], cost register automata [7], verification of linear dynamical systems, learning transducers, regret in games and reinforcement learning [6]

Universität Tübingen, Tübingen, Germany

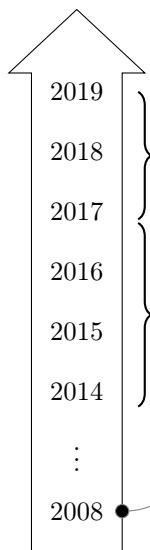
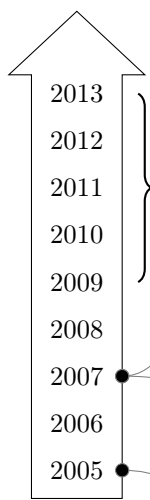
Postdoctoral researcher, February 2014–February 2017

- Topics: circuit complexity of transducers [11], language-theoretic views of descriptive complexity [15], cost register automata [12], extreme uniformity in circuit complexity [13]

Université de Montréal, Montréal, QC, Canada

Research assistant, March–December 2008

- Task: Mathematica programming to test conjectures on Steiner systems
- Supervisor: Prof. Pierre McKenzie



TEACHING
EXPERIENCE



ACADEMIC
SUPERVISION

University of Oxford, Oxford, UK

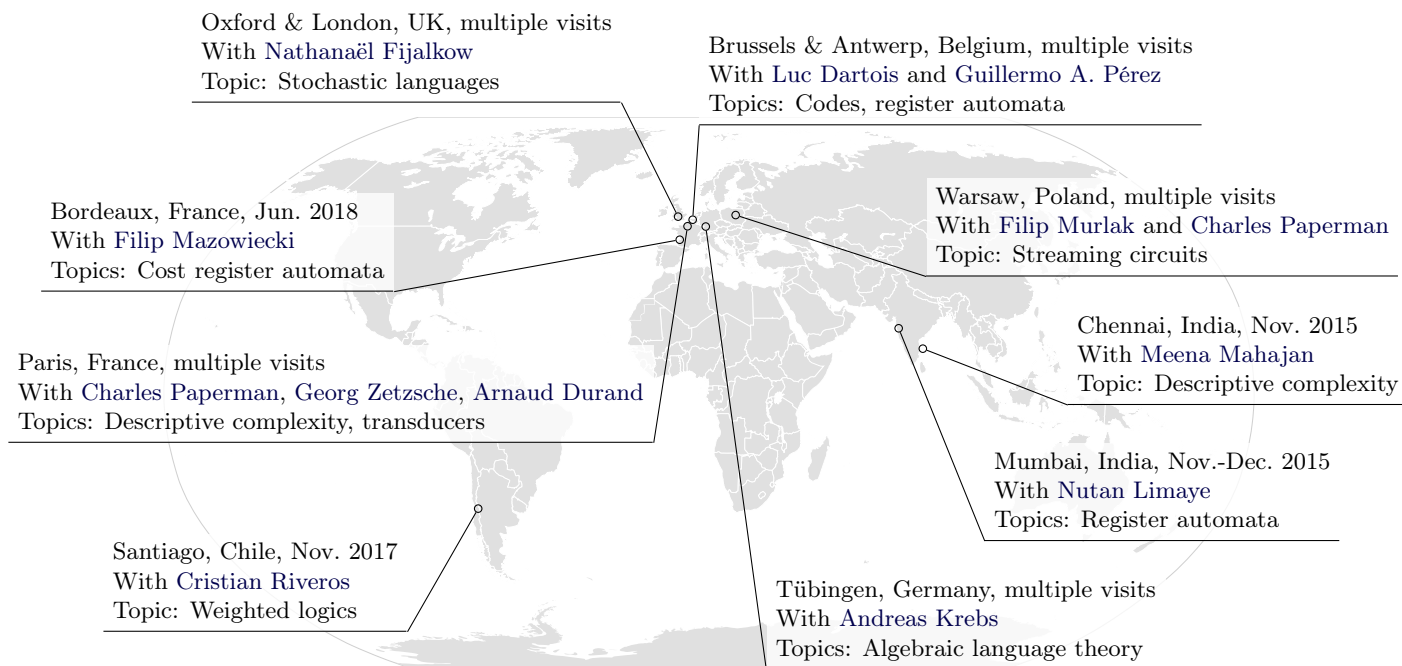
Corentin Barloy (ENS Paris-Saclay), Master's Degree Internship, February-July 2019

- Topic: Linear recurrence sequences, cost register automata
- Co-supervised with Shaull Almagor (@ Univ. Oxford)

Bartosz Bednarczyk (ENS Paris-Saclay), Master's Degree Internship, June-August 2018

- Topic: Algebraic theory of regular tree languages
- Co-supervised with Charles Paperman (@ Univ. Lille)

RESEARCH VISITS



ACADEMIC SERVICE

Review service

- Conferences: CPM'10, STACS'10, CSR'11, IWOCA'11, DLT'13, AFL'14, DLT'15, FSTTCS'15, FoSSaCS'15, MFCS'15, CSL'16, STACS'16, MFCS'17, STACS'17, DCFS'18, FoSSaCS'18, LICS'18, MFCS'18, STACS'19, LATA'19
- Journals: IJAC, IJFCS, LMCS, JCSS, JACM, Fundamenta Informaticae, IPL

Workshop organization

- *Autobóz* 2019—yearly invitational workshop on automata theory; main organizer

PARA-ACADEMIC DUTIES

University of Oxford, Oxford, UK

- 2017 – 2019 — Coorganizer of the weekly *Verification Seminar*
- 2017 – 2019 — Representative for the CS Dept. at the *Research Staff Society*
- 2017 – 2019 — Social events committee member at the *Research Staff Society*

Université de Montréal, Montréal, QC, Canada

- 2011 – 2013 — PhD students representative at the *CS Student Council*
- 2009 – 2011 — Graduate social events organizer at the *CS Student Council*

NONACADEMIC DUTIES

Beer homebrewing

- 2017 – 2018 — Organizer of termly competitions for the *Oxford Brewers Group*
- 2014 – 2017 — Cofounder of the *Hobbybrauer Club Tübingen*

Barbershop singing

- 2018 – 2019 — Section leader for baritones at *Oxford Harmony*

List of publications

REFEREED
JOURNAL
ARTICLES

- [1] Michaël Cadilhac, Olivier Carton, and Charles Paperman. “Continuity and Rational Functions”. In: *Logical Methods in Computer Science* (to appear).
- [2] Michaël Cadilhac, Andreas Krebs, and Pierre McKenzie. “The Algebraic Theory of Parikh Automata”. In: *Theory Comput. Syst.* 62.5 (2018), pp. 1241–1268. DOI: [10.1007/s00224-017-9817-2](https://doi.org/10.1007/s00224-017-9817-2).
- [3] 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](https://doi.org/10.1142/S0129054113400339).
- [4] 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](https://doi.org/10.1142/S0129054112400709).
- [5] 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](https://doi.org/10.1051/ita/2012013).

CONFERENCE
PROCEEDINGS

- [6] Michaël Cadilhac, Guillermo A. Pérez, and Marie van den Bogaard. *The Impatient May Use Limited Optimism to Minimize Regret*. Submitted. 2018. eprint: [arXiv:1811.07146](https://arxiv.org/abs/1811.07146).
- [7] Shaul Almagor, Michaël Cadilhac, Filip Mazowiecki, and Guillermo A. Pérez. “Weak Cost Register Automata Are Still Powerful”. In: *Developments in Language Theory - 22nd International Conference, DLT 2018, Tokyo, Japan, September 10-14, 2018, Proceedings*. Ed. by Mizuho Hoshi and Shinnosuke Seki. Vol. 11088. Lecture Notes in Computer Science. Selected for publication in special issue. Springer, 2018, pp. 83–95. DOI: [10.1007/978-3-319-98654-8_7](https://doi.org/10.1007/978-3-319-98654-8_7).
- [8] Michaël Cadilhac, Olivier Carton, and Charles Paperman. “Continuity and Rational Functions”. In: *44th International Colloquium on Automata, Languages, and Programming, ICALP 2017, July 10-14, 2017, Warsaw, Poland*. Selected for publication in special issue. 2017, 115:1–115:14. DOI: [10.4230/LIPIcs.ICALP.2017.115](https://doi.org/10.4230/LIPIcs.ICALP.2017.115).
- [9] Michaël Cadilhac and Charles Paperman. “A crevice on the Crane Beach: Finite-degree predicates”. In: *32nd Annual ACM/IEEE Symposium on Logic in Computer Science, LICS 2017, Reykjavik, Iceland, June 20-23, 2017*. 2017, pp. 1–9. DOI: [10.1109/LICS.2017.8005148](https://doi.org/10.1109/LICS.2017.8005148).
- [10] 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](https://doi.org/10.1007/978-3-662-53132-7_6).
- [11] 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](https://doi.org/10.1007/978-3-662-48057-1_11).
- [12] 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.
- [13] 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.

- [14] Michaël Cadilhac, Andreas Krebs, and Pierre McKenzie. “The Algebraic Theory of Parikh Automata”. In: *Algebraic Informatics - 5th International Conference, CAI 2013, Porquerolles, France, September 3-6, 2013. Proceedings*. 2013, pp. 60–73. DOI: [10.1007/978-3-642-40663-8_7](https://doi.org/10.1007/978-3-642-40663-8_7).
- [15] 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*. Selected for publication in special issue. 2012, pp. 239–250. DOI: [10.1007/978-3-642-31653-1_22](https://doi.org/10.1007/978-3-642-31653-1_22).
- [16] 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*. Selected for publication in special issue. 2011, pp. 103–119.
- [17] Michaël Cadilhac, Alain Finkel, and Pierre McKenzie. “Bounded Parikh Automata”. In: *Proceedings 8th International Conference Words 2011, Prague, Czech Republic, 12-16th September 2011*. Selected for publication in special issue. 2011, pp. 93–102. DOI: [10.4204/EPTCS.63.13](https://doi.org/10.4204/EPTCS.63.13).
- [18] 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.
- [19] 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 PUBLICATIONS
- [20] 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).
- [21] 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).
- [22] Michaël Cadilhac. “Automata with a semilinear constraint”. PhD thesis. 2013.
- [23] 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).
- [24] 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).
- [25] 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).
- [26] Sebastiaan Terwijn. *Éléments de théorie de la calculabilité*. French translation of *Syllabus Computability Theory* by Michaël Cadilhac. 2008.
- [27] Michaël Cadilhac. *Uniform guided random walks for conformance testing*. Master 2 and ÉPITA report. 2007.
- [28] Michaël Cadilhac. *Cover automata for finite languages, a survey*. Tech. rep. LRDE seminar, Paris, France, 2005.
- [29] Michaël Cadilhac. *Comparative study of programming methods regarding threads in fault-tolerant message passing*. Bachelor’s degree report. 2005.