Department of Electrical and Computer Engineering
University of Waterloo
200 University Ave. W., Waterloo, ON, N2L 3G1
Canada
☎ *+1 (519) 888-4567 x36616*
✉ *arie.gurfinkel@uwaterloo.ca*
ece.uwaterloo.ca/~agurfink
office: DC2522

Arie Gurfinkel

Personal Data

Education

2007 **Ph.D., Computer Science**, *University of Toronto*, Toronto.

Dissertation *Model-Checking with Many Values* (Adviser: Prof. M. Chechik)

2003 **M.Sc., Computer Science**, *University of Toronto*, Toronto.

Dissertation *Multi-Valued Symbolic Model-Checking: Fairness, Counter-Examples, Running Time* (Adviser: Prof. M. Chechik)

2000 **B.Sc., Computer Science**, *University of Toronto*, Toronto.

Employment

2022 – Present **Professor**, *Electrical & Computer Engineering, University of Waterloo*, Waterloo.

2016 – 2022 **Associate Professor**, *Electrical & Computer Engineering, University of Waterloo*, Waterloo.

2015 – 2016 **Principal Researcher (MTS A)**, *Software Engineering Institute, Carnegie Mellon University*, Pittsburgh.
Lead research and development in the areas of verification, analysis, and certification of software systems.

2011 – 2015 **Senior Researcher (MTS B)**, *Software Engineering Institute, Carnegie Mellon University*, Pittsburgh.
Develop tools and techniques for verification, analysis, and certification of software systems.

2011 – 2015 **Research Scientist (Assistant Professor)**, *Computer Science Department, Carnegie Mellon University*, Pittsburgh.
Courtesy appointment hosted by Prof. Edmund Clarke.

2006 – 2010 **Researcher (MTS C)**, *Software Engineering Institute, Carnegie Mellon University*, Pittsburgh.
Develop tools and techniques for verification, analysis, and certification of software systems.

Summer 2005 **Intern**, *IBM CAS*, Toronto.
Dynamic and static analysis of webservices, and integration of software model-checker YASM with Eclipse IDE.

Research and Scholarship

Areas of Interest

My main research interests are in the application of automated reasoning for improving quality of software and hardware systems. I am interested in Model Checking, Program Analysis, Abstract Interpretation, Satisfiability Modulo Theory, and Automated Theorem Proving. I am also interested in techniques for improving security of software systems, safety and reliability of Cyber-Physical and Embedded Systems, and evidence-based approaches to Software Certification. I am a lead developer and maintainer of an award-winning Software Model Checker SEAHORN, a hardware Model Checker AVY, and an automated decision procedure for Constrained Horn Clauses SPACER.

Publications

Career Publication Count	
Scholarly books (authored)	0
Scholarly books (edited)	2
Chapters in books	3
Papers in referred journals	17
Papers in refereed conferences	111

In my field of Computer Science, conferences are highly selective archival publication venues. Papers are 15–20 pages, rigorously reviewed by three to four program committee members, followed by discussion, often include author response, and are revised before final publication. Conference acceptance rates are on average between 25%–35%. At the same time, journals are becoming less relevant due to their very long review times (often over a year). The vast majority of my publications are at the top venues for Automated Verification (Computer Aided Verification, Tools and Algorithms for the Construction and Analysis of Systems, and Formal Methods for Computer-Aided Design) and top venues for Program Analysis (Principles of Programming Languages, and Static Analysis Symposium). For all papers that I am involved with, I have contributed to the initial ideas, worked on developing a solution, participated in tool building and experimental validation, and was closely involved in preparing the paper for publication. According to the Computer Science Rankings (`csrankings.org`) my publication record is **first** at the University of Waterloo in the areas of Logic & Verification, Software Engineering, and Programming Languages, and 18th at the university in all of Computer Science.

Articles Submitted

Articles in Refereed Journals

[J1] H. Govind V. K., S. Shoham, and A. Gurfinkel. "Solving constrained Horn clauses modulo algebraic data types and recursive functions". In: *Proc. ACM Program. Lang.* 6.POPL (2022), pp. 1–29.

[J2] S. Priya, X. Zhou, Y. Su, Y. Vizel, Y. Bao, and A. Gurfinkel. "Verifying verified code". In: *Innov. Syst. Softw. Eng.* 18.3 (2022), pp. 335–346.

[J3] N. S. Bjørner and A. Gurfinkel. "Preface of the special issue on the conference on formal methods in computer aided design 2018". In: *Formal Methods Syst. Des.* 57.2 (2021), pp. 119–120.

[J4] A. Komuravelli, A. Gurfinkel, and S. Chaki. "SMT-based model checking for recursive programs". In: *Formal Methods in System Design* 48.3 (2016), pp. 175–205.

[J5] S. Chaki, A. Gurfinkel, and O. Strichman. "Regression verification for multi-threaded programs (with extensions to locks and dynamic thread creation)". In: *Formal Methods in System Design* 47.3 (2015), pp. 287–301.

[J6] A. Gurfinkel, T. Kahsai, and J. A. Navas. "Algorithmic logic-based verification". In: *SIGLOG News* 2.2 (2015), pp. 29–38.

[J7] H. Chockler, A. Gurfinkel, and O. Strichman. "Beyond vacuity: towards the strongest passing formula". In: *Formal Methods in System Design (FMSD)* 43.3 (2013), pp. 552–571.

[J8] N. Ghafari, A. Gurfinkel, N. Klarlund, and R. J. Trefler. "Reachability Problems in Piecewise FIFO Systems". In: *ACM Transactions on Computational Logic (TOCL)* 13.1 (2012), p. 7.

[J9] A. Gurfinkel and M. Chechik. "Robust Vacuity for Branching Temporal Logic". In: *ACM Transactions on Computational Logic (TOCL)* 13.1 (2012), p. 1.

[J10] S. Chaki and A. Gurfinkel. "Automated assume-guarantee reasoning for omega-regular systems and specifications". In: *Innovations in Systems and Software Engineering (ISSE)* 7.2 (2011), pp. 131–139.

[J11] O. Wei, A. Gurfinkel, and M. Chechik. "On the consistency, expressiveness, and precision of partial modeling formalisms". In: *Information and Computation* 209.1 (2011), pp. 20–47.

[J12] A. Gurfinkel and S. Chaki. "Combining predicate and numeric abstraction for software model checking". In: *International Journal on Software Tools for Technology Transfer (STTT)* 12.6 (2010), pp. 409–427.

[J13] J. Simmonds, J. Davies, A. Gurfinkel, and M. Chechik. "Exploiting resolution proofs to speed up LTL vacuity detection for BMC". In: *International Journal on Software Tools for Technology Transfer (STTT)* 12.5 (2010), pp. 319–335.

[J14] M. Chechik and A. Gurfinkel. “A framework for counterexample generation and exploration”. In: *International Journal on Software Tools for Technology Transfer (STTT)* 9.5-6 (2007), pp. 429–445.

[J15] M. Chechik, A. Gurfinkel, B. Devereux, A. Y. C. Lai, and S. M. Easterbrook. “Data structures for symbolic multi-valued model-checking”. In: *Formal Methods in System Design (FMSD)* 29.3 (2006), pp. 295–344.

[J16] M. Chechik, B. Devereux, S. M. Easterbrook, and A. Gurfinkel. “Multi-valued symbolic model-checking”. In: *ACM Transactions Software Engineering and Methodology (TOSEM)* 12.4 (2003), pp. 371–408.

[J17] A. Gurfinkel, M. Chechik, and B. Devereux. “Temporal Logic Query Checking: A Tool for Model Exploration”. In: *IEEE Transactions on Software Engineering (TSE)* 29.10 (2003), pp. 898–914.

Articles in Refereed Conference Proceedings

[C1] H. G. V. K., I. Garcia-Contreras, S. Shoham, and A. Gurfinkel. “Speculative SAT Modulo SAT”. In: *Tools and Algorithms for the Construction and Analysis of Systems - 30th International Conference, TACAS 2024, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2024, Luxembourg City, Luxembourg, April 6-11, 2024, Proceedings, Part I*. Vol. 14570. Lecture Notes in Computer Science. Springer, 2024, pp. 43–60.

[C2] I. Garcia-Contreras, H. G. V. K., S. Shoham, and A. Gurfinkel. “Fast Approximations of Quantifier Elimination”. In: *Computer Aided Verification - 35th International Conference, CAV 2023, Paris, France, July 17-22, 2023, Proceedings, Part II*. Vol. 13965. Lecture Notes in Computer Science. Springer, 2023, pp. 64–86.

[C3] C. Geng, N. Le, X. Xu, Z. Wang, A. Gurfinkel, and X. Si. “Towards Reliable Neural Specifications”. In: *International Conference on Machine Learning, ICML 2023, 23-29 July 2023, Honolulu, Hawaii, USA*. Vol. 202. Proceedings of Machine Learning Research. PMLR, 2023, pp. 11196–11212.

[C4] J. Tafese, I. Garcia-Contreras, and A. Gurfinkel. “BTOR2MLIR: A Format and Toolchain for Hardware Verification”. In: *Formal Methods in Computer-Aided Design, FMCAD 2023, Ames, IA, USA, October 24-27, 2023*. IEEE, 2023, pp. 55–63.

[C5] I. Garcia-Contreras, A. Gurfinkel, and J. A. Navas. “Efficient Modular SMT-Based Model Checking of Pointer Programs”. In: *Static Analysis - 29th International Symposium, SAS 2022, Auckland, New Zealand, December 5-7, 2022, Proceedings*. Vol. 13790. Lecture Notes in Computer Science. Springer, 2022, pp. 227–246.

[C6] A. Gurfinkel. “Program Verification with Constrained Horn Clauses (Invited Paper)”. In: *Computer Aided Verification - 34th International Conference, CAV 2022, Haifa, Israel, August 7-10, 2022, Proceedings, Part I*. Vol. 13371. Lecture Notes in Computer Science. Springer, 2022, pp. 19–29.

[C7] S. Priya, Y. Su, Y. Bao, X. Zhou, Y. Vizel, and A. Gurfinkel. “Bounded Model Checking for LLVM”. In: *22nd Formal Methods in Computer-Aided Design, FMCAD 2022, Trento, Italy, October 17-21, 2022*. IEEE, 2022, pp. 214–224.

[C8] S. Wesley, M. Christakis, J. A. Navas, R. J. Trefler, V. Wüstholz, and A. Gurfinkel. “Verifying Solidity Smart Contracts via Communication Abstraction in SmartACE”. In: *Verification, Model Checking, and Abstract Interpretation - 23rd International Conference, VMCAI 2022, Philadelphia, PA, USA, January 16-18, 2022, Proceedings*. Vol. 13182. Lecture Notes in Computer Science. Springer, 2022, pp. 425–449.

[C9] R. Dureja, A. Gurfinkel, A. Ivrii, and Y. Vizel. “IC3 with Internal Signals”. In: *Formal Methods in Computer Aided Design, FMCAD 2021, New Haven, CT, USA, October 19-22, 2021*. IEEE, 2021, pp. 63–71.

[C10] H. Govind V. K., S. Shoham, and A. Gurfinkel. “Logical Characterization of Coherent Uninterpreted Programs”. In: *Formal Methods in Computer Aided Design, FMCAD 2021, New Haven, CT, USA, October 19-22, 2021*. IEEE, 2021, pp. 77–85.

[C11] A. Gurfinkel and J. A. Navas. “Abstract Interpretation of LLVM with a Region-Based Memory Model”. In: *Software Verification - 13th International Conference, VSTTE 2021, New Haven, CT, USA, October 18-19, 2021, and 14th International Workshop, NSV 2021, Los Angeles, CA, USA, July 18-19, 2021, Revised Selected Papers*. Vol. 13124. Lecture Notes in Computer Science. Springer, 2021, pp. 122–144.

[C12] N. Le, X. Si, and A. Gurfinkel. “Data-driven Optimization of Inductive Generalization”. In: *Formal Methods in Computer Aided Design, FMCAD 2021, New Haven, CT, USA, October 19-22, 2021*. IEEE, 2021, pp. 86–95.

[C13] S. Priya, X. Zhou, Y. Su, Y. Vizel, Y. Bao, and A. Gurfinkel. “Verifying Verified Code”. In: *Automated Technology for Verification and Analysis - 19th International Symposium, ATVA 2021, Gold Coast, QLD, Australia, October 18-22, 2021, Proceedings*. Vol. 12971. Lecture Notes in Computer Science. Springer, 2021, pp. 187–202.

[C14] S. Wesley, M. Christakis, J. A. Navas, R. J. Trefler, V. Wüstholz, and A. Gurfinkel. “Compositional Verification of Smart Contracts Through Communication Abstraction”. In: *Static Analysis - 28th International Symposium, SAS 2021, Chicago, IL, USA, October 17-19, 2021, Proceedings*. Vol. 12913. Lecture Notes in Computer Science. Springer, 2021, pp. 429–452.

[C15] H. Govind V. K., Y. Chen, S. Shoham, and A. Gurfinkel. "Global Guidance for Local Generalization in Model Checking". In: *Computer Aided Verification - 32nd International Conference, CAV 2020, Los Angeles, CA, USA, July 21-24, 2020, Proceedings, Part II*. Vol. 12225. Lecture Notes in Computer Science. Springer, 2020, pp. 101–125.

[C16] H. Govind V. K., G. Fedyukovich, and A. Gurfinkel. "Word Level Property Directed Reachability". In: *IEEE/ACM International Conference On Computer Aided Design, ICCAD 2020, San Diego, CA, USA, November 2-5, 2020*. IEEE, 2020, 107:1–107:9.

[C17] H. Zhang, M. Shinn, A. Gupta, A. Gurfinkel, N. Le, and N. Narodytska. "Verification of Recurrent Neural Networks for Cognitive Tasks via Reachability Analysis". In: *ECAI 2020 - 24th European Conference on Artificial Intelligence, 29 August-8 September 2020, Santiago de Compostela, Spain, August 29 - September 8, 2020 - Including 10th Conference on Prestigious Applications of Artificial Intelligence (PAIS 2020)*. Vol. 325. Frontiers in Artificial Intelligence and Applications. IOS Press, 2020, pp. 1690–1697.

[C18] R. Ashmore, A. Gurfinkel, and R. J. Trefler. "Local Reasoning for Parameterized First Order Protocols". In: *NASA Formal Methods - 11th International Symposium, NFM 2019, Houston, TX, USA, May 7-9, 2019, Proceedings*. Vol. 11460. Lecture Notes in Computer Science. Springer, 2019, pp. 36–53.

[C19] G. Fedyukovich, A. Gurfinkel, and A. Gupta. "Lazy but Effective Functional Synthesis". In: *Verification, Model Checking, and Abstract Interpretation - 20th International Conference, VMCAI 2019, Cascais, Portugal, January 13-15, 2019, Proceedings*. Vol. 11388. Lecture Notes in Computer Science. Springer, 2019, pp. 92–113.

[C20] E. Gershuni, N. Amit, A. Gurfinkel, N. Narodytska, J. A. Navas, N. Rinetzky, L. Ryzhyk, and M. Sagiv. "Simple and precise static analysis of untrusted Linux kernel extensions". In: *Proceedings of the 40th ACM SIGPLAN Conference on Programming Language Design and Implementation, PLDI 2019, Phoenix, AZ, USA, June 22-26, 2019*. ACM, 2019, pp. 1069–1084.

[C21] H. Govind V. K., Y. Vizel, V. Ganesh, and A. Gurfinkel. "Interpolating Strong Induction". In: *Computer Aided Verification - 31st International Conference, CAV 2019, New York City, NY, USA, July 15-18, 2019, Proceedings, Part II*. Vol. 11562. Lecture Notes in Computer Science. Springer, 2019, pp. 367–385.

[C22] A. Gurfinkel and N. Bjørner. "The Science, Art, and Magic of Constrained Horn Clauses". In: *21st International Symposium on Symbolic and Numeric Algorithms for Scientific Computing, SYNASC 2019, Timisoara, Romania, September 4-7, 2019*. IEEE, 2019, pp. 6–10.

[C23] J. Kuderski, J. A. Navas, and A. Gurfinkel. "Unification-based Pointer Analysis without Oversharing". In: *2019 Formal Methods in Computer Aided Design, FMCAD 2019, San Jose, CA, USA, October 22-25, 2019*. IEEE, 2019, pp. 37–45.

[C24] R. Shemer, A. Gurfinkel, S. Shoham, and Y. Vizel. "Property Directed Self Composition". In: *Computer Aided Verification - 31st International Conference, CAV 2019, New York City, NY, USA, July 15-18, 2019, Proceedings, Part I*. Vol. 11561. Lecture Notes in Computer Science. Springer, 2019, pp. 161–179.

[C25] R. Babaee, A. Gurfinkel, and S. Fischmeister. "Predictive Run-Time Verification of Discrete-Time Reachability Properties in Black-Box Systems Using Trace-Level Abstraction and Statistical Learning". In: *Runtime Verification - 18th International Conference, RV 2018, Limassol, Cyprus, November 10-13, 2018, Proceedings*. Vol. 11237. Lecture Notes in Computer Science. Springer, 2018, pp. 187–204.

[C26] R. Babaee, A. Gurfinkel, and S. Fischmeister. "*P*revent : A Predictive Run-Time Verification Framework Using Statistical Learning". In: *Software Engineering and Formal Methods - 16th International Conference, SEFM 2018, Held as Part of STAF 2018, Toulouse, France, June 27-29, 2018, Proceedings*. Vol. 10886. Lecture Notes in Computer Science. Springer, 2018, pp. 205–220.

[C27] J. Gennari, A. Gurfinkel, T. Kahsai, J. A. Navas, and E. J. Schwartz. "Executable Counterexamples in Software Model Checking". In: *Verified Software. Theories, Tools, and Experiments - 10th International Conference, VSTTE 2018, Oxford, UK, July 18-19, 2018, Revised Selected Papers*. Vol. 11294. Lecture Notes in Computer Science. Springer, 2018, pp. 17–37.

[C28] A. Gurfinkel, S. Shoham, and Y. Vizel. "Quantifiers on Demand". In: *Automated Technology for Verification and Analysis - 16th International Symposium, ATVA 2018, Los Angeles, CA, USA, October 7-10, 2018, Proceedings*. Vol. 11138. Lecture Notes in Computer Science. Springer, 2018, pp. 248–266.

[C29] A. Katis, G. Fedyukovich, H. Guo, A. Gacek, J. Backes, A. Gurfinkel, and M. W. Whalen. "Validity-Guided Synthesis of Reactive Systems from Assume-Guarantee Contracts". In: *Tools and Algorithms for the Construction and Analysis of Systems - 24th International Conference, TACAS 2018, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2018, Thessaloniki, Greece, April 14-20, 2018, Proceedings, Part II*. Vol. 10806. Lecture Notes in Computer Science. Springer, 2018, pp. 176–193.

[C30] H. Bourbouh, P.-L. Garoche, C. Garion, A. Gurfinkel, T. Kahsai, and X. Thirioux. "Automated analysis of Stateflow models". In: *LPAR-21, 21st International Conference on Logic for Programming, Artificial Intelligence and Reasoning, Maun, Botswana, May 7-12, 2017*. Vol. 46. EPiC Series in Computing. EasyChair, 2017, pp. 144–161.

[C31] A. Gurfinkel and A. Ivrii. "K-induction without unrolling". In: *2017 Formal Methods in Computer Aided Design, FMCAD 2017, Vienna, Austria, October 2-6, 2017*. IEEE, 2017, pp. 148–155.

[C32] A. Gurfinkel and J. A. Navas. “A Context-Sensitive Memory Model for Verification of C/C++ Programs”. In: *Static Analysis - 24th International Symposium, SAS 2017, New York, NY, USA, August 30 - September 1, 2017, Proceedings*. Vol. 10422. Lecture Notes in Computer Science. Springer, 2017, pp. 148–168.

[C33] M. Marescotti, A. Gurfinkel, A. E. J. Hyvärinen, and N. Sharygina. “Designing parallel PDR”. In: *2017 Formal Methods in Computer Aided Design, FMCAD 2017, Vienna, Austria, October 2-6, 2017*. IEEE, 2017, pp. 156–163.

[C34] Y. Vizel, A. Gurfinkel, S. Shoham, and S. Malik. “IC3 - Flipping the E in ICE”. In: *Verification, Model Checking, and Abstract Interpretation - 18th International Conference, VMCAI 2017, Paris, France, January 15-17, 2017, Proceedings*. Vol. 10145. Lecture Notes in Computer Science. Springer, 2017, pp. 521–538.

[C35] A. Albarghouthi, I. Dillig, and A. Gurfinkel. “Maximal specification synthesis”. In: *Proceedings of the 43rd Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages, POPL 2016, St. Petersburg, FL, USA, January 20 - 22, 2016*. ACM, 2016, pp. 789–801.

[C36] A. Champion, A. Gurfinkel, T. Kahsai, and C. Tinelli. “CoCoSpec: A Mode-Aware Contract Language for Reactive Systems”. In: *Software Engineering and Formal Methods - 14th International Conference, SEFM 2016, Held as Part of STAF 2016, Vienna, Austria, July 4-8, 2016, Proceedings*. Vol. 9763. Lecture Notes in Computer Science. Springer, 2016, pp. 347–366.

[C37] G. Fedyukovich, A. Gurfinkel, and N. Sharygina. “Property Directed Equivalence via Abstract Simulation”. In: *Computer Aided Verification - 28th International Conference, CAV 2016, Toronto, ON, Canada, July 17-23, 2016, Proceedings, Part II*. Vol. 9780. Lecture Notes in Computer Science. Springer, 2016, pp. 433–453.

[C38] A. Gurfinkel, S. Shoham, and Y. Meshman. “SMT-based Verification of Parameterized Systems”. In: *Proceedings of the 2016 24th ACM SIGSOFT International Symposium on Foundations of Software Engineering*. FSE 2016. Seattle, WA, USA: ACM, 2016, pp. 338–348.

[C39] C. Urban, A. Gurfinkel, and T. Kahsai. “Synthesizing Ranking Functions from Bits and Pieces”. In: *Tools and Algorithms for the Construction and Analysis of Systems - 22nd International Conference, TACAS 2016, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2016, Eindhoven, The Netherlands, April 2-8, 2016, Proceedings*. Vol. 9636. Lecture Notes in Computer Science. Springer, 2016, pp. 54–70.

[C40] N. Bjørner and A. Gurfinkel. “Property Directed Polyhedral Abstraction”. In: *Verification, Model Checking, and Abstract Interpretation - 16th International Conference, VMCAI 2015, Mumbai, India, January 12-14, 2015. Proceedings*. Vol. 8931. Lecture Notes in Computer Science. Springer, 2015, pp. 263–281.

[C41] N. Bjørner, A. Gurfinkel, K. L. McMillan, and A. Rybalchenko. “Horn Clause Solvers for Program Verification”. In: *Fields of Logic and Computation II - Essays Dedicated to Yuri Gurevich on the Occasion of His 75th Birthday*. Vol. 9300. Lecture Notes in Computer Science. Springer, 2015, pp. 24–51.

[C42] G. Fedyukovich, A. Gurfinkel, and N. Sharygina. “Automated Discovery of Simulation Between Programs”. In: *Logic for Programming, Artificial Intelligence, and Reasoning - 20th International Conference, LPAR-20 2015, Suva, Fiji, November 24-28, 2015, Proceedings*. Vol. 9450. Lecture Notes in Computer Science. Springer, 2015, pp. 606–621.

[C43] A. Gurfinkel and A. Ivrii. “Pushing To The Top”. In: *Formal Methods in Computer-Aided Design, FMCAD 2015, Austin, Texas, September, 2015*. IEEE, 2015.

[C44] A. Gurfinkel, T. Kahsai, A. Komuravelli, and J. A. Navas. “The SeaHorn Verification Framework”. In: *Computer Aided Verification - 27th International Conference, CAV 2015, San Francisco, CA, USA, July 18-24, 2015, Proceedings, Part I*. Vol. 9206. Lecture Notes in Computer Science. Springer, 2015, pp. 343–361.

[C45] A. Gurfinkel, T. Kahsai, and J. A. Navas. “SeaHorn: A Framework for Verifying C Programs (Competition Contribution)”. In: *Tools and Algorithms for the Construction and Analysis of Systems - 21st International Conference, TACAS 2015, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2015, London, UK, April 11-18, 2015. Proceedings*. Vol. 9035. Lecture Notes in Computer Science. Springer, 2015, pp. 447–450.

[C46] A. Komuravelli, N. Bjørner, A. Gurfinkel, and K. L. McMillan. “Compositional Verification of Procedural Programs using Horn Clauses over Integers and Arrays”. In: *Formal Methods in Computer-Aided Design, FMCAD 2015, Austin, Texas, September, 2015*. IEEE, 2015.

[C47] Y. Vizel, A. Gurfinkel, and S. Malik. “Fast Interpolating BMC”. In: *Computer Aided Verification - 27th International Conference, CAV 2015, San Francisco, CA, USA, July 18-24, 2015, Proceedings, Part I*. Vol. 9206. Lecture Notes in Computer Science. Springer, 2015, pp. 641–657.

[C48] S. Chaki, A. Gurfinkel, and N. Sinha. “Efficient verification of periodic programs using sequential consistency and snapshots”. In: *Formal Methods in Computer-Aided Design, FMCAD 2014, Lausanne, Switzerland, October 21-24, 2014*. IEEE, 2014, pp. 51–58.

[C49] G. Fedyukovich, A. Gurfinkel, and N. Sharygina. “Incremental Verification of Compiler Optimizations”. In: *NASA Formal Methods - 6th International Symposium, NFM 2014, Houston, TX, USA, April 29 - May 1, 2014. Proceedings*. Vol. 8430. Lecture Notes in Computer Science. Springer, 2014, pp. 300–306.

[C50] P.-L. Garoche, A. Gurfinkel, and T. Kahsai. “Synthesizing Modular Invariants for Synchronous Code”. In: *Proceedings First Workshop on Horn Clauses for Verification and Synthesis, HCVS 2014, Vienna, Austria, 17 July 2014*. Vol. 169. EPTCS. 2014, pp. 19–30.

[C51] A. Gurfinkel and A. Belov. “FrankenBit: Bit-Precise Verification with Many Bits - (Competition Contribution)”. In: *Tools and Algorithms for the Construction and Analysis of Systems - 20th International Conference, TACAS 2014, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2014, Grenoble, France, April 5-13, 2014. Proceedings*. Vol. 8413. Lecture Notes in Computer Science. Springer, 2014, pp. 408–411.

[C52] A. Gurfinkel, A. Belov, and J. Marques-Silva. “Synthesizing Safe Bit-Precise Invariants”. In: *Tools and Algorithms for the Construction and Analysis of Systems - 20th International Conference, TACAS 2014, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2014, Grenoble, France, April 5-13, 2014. Proceedings*. Vol. 8413. Lecture Notes in Computer Science. Springer, 2014, pp. 93–108.

[C53] A. Gurfinkel and Y. Vizel. “DRUPing for interpolates”. In: *Formal Methods in Computer-Aided Design, FMCAD 2014, Lausanne, Switzerland, October 21-24, 2014*. IEEE, 2014, pp. 99–106.

[C54] A. Ivrii, A. Gurfinkel, and A. Belov. “Small inductive safe invariants”. In: *Formal Methods in Computer-Aided Design, FMCAD 2014, Lausanne, Switzerland, October 21-24, 2014*. IEEE, 2014, pp. 115–122.

[C55] W. Jin, C. Cohen, J. Gennari, C. Hines, S. Chaki, A. Gurfinkel, J. Havrilla, and P. Narasimhan. “Recovering C++ Objects From Binaries Using Inter-Procedural Data-Flow Analysis”. In: *Proceedings of the 3rd ACM SIGPLAN Program Protection and Reverse Engineering Workshop 2014, PPREW 2014, January 25, 2014, San Diego, CA*. ACM, 2014, 1:1–1:11.

[C56] A. Komuravelli, A. Gurfinkel, and S. Chaki. “SMT-Based Model Checking for Recursive Programs”. In: *Computer Aided Verification - 26th International Conference, CAV 2014, Held as Part of the Vienna Summer of Logic, VSL 2014, Vienna, Austria, July 18-22, 2014. Proceedings*. Vol. 8559. Lecture Notes in Computer Science. Springer, 2014, pp. 17–34.

[C57] Y. Li, A. Albarghouthi, Z. Kincaid, A. Gurfinkel, and M. Chechik. “Symbolic optimization with SMT solvers”. In: *The 41st Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages, POPL ’14, San Diego, CA, USA, January 20-21, 2014*. ACM, 2014, pp. 607–618.

[C58] Y. Vizel and A. Gurfinkel. “Interpolating Property Directed Reachability”. In: *Computer Aided Verification - 26th International Conference, CAV 2014, Held as Part of the Vienna Summer of Logic, VSL 2014, Vienna, Austria, July 18-22, 2014. Proceedings*. Vol. 8559. Lecture Notes in Computer Science. Springer, 2014, pp. 260–276.

[C59] A. Albarghouthi, A. Gurfinkel, Y. Li, S. Chaki, and M. Chechik. "UFO: Verification with Interpolants and Abstract Interpretation - (Competition Contribution)". In: *Tools and Algorithms for the Construction and Analysis of Systems - 19th International Conference, TACAS 2013, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2013, Rome, Italy, March 16-24, 2013. Proceedings*. Vol. 7795. Lecture Notes in Computer Science. Springer, 2013, pp. 637–640.

[C60] N. Bjørner, A. Gurfinkel, K. Korovin, and O. Lahav. "Instantiations, Zippers and EPR Interpolation". In: *LPAR 2013, 19th International Conference on Logic for Programming, Artificial Intelligence and Reasoning, December 12-17, 2013, Stellenbosch, South Africa, Short papers proceedings*. Vol. 26. EPiC Series. EasyChair, 2013, pp. 35–41.

[C61] S. Chaki, A. Gurfinkel, S. Kong, and O. Strichman. "Compositional Sequentialization of Periodic Programs". In: *Verification, Model Checking, and Abstract Interpretation, 14th International Conference, VMCAI 2013, Rome, Italy, January 20-22, 2013. Proceedings*. Vol. 7737. Lecture Notes in Computer Science. Springer, 2013, pp. 536–554.

[C62] S. Chaki, A. Gurfinkel, and O. Strichman. "Verifying periodic programs with priority inheritance locks". In: *Formal Methods in Computer-Aided Design, FMCAD 2013, Portland, OR, USA, October 20-23, 2013*. IEEE, 2013, pp. 137–144.

[C63] A. Gurfinkel, S. F. Rollini, and N. Sharygina. "Interpolation Properties and SAT-Based Model Checking". In: *Automated Technology for Verification and Analysis - 11th International Symposium, ATVA 2013, Hanoi, Vietnam, October 15-18, 2013. Proceedings*. Vol. 8172. Lecture Notes in Computer Science. Springer, 2013, pp. 255–271.

[C64] A. Komuravelli, A. Gurfinkel, S. Chaki, and E. M. Clarke. "Automatic Abstraction in SMT-Based Unbounded Software Model Checking". In: *Computer Aided Verification - 25th International Conference, CAV 2013, Saint Petersburg, Russia, July 13-19, 2013. Proceedings*. Vol. 8044. Lecture Notes in Computer Science. Springer, 2013, pp. 846–862.

[C65] S. Sapra, M. Minea, S. Chaki, A. Gurfinkel, and E. M. Clarke. "Finding Errors in Python Programs Using Dynamic Symbolic Execution". In: *Testing Software and Systems - 25th IFIP WG 6.1 International Conference, ICTSS 2013, Istanbul, Turkey, November 13-15, 2013, Proceedings*. Vol. 8254. Lecture Notes in Computer Science. Springer, 2013, pp. 283–289.

[C66] A. Albarghouthi, A. Gurfinkel, and M. Chechik. "Craig Interpretation". In: *Static Analysis - 19th International Symposium, SAS 2012, Deauville, France, September 11-13, 2012. Proceedings*. Vol. 7460. Lecture Notes in Computer Science. Springer, 2012, pp. 300–316.

[C67] A. Albarghouthi, A. Gurfinkel, and M. Chechik. "From Under-Approximations to Over-Approximations and Back". In: *Tools and Algorithms for the Construction and Analysis of Systems - 18th International Conference, TACAS 2012, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2012, Tallinn, Estonia, March 24 - April 1, 2012. Proceedings*. Vol. 7214. Lecture Notes in Computer Science. Springer, 2012, pp. 157–172.

[C68] A. Albarghouthi, A. Gurfinkel, and M. Chechik. "Whale: An Interpolation-Based Algorithm for Inter-procedural Verification". In: *Verification, Model Checking, and Abstract Interpretation - 13th International Conference, VMCAI 2012, Philadelphia, PA, USA, January 22-24, 2012. Proceedings*. Vol. 7148. Lecture Notes in Computer Science. Springer, 2012, pp. 39–55.

[C69] A. Albarghouthi, Y. Li, A. Gurfinkel, and M. Chechik. "Ufo: A Framework for Abstraction- and Interpolation-Based Software Verification". In: *Computer Aided Verification - 24th International Conference, CAV 2012, Berkeley, CA, USA, July 7-13, 2012 Proceedings*. Vol. 7358. Lecture Notes in Computer Science. Springer, 2012, pp. 672–678.

[C70] S. Chaki, A. Gurfinkel, and O. Strichman. "Regression Verification for Multi-threaded Programs". In: *Verification, Model Checking, and Abstract Interpretation - 13th International Conference, VMCAI 2012, Philadelphia, PA, USA, January 22-24, 2012. Proceedings*. Vol. 7148. Lecture Notes in Computer Science. Springer, 2012, pp. 119–135.

[C71] W. Jin, S. Chaki, C. Cohen, A. Gurfinkel, J. Havrilla, C. Hines, and P. Narasimhan. "Binary Function Clustering Using Semantic Hashes". In: *11th International Conference on Machine Learning and Applications, ICMLA, Boca Raton, FL, USA, December 12-15, 2012. Volume 1*. IEEE, 2012, pp. 386–391.

[C72] S. Ben-David, M. Chechik, A. Gurfinkel, and S. Uchitel. "CSSL: a logic for specifying conditional scenarios". In: *SIGSOFT/FSE'11 19th ACM SIGSOFT Symposium on the Foundations of Software Engineering (FSE-19) and ESEC'11: 13rd European Software Engineering Conference (ESEC-13), Szeged, Hungary, September 5-9, 2011*. ACM, 2011, pp. 37–47.

[C73] S. Chaki, C. Cohen, and A. Gurfinkel. "Supervised learning for provenance-similarity of binaries". In: *Proceedings of the 17th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, San Diego, CA, USA, August 21-24, 2011*. ACM, 2011, pp. 15–23.

[C74] S. Chaki, A. Gurfinkel, and O. Strichman. "Time-bounded analysis of real-time systems". In: *International Conference on Formal Methods in Computer-Aided Design, FMCAD '11, Austin, TX, USA, October 30 - November 02, 2011*. FMCAD Inc., 2011, pp. 72–80.

[C75] A. Gurfinkel, S. Chaki, and S. Sapra. “Efficient Predicate Abstraction of Program Summaries”. In: *NASA Formal Methods - Third International Symposium, NFM 2011, Pasadena, CA, USA, April 18-20, 2011. Proceedings*. Vol. 6617. Lecture Notes in Computer Science. Springer, 2011, pp. 131–145.

[C76] A. Albarghouthi, A. Gurfinkel, O. Wei, and M. Chechik. “Abstract Analysis of Symbolic Executions”. In: *Computer Aided Verification, 22nd International Conference, CAV 2010, Edinburgh, UK, July 15-19, 2010. Proceedings*. Vol. 6174. Lecture Notes in Computer Science. Springer, 2010, pp. 495–510.

[C77] S. Chaki and A. Gurfinkel. “Automated Assume-Guarantee Reasoning for Omega-Regular Systems and Specifications”. In: *Second NASA Formal Methods Symposium - NFM 2010, Washington D.C., USA, April 13-15, 2010. Proceedings*. Vol. NASA/CP-2010-216215. NASA Conference Proceedings. 2010, pp. 57–66.

[C78] H. Chockler, A. Gurfinkel, and O. Strichman. “Variants of LTL Query Checking”. In: *Hardware and Software: Verification and Testing - 6th International Haifa Verification Conference, HVC 2010, Haifa, Israel, October 4-7, 2010. Revised Selected Papers*. Vol. 6504. Lecture Notes in Computer Science. Springer, 2010, pp. 76–92.

[C79] A. Gurfinkel and S. Chaki. “Boxes: A Symbolic Abstract Domain of Boxes”. In: *Static Analysis - 17th International Symposium, SAS 2010, Perpignan, France, September 14-16, 2010. Proceedings*. Vol. 6337. Lecture Notes in Computer Science. Springer, 2010, pp. 287–303.

[C80] I. Ozkaya, J. A. D. Pace, A. Gurfinkel, and S. Chaki. “Using Architecturally Significant Requirements for Guiding System Evolution”. In: *14th European Conference on Software Maintenance and Reengineering, CSMR 2010, 15-18 March 2010, Madrid, Spain*. IEEE Computer Society, 2010, pp. 127–136.

[C81] S. Chaki, A. Gurfinkel, and O. Strichman. “Decision diagrams for linear arithmetic”. In: *Proceedings of 9th International Conference on Formal Methods in Computer-Aided Design, FMCAD 2009, 15-18 November 2009, Austin, Texas, USA*. IEEE, 2009, pp. 53–60.

[C82] S. Chaki, J. A. D. Pace, D. Garlan, A. Gurfinkel, and I. Ozkaya. “Towards engineered architecture evolution”. In: *ICSE Workshop on Modeling in Software Engineering, MiSE 2009, Vancouver, BC, Canada, May 17-18, 2009*. IEEE Computer Society, 2009, pp. 1–6.

[C83] N. Ghafari, A. Gurfinkel, and R. J. Trefler. “Verification of Parameterized Systems with Combinations of Abstract Domains”. In: *Formal Techniques for Distributed Systems, Joint 11th IFIP WG 6.1 International Conference FMOODS 2009 and 29th IFIP WG 6.1 International Conference FORTE 2009, Lisboa, Portugal, June 9-12, 2009. Proceedings*. Vol. 5522. Lecture Notes in Computer Science. Springer, 2009, pp. 57–72.

[C84] O. Wei, A. Gurfinkel, and M. Chechik. “Mixed Transition Systems Revisited”. In: *Verification, Model Checking, and Abstract Interpretation, 10th International Conference, VMCAI 2009, Savannah, GA, USA, January 18-20, 2009. Proceedings*. Vol. 5403. Lecture Notes in Computer Science. Springer, 2009, pp. 349–365.

[C85] H. Chockler, A. Gurfinkel, and O. Strichman. “Beyond Vacuity: Towards the Strongest Passing Formula”. In: *Formal Methods in Computer-Aided Design, FMCAD 2008, Portland, Oregon, USA, 17-20 November 2008*. IEEE, 2008, pp. 1–8.

[C86] A. Gurfinkel and S. Chaki. “Combining Predicate and Numeric Abstraction for Software Model Checking”. In: *Formal Methods in Computer-Aided Design, FMCAD 2008, Portland, Oregon, USA, 17-20 November 2008*. IEEE, 2008, pp. 1–9.

[C87] A. Gurfinkel, O. Wei, and M. Chechik. “Model Checking Recursive Programs with Exact Predicate Abstraction”. In: *Automated Technology for Verification and Analysis, 6th International Symposium, ATVA 2008, Seoul, Korea, October 20-23, 2008. Proceedings*. Vol. 5311. Lecture Notes in Computer Science. Springer, 2008, pp. 95–110.

[C88] T. E. Hart, K. Ku, A. Gurfinkel, M. Chechik, and D. Lie. “Augmenting Counterexample-Guided Abstraction Refinement with Proof Templates”. In: *23rd IEEE/ACM International Conference on Automated Software Engineering (ASE 2008), 15-19 September 2008, L’Aquila, Italy*. IEEE Computer Society, 2008, pp. 387–390.

[C89] T. E. Hart, K. Ku, A. Gurfinkel, M. Chechik, and D. Lie. “PtYasm: Software Model Checking with Proof Templates”. In: *23rd IEEE/ACM International Conference on Automated Software Engineering (ASE 2008), 15-19 September 2008, L’Aquila, Italy*. IEEE Computer Society, 2008, pp. 479–480.

[C90] M. Chechik, M. Gheorghiu, and A. Gurfinkel. “Finding Environment Guarantees”. In: *Fundamental Approaches to Software Engineering, 10th International Conference, FASE 2007, Held as Part of the Joint European Conferences, on Theory and Practice of Software, ETAPS 2007, Braga, Portugal, March 24 - April 1, 2007, Proceedings*. Vol. 4422. Lecture Notes in Computer Science. Springer, 2007, pp. 352–367.

[C91] N. Ghafari, A. Gurfinkel, N. Klarlund, and R. J. Trefler. “Algorithmic Analysis of Piecewise FIFO Systems”. In: *Formal Methods in Computer-Aided Design, 7th International Conference, FMCAD 2007, Austin, Texas, USA, November 11-14, 2007, Proceedings*. IEEE Computer Society, 2007, pp. 45–52.

[C92] M. Gheorghiu, A. Gurfinkel, and M. Chechik. “Finding State Solutions to Temporal Logic Queries”. In: *Integrated Formal Methods, 6th International Conference, IFM 2007, Oxford, UK, July 2-5, 2007, Proceedings*. Vol. 4591. Lecture Notes in Computer Science. Springer, 2007, pp. 273–292.

[C93] J. Simmonds, J. Davies, A. Gurfinkel, and M. Chechik. "Exploiting Resolution Proofs to Speed Up LTL Vacuity Detection for BMC". In: *Formal Methods in Computer-Aided Design, 7th International Conference, FMCAD 2007, Austin, Texas, USA, November 11-14, 2007, Proceedings*. IEEE Computer Society, 2007, pp. 3–12.

[C94] A. Gurfinkel and M. Chechik. "Why Waste a Perfectly Good Abstraction?" In: *Tools and Algorithms for the Construction and Analysis of Systems, 12th International Conference, TACAS 2006 Held as Part of the Joint European Conferences on Theory and Practice of Software, ETAPS 2006, Vienna, Austria, March 25 - April 2, 2006, Proceedings*. Vol. 3920. Lecture Notes in Computer Science. Springer, 2006, pp. 212–226.

[C95] A. Gurfinkel, O. Wei, and M. Chechik. "Systematic Construction of Abstractions for Model-Checking". In: *Verification, Model Checking, and Abstract Interpretation, 7th International Conference, VMCAI 2006, Charleston, SC, USA, January 8-10, 2006, Proceedings*. Vol. 3855. Lecture Notes in Computer Science. Springer, 2006, pp. 381–397.

[C96] A. Gurfinkel, O. Wei, and M. Chechik. "Yasm: A Software Model-Checker for Verification and Refutation". In: *Computer Aided Verification, 18th International Conference, CAV 2006, Seattle, WA, USA, August 17-20, 2006, Proceedings*. Vol. 4144. Lecture Notes in Computer Science. Springer, 2006, pp. 170–174.

[C97] M. Chechik and A. Gurfinkel. "A Framework for Counterexample Generation and Exploration". In: *Fundamental Approaches to Software Engineering, 8th International Conference, FASE 2005, Held as Part of the Joint European Conferences on Theory and Practice of Software, ETAPS 2005, Edinburgh, UK, April 4-8, 2005, Proceedings*. Vol. 3442. Lecture Notes in Computer Science. Springer, 2005, pp. 220–236.

[C98] M. Chechik and A. Gurfinkel. "Model-Checking Software Using Precise Abstractions". In: *Verified Software: Theories, Tools, Experiments, First IFIP TC 2/WG 2.3 Conference, VSTTE 2005, Zurich, Switzerland, October 10-13, 2005, Revised Selected Papers and Discussions*. Vol. 4171. Lecture Notes in Computer Science. Springer, 2005, pp. 347–353.

[C99] A. Gurfinkel and M. Chechik. "How Thorough Is Thorough Enough?" In: *Correct Hardware Design and Verification Methods, 13th IFIP WG 10.5 Advanced Research Working Conference, CHARME 2005, Saarbrücken, Germany, October 3-6, 2005, Proceedings*. Vol. 3725. Lecture Notes in Computer Science. Springer, 2005, pp. 65–80.

[C100] S. Nejati, A. Gurfinkel, and M. Chechik. "Stuttering Abstraction for Model Checkin". In: *Third IEEE International Conference on Software Engineering and Formal Methods (SEFM 2005), 7-9 September 2005, Koblenz, Germany*. IEEE Computer Society, 2005, pp. 311–320.

[C101] O. Wei, A. Gurfinkel, and M. Chechik. “Identification and Counter Abstraction for Full Virtual Symmetry”. In: *Correct Hardware Design and Verification Methods, 13th IFIP WG 10.5 Advanced Research Working Conference, CHARME 2005, Saarbrücken, Germany, October 3-6, 2005, Proceedings*. Vol. 3725. Lecture Notes in Computer Science. Springer, 2005, pp. 285–300.

[C102] A. Gurfinkel and M. Chechik. “Extending Extended Vacuity”. In: *Formal Methods in Computer-Aided Design, 5th International Conference, FMCAD 2004, Austin, Texas, USA, November 15-17, 2004, Proceedings*. Vol. 3312. Lecture Notes in Computer Science. Springer, 2004, pp. 306–321.

[C103] A. Gurfinkel and M. Chechik. “How Vacuous Is Vacuous?” In: *Tools and Algorithms for the Construction and Analysis of Systems, 10th International Conference, TACAS 2004, Held as Part of the Joint European Conferences on Theory and Practice of Software, ETAPS 2004, Barcelona, Spain, March 29 - April 2, 2004, Proceedings*. Vol. 2988. Lecture Notes in Computer Science. Springer, 2004, pp. 451–466.

[C104] M. Chechik and A. Gurfinkel. “TLQSolver: A Temporal Logic Query Checker”. In: *Computer Aided Verification, 15th International Conference, CAV 2003, Boulder, CO, USA, July 8-12, 2003, Proceedings*. Vol. 2725. Lecture Notes in Computer Science. Springer, 2003, pp. 210–214.

[C105] S. M. Easterbrook, M. Chechik, B. Devereux, A. Gurfinkel, A. Y. C. Lai, V. Petrovykh, A. Tafliovich, and C. D. Thompson-Walsh. “ChiChek: A Model Checker for Multi-Valued Reasoning”. In: *Proceedings of the 25th International Conference on Software Engineering, May 3-10, 2003, Portland, Oregon, USA*. IEEE Computer Society, 2003, pp. 804–805.

[C106] A. Gurfinkel and M. Chechik. “Generating Counterexamples for Multi-valued Model-Checking”. In: *FME 2003: Formal Methods, International Symposium of Formal Methods Europe, Pisa, Italy, September 8-14, 2003, Proceedings*. Vol. 2805. Lecture Notes in Computer Science. Springer, 2003, pp. 503–521.

[C107] A. Gurfinkel and M. Chechik. “Multi-Valued Model Checking via Classical Model Checking”. In: *CONCUR 2003 - Concurrency Theory, 14th International Conference, Marseille, France, September 3-5, 2003, Proceedings*. Vol. 2761. Lecture Notes in Computer Science. Springer, 2003, pp. 263–277.

[C108] A. Gurfinkel and M. Chechik. “Proof-Like Counter-Examples”. In: *Tools and Algorithms for the Construction and Analysis of Systems, 9th International Conference, TACAS 2003, Held as Part of the Joint European Conferences on Theory and Practice of Software, ETAPS 2003, Warsaw, Poland, April 7-11, 2003, Proceedings*. Vol. 2619. Lecture Notes in Computer Science. Springer, 2003, pp. 160–175.

[C109] M. Chechik, A. Gurfinkel, and B. Devereux. "ChiChek: A Multi-valued Model-Checker". In: *Computer Aided Verification, 14th International Conference, CAV 2002,Copenhagen, Denmark, July 27-31, 2002, Proceedings*. Vol. 2404. Lecture Notes in Computer Science. Springer, 2002, pp. 505–509.

[C110] A. Gurfinkel, B. Devereux, and M. Chechik. "Model exploration with temporal logic query checking". In: *Proceedings of the Tenth ACM SIGSOFT Symposium on Foundations of Software Engineering 2002, Charleston, South Carolina, USA, November 18-22, 2002*. ACM, 2002, pp. 139–148.

[C111] M. Chechik, B. Devereux, and A. Gurfinkel. "Model-Checking Infinite State-Space Systems with Fine-Grained Abstractions Using SPIN". In: *Model Checking Software, 8th International SPIN Workshop, Toronto, Canada, May 19-20, 2001, Proceedings*. Vol. 2057. Lecture Notes in Computer Science. Springer, 2001, pp. 16–36.

Chapters in Books

[B1] A. Gurfinkel and J. A. Navas. "Automatic Program Verification with SeaHorn". In: *Engineering Secure and Dependable Software Systems, Proceedings of the NATO Advanced Study Institute on Engineering Secure and Dependable Software Systems, Marktoberdorf, Germany, 31 July – 11 August, 2018*. NATO Science for Peace and Security Series. IOS Press, 2019, pp. 83–112.

[B2] S. Chaki and A. Gurfinkel. "BDD-Based Symbolic Model Checking". In: *Handbook of Model Checking*. Springer, 2018. Chap. 8, pp. 219–246.

[B3] S. Chaki, E. M. Clarke, A. Gurfinkel, and J. Hudak. "Logical Correctness for Hybrid Systems". In: *Cyber-Physical Systems*. SEI Series in Software Engineering. Addison-Wesley, 2017. Chap. 6, pp. 197–236.

Invited Talks and Lectures

2023 Program Verification with Constrained Horn Clauses, *Invited Talk at Florida State University*.

2022 Program Verification with Constrained Horn Clauses, *Invited Keynote at 34th International Conference on Computer Aided Verification (CAV 2022)*.

2019 Machine Learning and Invariant Synthesis, *Waterloo ML+Security+Verification Workshop*.

Science, Art, and Magic of Constrained Horn Clauses, *Invited Tutorial at 21st International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC 2019)*.

2018 Regression Verification of Multi-Threaded Programs, *Dagstuhl Seminar on Program Equivalence*.

The Curse of Interpolation, *Invited talk at ANDREI-60: Automating New-Era Deductive Reasoning Event in Iberia*.

2017 SeaHorn: Software Model Checking with SMT and AI, *Invited tutorial at Haifa Verification Conference (HVC)*.

Pushing to the Top with k-induction, *The Technion*.

A Context Sensitive Memory Model for Software Model Checking, *Tel-Aviv University*.

Solving Constrained Horn Clauses by Property Directed Reachability, *International Workshop on Horn Clauses for Verification and Synthesis (HCVS)*.

System Verification by Abstract Interpretation and Model Checking, *The Next 40 years of Abstract Interpretation Workshop at POPL*.

2016 Algorithmic Logic-based Verification with SeaHorn, *University of Washington*.

Algorithmic Logic-based Verification with SeaHorn, *Invited talk at the 4th Workshop on Software Correctness and Reliability*.

Algorithmic Logic-based Verification with SeaHorn, *Università della Svizzera Italiana*.

Algorithmic Logic-Based Verification: Parameterized Systems, *Tenth IFIP WG 1.9/2.15 Meeting on Verified Software*.

Career Management at a Research Lab, *Invited talk at 2nd International Verification Mentoring Workshop*.

Model Checking, *Invited tutorial at Dagstuhl Seminar on Synergies among Testing, Verification, and Repair for Concurrent Programs*.

Algorithmic Logic-Based Verification, *Dagstuhl Seminar on Synergies among Testing, Verification, and Repair for Concurrent Programs*.

2015 Algorithmic Logic-based verification with SeaHorn, *POPL 2016 PC Workshop*.

Algorithmic Logic-based verification with SeaHorn, *Invited tutorial at the International Symposium on Symbolic and Numeric Algorithms for Scientific Computing*.

Parametric Symbolic Reachability, *Dagstuhl Seminar on Information from Deduction: Models and Proofs*.

Interpolating Property Directed Reachability, *Invited talk at 3rd International Workshop on Interpolation: From Proofs to Applications*.

Building Program Verifiers from Compilers and Theorem Provers, *Lectures at the Fifth Summer School on Formal Techniques*.

The SeaHorn Verification Framework, *Invited talk at the 3rd International Workshop on Verification and Program Transformation*.

2014 Verifying Programs by Evolving (Under)-Approximations, *Invited talk at the 3rd International Workshop on Valid Strategies for Software Evolution*.

2013 Verifying Programs by Evolving (Under)-Approximations, *Bell Labs*.

Trust in Formal Methods Toolchains, *VeriSure: Verification and Assurance*.

Vinta: Combining Model Checking and Abstract Interpretation, *Microsoft Research Redmond*.

2013 UFO: From Under-approximations to Over-approximations and Back!, *CMACS Seminar, Carnegie Mellon University*.

Static Analysis of Real Time Embeded Systems with REK, *Dagstuhl Seminar on Certification: Theories and Tools*.

VINTA: Verification with INTerpolation and Abstract interpretation, *Università della Svizzera Italiana*.

2012 From Under-approximations to Over-approximations and Back!, *Microsoft Research Redmond*.

Time-Bounded Analysis of Real-Time Systems, *Laboratoire d'Informatique Algorithmique: Fondements et Applications (LIAFA), Université Paris Diderot - Paris 7*.

From Under-approximations to Over-approximations and Back!, *Università della Svizzera Italiana*.

2011 An Abstract Domain of Boxes, *Departmental Colloquium Series, University of Iowa*.

2008 Introduction to BMC, *Guest lecture at 15-414, Carnegie Mellon University*.

2007 Why Waste a Perfectly Good Abstraction?, *Specification and Verification Center (SVC) Seminar, Carnegie Mellon University*.

2006 Model Checking: From Hardware to Software, *Tutorial at 14th International Symposium on Formal Methods*.

Why Waste a Perfectly Good Abstraction?, *Microsoft Research Cambridge*.

2005 Software Model-Checking with YASM: A Tutorial, *Guest lecture at CSC2108, University of Toronto*.

2003 An Automata-Theoretic Approach to Branching Time Model-Checking, *Guest lecture at CSC2108, University of Toronto*.

Research Funding

Agency	Program	Title	Years	Amount	Role
MathWorks		Model Checking Innovations	2022–25	$131K	PI

AWS		Automatic Verification	2021	$66K	PI
CMU		Semantic Equivalence Checker for Binary Code	2020	$40K	PI
AWS		Scalable Pointer Analysis	2019	$66K	PI
CMU		Binary Path Finding with Spacer	2019–20	$125K	PI
NSERC	CRD	Mobile Trust	2020-23	$332K	PI
WHJIL		Mobile Trust	2019-22	$292K	PI
NSERC	CRD	Software Dependability for 5G Systems	2019–24	$1,011K	co-PI
Ripple	Fellow	Smart Trust — Towards Trusted Smart Contracts	2018–22	$120K	PI
NSERC	Accelerator	Automated Software Verification: Foundations and Applications	2017–20	$120K	PI
NSERC	Discovery	Automated Software Verification: Foundations and Applications	2017–22	$170K	PI
IBM	IBM Faculty Award	Modularity and Abstraction for Formal Hardware Verification	2016	$52K	PI
SEI	LENS	Property-Directed Test-case Generation	2015	$350K	PI
NASA	NRA	Contract-based Compositional Verification for Outsorced Flight Critical Systems	2014–17	$1,386K	co-PI
SEI	LENS	Verifying Evolving Software	2013	$350K	PI
SEI	LENS	Regression Verification of Real-Time Embedded Software	2010	$350K	PI

Teaching Activities

Courses Taught

F2022 ECE351: Compilers. Level: Undergraduate.

W2022 ECE453/CS447/CS647: Software Testing, Quality Assurance, and Maintenance. Level: Undergraduate.

W2022 ECE650: Methods and Tools for Software Engineering. Level: Graduate.

F2021 ECE351: Compilers. Level: Undergraduate.

W2021 ECE453/CS447/CS647: Software Testing, Quality Assurance, and Maintenance. Level: Undergraduate; Class size: 44.

F2020 ECE650: Methods and Tools for Software Engineering. Level: Graduate; Class size: 62.

W2020 ECE351: Compilers. Level: Undergraduate; Class size: 114.

W2020 ECE453/CS447/CS647: Software Testing, Quality Assurance, and Maintenance. Level: Undergraduate; Class size: 54.

F2019 ECE650: Methods and Tools for Software Engineering. Level: Graduate; Class size: 93.

F2019 ECE750T29: Automated Program Verification. Level: Graduate; Class size: 8

W2019 ECE453/CS447/CS647: Software Testing, Quality Assurance, and Maintenance. Level: Undergraduate; Class size: 45.

F2018 ECE750T29: Automated Program Verification. Level: Graduate; Class size: 12

W2018 ECE453/CS447/CS647: Software Testing, Quality Assurance, and Maintenance. Level: Undergraduate; Class size: 79.

W2018 ECE653: Software Testing, Quality Assurance, and Maintenance. Level: Graduate; Class size: 51.

F2017 ECE650: Methods and Tools for Software Engineering. Level: Graduate; Class size: 88.

W2017 ECE653: Software Testing, Quality Assurance, and Maintenance. Level: Graduate; Class size: 32.

Course Critique Scores

Undergraduate Teaching

Term & Year	Course #	Course Title	# of Students	Critique Rating (Q10)	Critique Rating Average (Q1-9)	Critique Response %
W2021	ECE453	Software Testing	44	75	77	30
W2020	ECE351	Compilers	114	77	84	36
W2020	ECE453	Software Testing	54	63	71	22
W2019	ECE453	Software Testing	45	72	78	35
W2018	ECE453	Software Testing	79	73	77	38

Graduate Teaching

Term & Year	Course #	Course Title	# of Students	Critique Rating (Q9)	Critique Rating Average (Q1-8)	Critique Response %
F2020	ECE650	Software Engineering	62	77	82	24
F2019	ECE750T29	Program Verification	8	81	86	100
F2019	ECE650	Software Engineering	93	85	86	89
F2018	ECE750T29	Program Verification	12	82	85	83

W2018	ECE653	Software Testing	51	85	83	80
F2017	ECE650	Software Engineering	88	92	88	84
W2017	ECE653	Software Testing	32	80	80	78

Courses Redesigned

F2018 ECE750T29. Developed a new graduate course on SAT-based Automated Program Verification.

F2017 ECE650. Developed new lectures on Git, Unix, Python, propositional logic, and propositional satisfiability. Developed sample projects to teach Python and C++ programming.

W2017 ECE653. Redesigned the course to focus on foundations of testing and quality assurance. Developed new lectures on semantics, propositional logic, first order logic, decision procedures, symbolic execution, deductive verification, and automated verification. Developed symbolic execution framework used in assignments. Developed a telescoping project-based assignments.

Undergraduate Courses Co-taught

2014 15-414/614: Bug Catching: Automated Program Verification (with Prof. Edmund Clarke and Sagar Chaki), *Carnegie Mellon University*.

2012 15-414/614: Bug Catching: Automated Program Verification (with Prof. Edmund Clarke and Sagar Chaki), *Carnegie Mellon University*.

2011 15-414: Bug Catching: Automated Program Verification and Testing (with Prof. Edmund Clarke and Sagar Chaki), *Carnegie Mellon University*.

Post-Graduate Fellows Supervised

2021–2023 **Isabel Garcia-Contreras**, *PDF, University of Waterloo*.
Efficient Quantifier Elimination and Interpolation

2021–2022 **Yuyan Bao**, *PDF, University of Waterloo.*
Verification of Trusted Execution Environments (with Prof. W. Dietl)

Graduate Students Supervised

2023–Present **Estifanos Getachew**, *MMath, University of Waterloo.*
Model-based Projection for Theories (with Prof. R. Trefler)

2023–Present **Eduard Kvashyn**, *MSc, University of Waterloo.*
Solving Constrained Horn Clauses

2022–Present **Joseph Tafese**, *PhD, University of Waterloo.*
Specification and Formats for Hardware Verification

2021–2022 **Prasanna Kumar**, *MMath, University of Waterloo.*
Model Checking Binary Code (with Prof. R. Trefler)

2020–Present **Nhâm Lê**, *PhD, University of Waterloo.*
Improving Formal Verification with Machine Learning

2020–Present **Yusen Yu**, *PhD, University of Waterloo.*
Abstract Interpretation for Model Checking

2020–2022 **Xiang Zhou**, *MSc, University of Waterloo.*
Hybrid Memory Model for Bounded Model Checking

2020–Present **Siddharth Priya**, *MSc, University of Waterloo.*
Bounded Model Checking of Low-Level Code

2019–2021 **Scott Wesley**, *MMath, University of Waterloo.*
Automated Analysis of Solidity Smart Contracts (with Prof. R. Trefler)

2019–2021 **Aishwarya Ramanathan**, *MMath, University of Waterloo.*
Understanding Model Checking (with Prof. R. Trefler)

2019–Present **Hari Govind V.K.**, *PhD, University of Waterloo.*
Model Checking with Many Theories

2018–2020 **Nhâm Lê**, *MSc, University of Waterloo.*
Neural Guidance for Symbolic Reasoning

2018–2022 **Tejvinder Singh Toor**, *MSc, University of Waterloo.*
Decompilation of Binaries into LLVM IR for Automated Analysis

2018–2019 **Hari Govind V.K.**, *MSc, University of Waterloo.*
Interpolating Strong Induction (with Prof. Vijay Ganesh)

2017–2019 **Jakub Kuderski**, *MSc, University of Waterloo.*
Memory Safety Verification with Software Model Checking

2017–2019 **Rylo Ashmore**, *MMath, University of Waterloo.*
Local Verification of Distributed Systems (with Prof. Richard Trefler)

2016–2018 **Reza Babaee**, *PhD, University of Waterloo.*
Run-time Monitoring of Probabilistic Systems (with Prof. Sebastian Fischmeister)

Graduate Students Supervised prior to University of Waterloo

Prior to joining University of Waterloo, I was a Researcher at the Software Engineering Institute at Carnegie Mellon University. The position allowed me to co-supervise students with a different primary supervisor. For the students listed below I have been an active supervisor involved in all steps of their studies.

2014–2015 **Grigory Fedyukovich**, *PhD, Università della Svizzera italiana (USI).*
Automated Incremental Software Verification (with Prof. Natasha Sharygina)

2012–2015 **Anvesh Komuravelli**, *PhD, Carnegie Mellon University.*
Abstraction in SMT-Based Model Checking (with Prof. Edmund Clarke)

2009–2014 **Aws Albarghouthi**, *PhD, University of Toronto.*
Software Verification with Interpolation (with Prof. Marsha Chechik)

2011–2013 **Yi Li**, *MSc, University of Toronto.*
Precise Transformers for Linear Arithmetic (with Prof. Marsha Chechik)

2006–2009 **Nagmeh Ghafari**, *PhD, University of Waterloo.*
Algorithmic Analysis of Infinite State Systems (with Prof. Richard Trefler)

2003–2009 **Ou Wei**, *PhD, University of Toronto.*
Abstraction for Verification and Refutation (with Prof. Marsha Chechik)

Undergraduate Students Supervised

Summer 2023 **Eduard Kvashyn**, *Mitacs, University of Waterloo.*
Data-Driven and Synthesis-Guided Generalization in CHC-Solving

Summer 2023 **Boris Jancic**, *CoOp, University of Waterloo.*
Verification Case Study for Unsafe Rust

Summer 2023 **Thomas Hart**, *CoOp, University of Waterloo.*
Verification Case Study for Unsafe Rust

Winter 2023 **Guy Blumenthal**, *URA, University of Waterloo.*
Verification of Unsafe Rust

Winter 2022 **Linda Zheng**, *URA, University of Waterloo.*
Type Inference with Constrained Horn Clauses

Fall 2021 **Alex Chen**, *URA, University of Waterloo.*
Verifying Trusty

Fall 2021 **Liam Metke**, *URA, University of Waterloo.*
Verifying Trusty

Fall 2021 **Joseph Tafese**, *USRA, University of Waterloo.*
Intermediate Representation for Verification using MLIR

Summer 2021 **Tiantong Hu**, *URA, University of Waterloo.*
Understanding Counterexamples for BMC

Winter 2021 **Felix Cheng**, *URA, University of Waterloo.*
Intermediate Representation for Verification Conditions

Fall 2020 **Shuolin (Alan) Wang**, *USRA, University of Waterloo.*
Word-Level Bit-Precise Model Checking

Fall 2020 **Raymond Zhou**, *URA, University of Waterloo.*
Visualizing Solving Constrained Horn Clauses

Fall 2020 **Emmy Ni**, *URA, University of Waterloo.*
Bounded Model Checking of Low-Level Libraries

Spring 2020 **Tony Kappen**, *USRA, University of Waterloo.*
Verification of Binary Code

Spring 2020 **Colin McClure**, *URI-USRA, University of Waterloo.*
Extensible Type-Checking Framework for Intermediate Verification Language

Spring 2020 **Anton Vassilev**, *USRA, University of Waterloo.*
Automatic Specification Discovery from Library Code

Fall 2019 **Xiang (Daniel) Zhou**, *USRA, University of Waterloo.*
Bounded Model Checking of Trusted Code

Fall 2019 **Emily Socheta Hem**, *URA, University of Waterloo.*
Specification Discovery from LibC

Spring 2019 **Lude (Ruth) Lyu**, *URA, University of Waterloo.*
Memory Safety Verification of Trusty OS and Applications

Spring 2019 **Xiaoxiao (Michelle) Wang**, *URA, University of Waterloo.*
STL for Software Model Checking

Spring 2019 **Charles Lei**, *URA, University of Waterloo.*
Bit-Precise Semantics for Bounded Verification

Winter 2019 **Pritham Marupaka**, *URA, University of Waterloo.*
Verification of Smart Contracts

Winter 2019 **Arthur Scott Wesley**, *URA, University of Waterloo.*
Verification of Smart Contracts

Winter 2019 **Matvey Shvartszayad**, *URA, University of Waterloo.*
STL for Software Model Checking

Fall 2018 **Daniel McCormick**, *URA, University of Waterloo.*
Benchmarks for Low-Level Memory Verification

Winter 2018 **Charles Lei**, *URA, University of Waterloo.*
Executable Counterexamples for Software Model Checking

Winter 2018 **Yubo Han**, *URA*, *University of Waterloo*.
Sparse Value Flow Analysis and its Frameworks

Visiting Graduate Students

Winter 2019 **Yu-Ting Chen**, *IVGS*, *University of Gothenburg*.
Lemma Learning in Property Directed Reachability

Spring 2018 **Matteo Marescotti**, *IVGS*, *University of Waterloo*.
Distributed Property Directed Reachability

Summer 2017 **Bernhard Gleiss**, *IVGS*, *University of Waterloo*.
Better Generalization for IC3

Summer 2015 **Caterina Urban**, *Intern*, *Carnegie Mellon University*.
Synthesizing Ranking Functions from Bits and Pieces

Summer 2012 **Soonho Kong**, *Intern*, *Carnegie Mellon University*.
Analyzing Real-Time Embedded Systems

Summer 2010 **Samir Sapra**, *Intern*, *Carnegie Mellon University*.
Efficient Predicate Abstraction of Program Summaries

Thesis Examination

Date	**Student**	**Degree**	**Status**
2021	Roderigo Benedito Otoni (USI)	PhD	in progress
2021	Khouloud Gaaloul (U. of Luxembourg)	PhD	in progress
2021	Isabel García Contreras (IMDEA)	PhD	completed
2021	Alireza Lotfi	MSc	in progress
2021	Ruoxi Zhang	PhD	in progress
2021	Denis Bueno (U. of Michigan)	PhD	completed
2021	Lian Sun	MSc	completed

2020	Puneet Gill	MSc	completed
2020	Frederic Bouchard	MSc	completed
2020	Weitian Xing	MSc	completed
2020	Jenny Xiang	MSc	completed
2019	Ryan Berryhill (U. of Toronto)	PhD	completed
2019	Chunxiao Li	MSc	completed
2021	Sean Kauffman	PhD	completed
2020	Nahid Juma	PhD	completed
2017	Rafael Olaechea	PhD	completed
2018	Edmund Wong	PhD	completed
2018	Edward Zulkoski	PhD	completed
2019	Waleed Qadir Khan	MSc	completed
2018	Ian Colwell	MSc	completed
2018	Charles Zhuo Chen	MSc	completed
2018	Mier Ta	MSc	completed
2018	Daniel Caccamo	MSc	completed
2017	Joseph Scott	MMath	completed
2016	Uri Juhasz (ETH Zurich)	PhD	completed

Service

Committees

2021–Present **Member**, SE Curriculum Committee.

2021–2022 **Member**, Department Advisory Committee on Appointments.

2019–Present **Member**, Undergraduate Studies Council.

2020–2021 **Member**, Department Advisory Committee on Appointments.

2020–2021 **Member**, Department Advisory Committee on Appointments.

2019–2020 **Member**, Graduate Studies Council.

2018–2019 **Member**, Department Advisory Committee on Appointments.

2019–2021 **Member**, Engineering Faculty Council.

2019–2020 **Member**, Designated Chairs Pool.

2017–2019 **Member**, Engineering Faculty Council.

2017–2019 **Member**, Designated Chairs Pool.

Professional Activities

In my area of Computer Science, conferences are the main publication venue. They are ranked as high as journals in other disciplines. Conference papers are 15–20 pages, rigorously reviewed by program committee members, followed by discussion, often an author response period, and a round of revisions before publication. I have served repeatedly on program committees of the top conferences in the areas of Verification (Computer Aided Verification, Tools and Algorithms for the Construction and Analysis of Systems, and Formal Methods for Computer-Aided Design), Program Analysis (Principles of Programming Languages, Static Analysis Symposium), and Software Engineering (International Conference in Software Engineering, Automated Software Engineering). I have been a technical program co-chair of the top hardware verification conference Formal Methods for Computer-Aided Design.

Major Conference Organization Positions

2025 **Program Co-Chair**, International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), *2025*.

2024 **Program Co-Chair**, International Conference on Computer-Aided Verification (CAV), Canada, *2024*.

2021 **Publicity Chair**, The Eighth Federated Logic Conference (FLoC 2022), Haifa, Israel, *2021*.

Workshop Chair, 33rd International Conference on Computer-Aided Verification, Online, *2021*.

Technical Track Chair, International Symposium on Symbolic and Numeric Algorithms (SYNASC), Romania, *2021*.

2018 **Technical Program Co-Chair**, International Conference on Formal Methods for Computer-Aided Design, Austin, TX, *2018*.

2015 **Technical Program Co-Chair**, 7th Working Conference on Verified Software: Theories, Tools, and Experiments (VSTTE), San Francisco, CA, *2015*.

Technical Program Co-Chair, 2nd International Workshop on Horn Clauses for Verification and Synthesis (HCVS), San Francisco, CA, *2015*.

Program Committees

2022 27th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), *2022*.

2021 32nd International Conference on Computer Aided Verification (CAV), *2021*.

The ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), *2021*.

20th International Static Analysis Symposium (SAS), *2021*.

International Conference on Formal Methods in Computer-Aided Design (FMCAD), *2021*.

8th International Workshop on Horn Clauses for Verification and Synthesis (HCVS), *2021*.

22nd International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI), *2021*.

2020 32nd International Conference on Computer Aided Verification (CAV), *2020*.

19th International Static Analysis Symposium (SAS), *2020*.

International Conference on Formal Methods in Computer-Aided Design (FMCAD), *2020*.

12th NASA Formal Methods Symposium (NFM), *2020*.

LPAR-23: 23rd International Conference on Logic for Programming, Artificial Intelligence and Reasoning, *2020*.

2019 41th International Conference on Software Engineering (ICSE), *2019*.

11th International Working Conference on Verified Software: Theories, Tools, and Experiments (VSTTE), *2019*.

31st International Conference on Computer Aided Verification (CAV), *2019*.

11th NASA Formal Methods Symposium (NFM), *2019*.

14th Ershov Informatics Conference (PSI), *2019*.

FormaliSE: FME Workshop on Formal Methods in Software Engineering, *2019*.

6th International Workshop on Horn Clauses for Verification and Synthesis (HCVS), *2019*.

21st International Symposium on Principles and Practice of Declarative Programming (PPDP), *2019*.

2018 30th International Conference on Computer Aided Verification (CAV), *2018*.

23rd International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), *2018*.

40th International Conference on Software Engineering (ICSE), *2018*.

16th International Symposium on Automated Technology for Verification and Analysis (ATVA), *2018*.

10th International Working Conference on Verified Software: Theories, Tools, and Experiments (VSTTE), *2018*.

5th International Workshop on Horn Clauses for Verification and Synthesis (HCVS), *2018*.

2017 The 8th International Conference on Ambient Systems, Networks and Technologies (ANT), *2017*.

Software Verification and Testing (SAC-SVT), *2017*.

24th International SPIN Symposium on Model Checking of Software (SPIN), *2017*.

9th NASA Formal Methods Symposium (NFM), *2017*.

2016 43nd ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL), *2016*.

Formal Methods in Computer-Aided Design (FMCAD), *2016*.

International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC), *2016*.

21th International Symposium on Formal Methods, *2016*.

3rd Workshop on Horn Clauses for Verification and Synthesis, *2016*.

22nd International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), *2016*.

17th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI), *2016*.

Software Verification and Testing track of the 31st ACM/SIGAPP Symposium on Applied Computing (SAC-SVT), *2016*.

8th NASA Formal Methods Symposium (NFM), *2016*.

2015 27th International Conference on Computer Aided Verification (CAV), *2015*.

30th IEEE/ACM International Conference on Automated Software Engineering (ASE), *2015*.

20th International Symposium on Formal Methods, *2015*.

21st International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), *2015*.

4th International Competition on Software Verification (SV-COMP), *2015*.

10th Ershov Informatics Conference (PSI), *2015*.

International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC), *2015*.

The Sixth Workshop on Tools for Automatic Program Analysis, *2015*.

2014 29th IEEE/ACM International Conference on Automated Software Engineering (ASE), *2014*.

6th NASA Formal Methods Symposium (NFM), *2014*.

6th Working Conference on Verified Software: Theories, Tools, and Experiments (VSTTE), *2014*.

Fifth International Symposium on Games, Automata, Logics and Formal Verification (GandALF), *2014*.

International Symposium on Model Checking of Software (SPIN), *2014*.

FormaliSE: FME Workshop on Formal Methods in Software Engineering, *2014*.

9th Ershov Informatics Conference (PSI), *2014*.

3rd International Competition on Software Verification (SV-COMP), *2014*.

2013 25th International Conference on Computer Aided Verification (CAV), *2013*.

28th IEEE/ACM International Conference on Automated Software Engineering (ASE), *2013*.

5th Working Conference on Verified Software: Theories, Tools, and Experiments (VSTTE), *2013*.

20th International Static Analysis Symposium (SAS), *2013*.

IFIP Joint International Conference on Formal Techniques for Distributed Systems (FORTE/FMOODS), *2013*.

2nd International Competition on Software Verification (SV-COMP), *2013*.

FormaliSE: FME Workshop on Formal Methods in Software Engineering, *2013*.

2012 27th IEEE/ACM International Conference on Automated Software Engineering (ASE), *2012*.

Third International Symposium on Games, Automata, Logics, and Formal Verification, *2012*.

Asian Symposium on Programming Languages and Systems, *2012*.

2011 26th IEEE/ACM International Conference on Automated Software Engineering (ASE), *2011*.

2009 Annual International Conference on Computer Science and Software Engineering, *2009*.

2008 Annual International Conference on Computer Science and Software Engineering, *2008*.

The 19th International Conference on Concurrency Theory (CONCUR), *2008*.

Organizing Committees

2020 Dagstuhl Seminar on Theoretical Advances and Emerging Applications in Abstract Interpretation, *2020*.

2019 1st Workshop on Democratizing Software Verification (DSV), *2019*.

2016 Workshop on Verification and Synthesis for Software Evolution, *2016*.

2015 1st Artifact Evaluation Committee of 27th International Conference on Computer Aided Verification (CAV-ART), *2015*.

2014 Tool Demonstration at 29th IEEE/ACM International Conference on Automated Software Engineering (ASE-TOOLS), *2014*.

5th International Workshop on the State of the Art in Automated Software Engineering Research, *2014*.

Quantified Reasoning Session at the 4th International Congress on Mathematical Software (ICMS), *2014*.

Grant Selection Committees

2019 **Panel Member**, US National Science Foundation, Small Proposal Review, *2019*.

2017 **Panel Member**, US National Science Foundation, Medium Proposal Review, *2017*.

2015 **Panel Member**, US National Science Foundation, Medium Proposal Review, *2015*.

2014 **Panel Member**, US National Science Foundation, Small Proposal Review, *2014*.

2012 **Panel Member**, US National Science Foundation, Small Proposal Review, *2012*.