

Andreas Pavlogiannis

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Post-Doc at LARA, EPFL

Education & Employment

- 2017–current Post-doc, **École polytechnique fédérale de Lausanne (EPFL)**, Switzerland
Group: Lab for Automated Reasoning and Analysis
PI: Viktor Kunčák
- 2012–2017 Doctor of Philosophy, **Institute of Science and Technology Austria**, Austria
Thesis: Algorithmic Advances in Program Analysis and Their Applications.
Advisor: Krishnendu Chatterjee
- 2010–2012 Master of Science in Computer Science, **University of California, Davis**, USA
Thesis: Graph Algorithms for Gene Regulatory Network Minimization, Robustness and Evolvability.
Advisor: Ilias Tagkopoulos
- 2005–2010 Bachelor in Computer Engineering, **University of Patras**, Greece
Thesis: Passively Mobile Communicating Machines that Use Restricted Space.
Advisor: Paul Spirakis

Publications (author order is alphabetical unless * is present, which marks first authorship)

Peer-reviewed Conferences

- [POPL 19] Krishnendu Chatterjee, Amir Kafshdar Goharshady, Nastaran Okati, and Andreas Pavlogiannis. “Efficient Parameterized Algorithms for Data Packing”. In: *PACMPL POPL* (2019). To Appear.
- [POPL 18a] Marek Chalupa, Krishnendu Chatterjee, Andreas Pavlogiannis, Nishant Sinha, and Kapil Vaidya. “Data-centric dynamic partial order reduction”. In: *PACMPL POPL* (2018), 31:1–31:30.
- [POPL 18b] Krishnendu Chatterjee, Bhavya Choudhary, and Andreas Pavlogiannis. “Optimal Dyck reachability for data-dependence and alias analysis”. In: *PACMPL POPL* (2018), 30:1–30:30.
- [ATVA 17] Krishnendu Chatterjee, Amir Kafshdar Goharshady, and Andreas Pavlogiannis. “JTDec: A Tool for Tree Decompositions in Soot”. In: *Automated Technology for Verification and Analysis: 15th International Symposium, ATVA 2017, Pune, India, October 3–6, 2017, Proceedings*. Springer International Publishing, 2017, pp. 59–66.
- [ESOP 17] Krishnendu Chatterjee, Bernhard Kragl, Samarth Mishra, and Andreas Pavlogiannis. “Faster Algorithms for Weighted Recursive State Machines”. In: *Programming Languages and Systems: 26th European Symposium on Programming, ESOP 2017, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2017, Uppsala, Sweden, April 22–29, 2017, Proceedings*. Springer Berlin Heidelberg, 2017, pp. 287–313.

- [POPL 16] Krishnendu Chatterjee, Amir Kafshdar Goharshady, Rasmus Ibsen-Jensen, and Andreas Pavlogiannis. “Algorithms for Algebraic Path Properties in Concurrent Systems of Constant Treewidth Components”. In: *Proceedings of the 43rd Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*. POPL ’16. ACM, 2016, pp. 733–747.
- [ESA 16] Krishnendu Chatterjee, Rasmus Rasmus Ibsen-Jensen, and Andreas Pavlogiannis. “Optimal Reachability and a Space-Time Tradeoff for Distance Queries in Constant-Treewidth Graphs”. In: *24th Annual European Symposium on Algorithms (ESA 2016)*. Leibniz International Proceedings in Informatics (LIPIcs). Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik, 2016, 28:1–28:17.
- [CAV 15] Krishnendu Chatterjee, Rasmus Ibsen-Jensen, and Andreas Pavlogiannis. “Faster Algorithms for Quantitative Verification in Constant Treewidth Graphs”. In: *Computer Aided Verification: 27th International Conference, CAV 2015, San Francisco, CA, USA, July 18–24, 2015, Proceedings, Part I*. Springer International Publishing, 2015, pp. 140–157.
- [POPL 15a] Krishnendu Chatterjee, Rasmus Ibsen-Jensen, Andreas Pavlogiannis, and Prateesh Goyal. “Faster Algorithms for Algebraic Path Properties in Recursive State Machines with Constant Treewidth”. In: *Proceedings of the 42Nd Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*. POPL ’15. ACM, 2015, pp. 97–109.
- [POPL 15b] Krishnendu Chatterjee, Andreas Pavlogiannis, and Yaron Velner. “Quantitative Interprocedural Analysis”. In: *Proceedings of the 42Nd Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*. POPL ’15. ACM, 2015, pp. 539–551.
- [RTSS 14] Krishnendu Chatterjee, Andreas Pavlogiannis, Alexander Köbller, and Ulrich Schmid. “A framework for automated competitive analysis of on-line scheduling of firm-deadline tasks”. In: *Real-Time Systems Symposium (RTSS), 2014 IEEE*. IEEE. 2014, pp. 118–127.
- [FMCAD 13] Krishnendu Chatterjee, Thomas A Henzinger, Jan Otop, and Andreas Pavlogiannis. “Distributed synthesis for LTL fragments”. In: *Formal Methods in Computer-Aided Design (FMCAD), 2013*. IEEE. 2013, pp. 18–25.
- [FOMC 11] Ioannis Chatzigiannakis, Othon Michail, Stavros Nikolaou, Andreas Pavlogiannis, and Paul G Spirakis. “Passively mobile communicating machines that use restricted space”. In: *Proceedings of the 7th ACM SIGACT/SIGMOBILE International Workshop on Foundations of Mobile Computing*. ACM. 2011, pp. 6–15.
- [MFCS 10] Ioannis Chatzigiannakis, Othon Michail, Stavros Nikolaou, Andreas Pavlogiannis, and Paul G Spirakis. “All Symmetric Predicates in NSPACE (n^2) Are Stably Computable by the Mediated Population Protocol Model”. In: *MFCS*. 2010, pp. 270–281.

Peer-reviewed Journals

- [TOPLAS 19] Krishnendu Chatterjee, Prateesh Goyal, Rasmus Ibsen-Jensen, and Andreas Pavlogiannis. “Faster Algorithms for Algebraic Path Properties in Recursive State Machines with Constant Treewidth”. In: *ACM Trans. Program. Lang. Syst.* (2019). Accepted with revisions.
- [COM BIO 19] *Josef Tkadlec, *Andreas Pavlogiannis, Krishnendu Chatterjee, and Martin A. Nowak. “Fixation probability and fixation time in structured populations”. In: *Communications Biology* (2019). To Appear.
- [TOPLAS 18] Krishnendu Chatterjee, Rasmus Ibsen-Jensen, Amir Kafshdar Goharshady, and Andreas Pavlogiannis. “Algorithms for Algebraic Path Properties in Concurrent Systems of Constant Treewidth Components”. In: *ACM Trans. Program. Lang. Syst.* 3 (July 2018), 9:1–9:43.

- [RTS 18] Krishnendu Chatterjee, Andreas Pavlogiannis, Alexander Köbller, and Ulrich Schmid. “Automated Competitive Analysis of Real-time Scheduling with Graphs and Games”. In: *Real-Time Systems* 1 (2018), pp. 166–207.
- [COM BIO 18] *Andreas Pavlogiannis, *Josef Tkadlec, Krishnendu Chatterjee, and Martin A. Nowak. “Construction of arbitrarily strong amplifiers of natural selection using evolutionary graph theory”. In: *Communications Biology* 1 (2018), p. 71.
- [SCI REP 17] *Andreas Pavlogiannis, *Josef Tkadlec, Krishnendu Chatterjee, and Martin A. Nowak. “Amplification on Undirected Population Structures: Comets Beat Stars”. In: *Scientific Reports* 1 (2017), p. 82.
- [SCI REP 15] *Andreas Pavlogiannis, Krishnendu Chatterjee, Ben Adlam, and Martin A. Nowak. “Cellular cooperation with shift updating and repulsion”. In: *Scientific Reports* (Nov. 2015). Article, 17147 EP -.
- [PLOS CB 14] *Krishnendu Chatterjee, Andreas Pavlogiannis, Ben Adlam, and Martin A Nowak. “The time scale of evolutionary innovation”. In: *PLoS computational biology* 9 (2014), e1003818.
- [BMC BIO 13] *Andreas Pavlogiannis, Vadim Mozhayskiy, and Ilias Tagkopoulos. “A flood-based information flow analysis and network minimization method for gene regulatory networks”. In: *BMC Bioinformatics* 1 (2013), p. 137.
- [TCS 11] Ioannis Chatzigiannakis, Othon Michail, Stavros Nikolaou, Andreas Pavlogiannis, and Paul G. Spirakis. “Passively mobile communicating machines that use restricted space”. In: *Theoretical Computer Science* 46 (2011), pp. 6469–6483.

Fellowships & Awards

- 2018 EPFL IC Department Bonus (CHF 2,000)
- 2018-2020 Schrodinger Fellowship (€135,240)
- 2017-2018 EPFL-INRIA Fellowship (CHF 82,517)
- 2011-2012 UC Davis Graduate Scholars Fellowship (\$34,000)
- 2010-2011 Andreas Mentzelopoulos Scholarship (\$5,000)
- 2008 Greek National Scholarships Foundation: Scholarship for academic excellence (€1,467)
- 2008 Greek National Scholarships Foundation: Best student award (department-wide) (€293)
- 2007 Greek National Scholarships Foundation: Scholarship for academic excellence (€1,467)
- 2007 Greek National Scholarships Foundation: Best student award (department-wide) (€293)

Teaching Experience

- IST Austria ’17 Formal Methods
- IST Austria ’13 Formal Methods
- UC Davis ’11 Basic Concepts of Computing
- U of Patras ’10 Distributed Computing

Mentoring Experience

- 2017 Mentoring Viktor Toman, a student intern of Krishnendu Chatterjee, on a project related to concurrency and stateless model checking.
- 2017 Scientific supervision of Bhavya Choudhary, a student intern of Krishnendu Chatterjee, on a project related to data-dependence and alias analysis via bidirected Dyck reachability [POPL 18b].

- 2016-2017 Scientific supervision of Marek Chalupa, a student intern of Krishnendu Chatterjee, on a project related to partial-order reduction techniques for the verification of concurrent programs [POPL 18a].
- 2016 Scientific supervision of Kapil Vaidya, a student intern of Krishnendu Chatterjee, on a project related to partial-order reduction techniques for the verification of concurrent programs [POPL 18a].
- 2016-2017 Mentoring Josef Tkadlec, a Ph.D. student of Krishnendu Chatterjee, on a series of projects related to evolutionary graph theory and evolutionary biology [SCI REP 17; COM BIO 18].
- 2015 Mentoring Bernhard Kragl, a Ph.D. student of Tom Henzinger, on a project related to the quantitative analysis of recursive state machines [ESOP 17].
- 2015 Scientific supervision of Amir Kafshdar Goharshady, Ph.D. student of Krishnendu Chatterjee on a project related to static analysis of concurrent programs [POPL 16].
- 2015 Scientific supervision of Samarth Mishra, a student intern of Krishnendu Chatterjee, on a project related to the quantitative analysis of recursive state machines [ESOP 17].
- 2014 Scientific supervision of Prateesh Goyal, a student intern of Krishnendu Chatterjee, on a project related to the static analysis of recursive state machines [POPL 15].

Service

- (Sub-)Reviewer ICALP '10, DISC '11, ICALP '12, SR '14, CAV '14, MFCS '15, SIROCCO '15, IPL '15, FOSSACS '15, VMCAI '16, TACAS '16, FSTTCS '16, ICALP '16, IPL '16, PLOS CB '16, IPL '17, ICALP '17, CAV '18, EPL '18, FSTTCS '18, IPL '19, ESOP '19
- Organizer MFCS '13

Conference Talks

- July '18 Stateless Model Checking under the Data-centric View. At *FRiDA, FLoC '18*, Oxford, UK.
- January '18 Data-centric Dynamic Partial Order Reduction. At *POPL '18*, Los Angeles, California, USA.
- January '18 Optimal Dyck Reachability for Data-dependence and Alias Analysis. At *POPL '18*, Los Angeles, California, USA.
- August '16 Optimal Reachability and a Space-Time Tradeoff for Distance Queries in Constant-Treewidth Graphs. At *ESA '16*, Aarhus, Denmark.
- January '16 Algorithms for Algebraic Path Properties in Concurrent Systems of Constant Treewidth Components. At *POPL '16*, St. Petersburg, Florida, USA.
- July '15 Faster Algorithms for Quantitative Verification in Constant Treewidth Graphs. At *CAV '15*, San Francisco, California, USA.
- January '15 Faster Algorithms for Algebraic Path Properties in Recursive State Machines with Constant Treewidth. At *POPL '15*, Mumbai, India.
- December '14 A Framework for Automated Competitive Analysis of On-line Scheduling of Firm-Deadline Tasks. At *RTSS '14*, Rome, Italy.
- July '11 Passively mobile communicating machines that use restricted space. At *FCRC '11*, San Jose, California, USA.

Invited Talks

- January '19 Towards Sound and Complete Algorithms for Race Prediction. At the *5th EPFL-INRIA Workshop*, Lausanne, Switzerland.
- December '18 Efficient Parameterized Algorithms for Data Packing. At the *16th Athens Programming Languages Seminar*, Athens, Greece.
- July '18 Stateless Model Checking under the Data-centric View. At *FRiDA, FLoC '18*, Oxford, UK.
- June '18 Algorithmic Advances in Program Analysis and Their Applications. At the *Heinz Zemanek Award, Shortlisted Candidate Presentations*, Vienna, Austria.
- February '18 New Algorithms for Static Analysis via Dyck Reachability. At the *4th EPFL-INRIA Workshop*, Paris, France.
- January '18 Data-centric Dynamic Partial Order Reduction. At the *15th Athens Programming Languages Seminar*, Athens, Greece.
- June '17 Algorithmic Advances in Program Analysis and Their Applications. At *EPFL*, Lausanne, Switzerland
- March '15 Faster Algorithms for Algebraic Path Properties in Recursive State Machines with Constant Treewidth. At the *IST-ERC Workshop*, Vienna, Austria.

References

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