Yuriy Brun

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University of Massachusetts
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Research Interests

Software engineering, formal verification, software fairness, trust, specification inference, automated repair.

Education

UNIVERSITY OF SOUTHERN CALIFORNIA ..... Los Angeles, CA, USA

5/2008 **Doctor of Philosophy in Computer Science**
Dissertation: Self-assembly for discreet, fault-tolerant, and scalable computation on Internet-sized distributed networks
Advisor: Prof. Nenad Medvidović

5/2006 **Master of Science in Computer Science**

MASSACHUSETTS INSTITUTE OF TECHNOLOGY ..... Cambridge, MA, USA

9/2003 **Master of Engineering in Electrical Engineering and Computer Science**
Thesis: Fault identification via dynamic analysis and machine learning
Advisor: Prof. Michael D. Ernst

6/2003 **Bachelor of Science in Computer Science and Engineering**

6/2003 **Bachelor of Science in Mathematics**

Employment History

UNIVERSITY OF MASSACHUSETTS ..... Amherst, MA, USA

9/2021 – present Professor

9/2017 – 8/2021 Associate Professor

9/2012 – 8/2017 Assistant Professor
Co-director: Laboratory for Advanced Software Engineering Research (LASER)
Co-director: Programming Languages and Systems at Massachusetts (PLASMA)

ARCHIMEDES, ATHENA RESEARCH CENTER ..... Athens, Greece

9/2025 – 5/2026 Visiting Researcher (sabbatical appointment)

UNIVERSITY OF WASHINGTON ..... Seattle, WA, USA

9/2009 – 8/2012 NSF CRA Postdoctoral Computing Innovation Fellow

UNIVERSITY OF SOUTHERN CALIFORNIA ..... Los Angeles, CA, USA

7/2008 – 9/2009 Postdoctoral Research Associate:
Center for Systems and Software Engineering

8/2003 – 6/2008 Research and Teaching Assistant:
Laboratory for Molecular Science, Software Architectures Group

MASSACHUSETTS INSTITUTE OF TECHNOLOGY ..... Cambridge, MA, USA

2/2002 – 6/2003 Research and Teaching Assistant:
Program Analysis Group

9/1999 – 1/2002 Undergraduate Research Assistant:
Cognitive Machines Group, Ocean Engineering Testing Tank, Mathematics Department

Honors, Awards, Fellowships

2025	ACM FSE 2025 Test of Time Honorable Mention Award for [C25] (ESEC/FSE'15)
2025	ACM SIGSOFT Distinguished Paper Award for [C52] (ICSE'25)
2025	Elevated to IEEE Fellow
2024	FSE 2024 Distinguished Reviewer Award
2023	ACM SIGSOFT Distinguished Paper Award for [C46] (ESEC/FSE'23)
2023	Center for Research on Families Research Scholar
2022	ACM SIGSOFT Distinguished Paper Award for [C42] (ICSE'22)
2021	Google Inclusion Research Award
2021	Amazon Research Award
2021	IEEE Computer Society TCSE New Directions Award
2020	ASE 2020 Distinguished PC Member Award
2020	SEAMS 2020 Most Influential (test of time) Paper Award for [C4] (SEAMS'07)
2020	ACM SIGSOFT Distinguished Artifact Award for [C38] (ICSE'20)
2019	Elevated to ACM Distinguished Member
2019	ACM SIGPLAN Distinguished Paper Award for [C36] (OOPSLA'19)
2018	Interdisciplinary Studies Institute Fellowship
2017	ACM SIGSOFT Distinguished Paper Award for [C31] (ESEC/FSE'17)
2017	Lilly Fellowship for Teaching Excellence
2017	Elevated to ACM Senior Member
2017	Elevated to IEEE Senior Member
2017	College of Information and Computer Sciences Outstanding Teacher Award
2017	ICSA 2017 Best Paper Award for [C30]
2016	UMass Distinguished Teaching Award finalist
2015	IEEE Transactions on Software Engineering spotlight paper recognition for [J20]
2015	Google Faculty Research Award
2015	ICSE 2015 Distinguished Reviewer Award
2015	National Science Foundation CAREER Award
2014	Microsoft Research Software Engineering Innovation Foundation (SEIF) Award
2013	IEEE Transactions on Software Engineering spotlight paper recognition for [J14]
2013	IEEE TCSC Young Achiever in Scalable Computing Award
2011	ACM SIGSOFT Distinguished Paper Award for [C12] (ESEC/FSE'11)
2010	Howard Hughes Medical Institute Future Faculty Fellow
2009–11	NSF CRA Computing Innovation Fellowship for Postdoctoral Research (CI Fellow)
2008	ACM Doctoral Dissertation Competition Finalist for [N4]
2008	University of California Entrepreneurship Academy Grant
2007–08	USC Graduate School Dissertation Completion Fellow
2007	Outstanding Teaching Assistant Award (USC)
2003–07	USC Viterbi School of Engineering Doctoral Fellow
2004	Department of Defense National Defense Science and Engineering Graduate (NDSEG) Fellowship Honorable Mention

Research Grants

[G28] VERSE: Verification Engineering for Real-world Software Engineers.
- **DARPA**: Defense Advanced Research Projects Agency I2O Pipelined Reasoning of Verifiers Enabling Robust Systems (PROVERS) (Co. #FA8750-24-C-B044)
- duration: March 26, 2024 – September 25, 2027
- PIs: Mike Dodds, Joe Kiniry (Galois)
  Neel Krishnaswami and Peter Sewell (University of Cambridge), Benjamin Pierce, Stephanie Weirich, and Andrew Head (University of Pennsylvania), Leonidas Lampropoulos (University of Maryland), Clément Pit-Claudel (Swiss Federal Institute of Technology Lausanne), Yuriy Brun, Talia Ringer (University of Illinois Urbana-Champaign), Will Keegan (Lynx Software Technologies), Eric Schmidt (Lockheed Martin Aero), Pascal Cuoq (TrustInSoft)
  $21,799,877; UMass portion **$799,440**

[G27] EPSULLM: Enabling Formal Methods Proof Synthesis Using Large Language Models.
- **DARPA**: Defense Advanced Research Projects Agency I2O (Co. #HR0011-24-2-0307)
- duration: February 21, 2024 – August 21, 2025
- PIs: Yuriy Brun
  Talia Ringer (University of Illinois Urbana-Champaign)
  $1,000,000; UMass portion **$635,000**

[G26] Auditing and Correcting Bias in Learned Models in ML-Driven Image and Sound Processing Systems.
- **Dolby**: Unrestricted gift
- duration: April 1, 2023 – March 31, 2024
- sole PI: **$50,000**

[G25] SHF: Small: Toward Fully Automated Formal Software Verification.
- **NSF**: The National Science Foundation (Co. #2210243)
- duration: October 1, 2022 – September 30, 2026
- sole PIs: **$635,852**

[G24] Learning Fair Ad Preference Models Under Data Distribution Uncertainty.
- **Google**: Unrestricted gift
- duration: March 8, 2022 – March 7, 2023
- sole PI: **$50,000**

[G23] PLATO: Enriched Tactic Prediction Models for Proof Synthesis & Repair.
- **DARPA**: Defense Advanced Research Projects Agency I2O Proof Engineering, Adaptation, Repair, and Learning for Software (PEARLS) (Co. #HR0011-22-9-0063)
- duration: February 1, 2022 – July 31, 2023
- PIs: Talia Ringer (University of Illinois Urbana-Champaign)
  Yuriy Brun
  Alex Sanchez-Stern
  $1,000,000; UMass portion **$504,032**

[G22] High-Confidence Long-Term Safety and Fairness Guarantees.
- **Facebook**: Unrestricted gift
- duration: December 1, 2021 – November 30, 2022
- PIs: Philip S. Thomas
  Yuriy Brun
  $100,000

[G21] Inclusion Research Award: Supervised Learning with Long-Term Fairness Guarantees.
Google: Unrestricted gift
duration: November 1, 2021 – October 31, 2022
PIs: Philip S. Thomas
Yuriy Brun
$60,000

[G20] Formal Verification via Language-Modeling-Based Proof Synthesis.
Amazon: Unrestricted gift
duration: August 1, 2021 – July 31, 2022
sole PI: **$40,000**

[G19] Bias Mitigation and AI Fairness.
Kosa.ai: Unrestricted gift
duration: March 18, 2021 – March 17, 2022
sole PI: **$36,000**

[G18] Mitigating Bias in Learned Ad Preference Models.
Google: Unrestricted gift
duration: February 18, 2021 – February 17, 2022
sole PI: **$50,000**

[G17] Computing Innovation Fellows 2020 Project (subaward from the Computing Research Association), funding to support Yixue Zhao as a CI postdoctoral fellow.
NSF: The National Science Foundation (Co. #2030859)
duration: January 1, 2021 – December 31, 2022
solePI: Yuriy Brun (funding earmarked for Yixue Zhao)
$248,186

[G16] Detecting Bias in Training-Data Generation for Ads.
Google: Unrestricted gift
duration: October 1, 2019 – September 30, 2020
sole PI: **$50,000**

[G15] Fairness in Ranking and Continuous-Valued Systems.
Oracle Labs: Unrestricted gift
duration: February 1, 2019 – January 31, 2020
PIs: Yuriy Brun
Alexandra Meliou
$100,000

[G14] SHF: Medium: Fairness in Software Systems.
NSF: The National Science Foundation (Co. #1763423)
duration: September 15, 2018 – August 31, 2024
PIs: Yuriy Brun
Alexandra Meliou
$1,107,329

[G13] EAGER: Exploring the Feasibility of Software Testing Techniques to Evaluate Fairness Algorithms in Software Systems.

NSF:	The National Science Foundation (Co. #1744471)
duration:	September 1, 2017 – August 31, 2018
PIs:	Yuriy Brun
	Alexandra Meliou
	$131,230

[G12] SHF: Medium: Collaborative Research: Semi and fully automated program repair and synthesis via semantic code search.

NSF:	The National Science Foundation (Co. #1564162)
duration:	July 1, 2016 – June 30, 2022
PIs:	Yuriy Brun
	Claire Le Goues (Carnegie Mellon University)
	Kathryn Stolee (North Carolina State University)
	$1,266,511; UMass portion **$457,329**

[G11] CyberCorps Scholarship for Service at the University of Massachusetts Amherst.

NSF:	The National Science Foundation (Co. #1565521)
duration:	January 1, 2016 – December 31, 2020
PI:	Brian Levine
coPIs:	Wayne Burleson, Eric Sommers, Marc Liberatore, and Mila Sherman
collab-	Emery Berger, Yuriy Brun, Lori Clarke, Daniel Holcomb, Amir Houmansadr, Lixian
orators:	Gao, Krista Gile, Arjun Guha, Gerome Miklau, Anna Nagurney, and Ryan Wright
	$4,189,000

[G10] Understanding flaky tests using performance-aware behavioral models.

Google:	Faculty Research Award
duration:	September 1, 2015 – August 31, 2016
sole PI	**$61,193**

[G9] TWC: Medium: Collaborative: Developer Crowdsourcing: Capturing, Understanding, and Addressing Security-related Blind Spots in APIs.

NSF:	The National Science Foundation (Co. #1513055)
duration:	September 1, 2015 – August 31, 2019
PIs:	Yuriy Brun
	Justin Cappos (NYU Polytechnic School of Engineering)
	Daniela Oliveira and Natalie Ebner (University of Florida)
	$1,216,000; UMass portion **$398,759**

[G8] CAREER: Improving Software Quality using Dynamically Inferred Models.

NSF:	The National Science Foundation (Co. #1453474)
duration:	March 1, 2015 – February 28, 2022
sole PI	**$597,780**

[G7] SHF: EAGER: Collaborative Research: Demonstrating the Feasibility of Automatic Program Repair Guided by Semantic Code Search.

NSF:	The National Science Foundation (Co. #1446683)
duration:	July 1, 2014 – June 30, 2016
PIs:	Yuriy Brun
	Claire Le Goues (Carnegie Mellon University)
	Kathryn Stolee (Iowa State University)
	$287,912; UMass portion **$104,372**

[G6] Augmenting Testing with Performance-Aware Behavioral Models.

MSR SEIF:	Microsoft Research Software Engineering Innovation Foundation
duration:	July 1, 2014 – June 30, 2015
sole PI	**$40,000**

[G5] Testing Privacy-Preserving Distributed Systems on DETERLab.

DARPA:	The Defense Advanced Research Projects Agency (Co. #N66001-11-C-4021)
	Safer Warfighter Communications (SAFER) program
duration:	November 1, 2013 – October 31, 2014
PIs:	Yuriy Brun
	Sam Malek (George Mason University)
	Nenad Medvidovic (University of Southern California)
	$300,000; UMass portion **$84,000**

[G4] sTile: Private Computing in the Open.

IARPA:	The Intelligence Advanced Research Projects Activity (Co. #N66001-13-1-2006)
duration:	September 27, 2013 – September 26, 2014
PIs:	Yuriy Brun
	Nenad Medvidovic (University of Southern California)
	Sam Malek (George Mason University)
	$300,000; UMass portion **$84,000**

[G3] Travel Grant for Future of Software Engineering 2013 Symposium.

NSF:	The National Science Foundation (Co. #1341994)
duration:	July 1, 2013 – June 30, 2014
sole PI	**$15,000**

[G2] Speculation and continuous validation for software development.

MSR SEIF:	Microsoft Research Software Engineering Innovation Foundation
duration:	July 1, 2010 – June 30, 2011
with	Michael D. Ernst (University of Washington)
	Reid Holmes (University of Washington)
	David Notkin (University of Washington)
	$25,000

[G1] Self-Adaptive Software Systems.

NSF:	The National Science Foundation CRA Computing Innovation Fellowship
duration:	September 15, 2009 – September 14, 2011
with	David Notkin (University of Washington)
	$267,500

Publications

Refereed Journal Articles

[J33] Yuriy Brun, Saikat Chakraborty, Claire Le Goues, Corina Păsăreanu, and Adish Singla. Automatically Engineering Trusted Software: A Research Roadmap. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 2026. DOI: 10.1145/3779132.

[J32] Alex Sanchez-Stern, Emily First, Timothy Zhou, Zhanna Kaufman, Yuriy Brun, and Talia Ringer. Passport: Improving Automated Formal Verification Using Identifiers. *ACM Transactions on Programming Languages and Systems (TOPLAS)*, 45(2):12:1–12:30, June 2023. DOI: 10.1145/3593374, arXiv: abs/2204.10370. Presented as journal-first paper at PLDI 2023.

[J31] Brittany Johnson, Jesse Bartola, Rico Angell, Sam Witty, Stephen J. Giguere, and Yuriy Brun. Fairkit, Fairkit, on the Wall, Who's the Fairest of Them All? Supporting Data Scientists in Training Fair Models. *EURO Journal on Decision Processes*, 11, 2023. DOI: 10.1016/j.ejdp.2023.100031, arXiv: abs/2012.09951.

[J30] Yuriy Brun, Tian Lin, Jessie Elise Somerville, Elisha M. Myers, and Natalie Ebner. Blindspots in Python and Java APIs Result in Vulnerable Code. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 32(3):76:1–76:31, April 2023. ACM artifact badges granted: Results Replicated. DOI: 10.1145/3571850, arXiv: abs/2103.06091. Presented as journal-first paper at ICSE 2023.

[J29] Manish Motwani, Mauricio Soto, Yuriy Brun, René Just, and Claire Le Goues. Quality of Automated Program Repair on Real-World Defects. *IEEE Transactions on Software Engineering (TSE)*, 48(2):637–661, February 2022. DOI: 10.1109/TSE.2020.2998785.

[J28] Afsoon Afzal, Manish Motwani, Kathryn T. Stolee, Yuriy Brun, and Claire Le Goues. SOSRepair: Expressive Semantic Search for Real-World Program Repair. *IEEE Transactions on Software Engineering (TSE)*, 47(10):2162–2181, October 2021. DOI: 10.1109/TSE.2019.2944914.

[J27] Ivan Beschastnikh, Perry Liu, Albert Xing, Patty Wang, Yuriy Brun, and Michael D. Ernst. Visualizing distributed system executions. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 29(2):9:1–9:38, March 2020. DOI: 10.1145/3375633.

[J26] Philip S. Thomas, Bruno Castro da Silva, Andrew G. Barto, Stephen Giguere, Yuriy Brun, and Emma Brunskill. Preventing Undesirable Behavior of Intelligent Machines. *Science*, 366(6468):999–1004, 22 November 2019. DOI: 10.1126/science.aag3311.

[J25] Jae young Bang, Yuriy Brun, and Nenad Medvidovic. Collaborative Design Conflicts: Costs and Solutions. *IEEE Software*, 35(6):25–31, November/December 2018. Acceptance rate: $\frac{4}{24} \approx 17\%$. DOI: 10.1109/MS.2018.290110057.

[J24] Manish Motwani, Sandhya Sankaranarayanan, René Just, and Yuriy Brun. Do Automated Program Repair Techniques Repair Hard and Important Bugs? *Empirical Software Engineering (EMSE)*, 23(5):2901–2947, October 2018. DOI: 10.1007/s10664-017-9550-0.

[J23] Seung Yeob Shin, Yuriy Brun, Hari Balasubramanian, Philip L. Henneman, and Leon J. Osterweil. Discrete-Event Simulation and Integer Linear Programming for Constraint-Aware Resource Scheduling. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 48(9):1578–1593, September 2018. Previous version appeared as University of Massachusetts Computer Science technical report UM-CS-2014-009, DOI: 10.1109/TSMC.2017.2681623.

[J22] Claire Le Goues, Yuriy Brun, Sven Apel, Emery Berger, Sarfraz Khurshid, and Yannis Smaragdakis. Effectiveness of Anonymization in Double-Blind Review. *Communications of the ACM*, 61(6):34–37, June 2018. DOI: 10.1145/3208157, arXiv: abs/1709.01609.

[J21] Ivan Beschastnikh, Patty Wang, Yuriy Brun, and Michael D. Ernst. Debugging Distributed Systems. *Communications of the ACM*, 59(8):32–37, August 2016. A previous version appeared in ACM Queue 14(2):91–110, March/April 2016, DOI: 10.1145/2909480.

[J20] Claire Le Goues, Neal Holtschulte, Edward K. Smith, Yuriy Brun, Premkumar Devanbu, Stephanie Forrest, and Westley Weimer. The ManyBugs and IntroClass Benchmarks for Automated Repair of C Programs. *IEEE Transactions on Software Engineering (TSE)*, 41(12):1236–1256, December 2015. 🏆 Recognized as a Spotlight Paper. DOI: 10.1109/TSE.2015.2454513.

[J19] Jie Chen, Xiwei Xu, Leon J. Osterweil, Liming Zhu, Yuriy Brun, Len Bass, Junchao Xiao, Mingshu Li, and Qing Wang. Using Simulation to Evaluate Error Detection Strategies: A Case Study of Cloud-Based Deployment Processes. *Journal of Systems and Software*, 110:205–221, December 2015. DOI: 10.1016/j.jss.2015.08.043.

[J18] Philip L. Henneman, Seung Yeob Shin, Yuriy Brun, Hari Balasubramanian, Fidela Blank, and Leon J. Osterweil. Using Computer Simulation to Study Nurse-to-Patient Ratios in an Emergency Department. *The Journal of Nursing Administration*, 45(11):551–556, November 2015. DOI: 10.1097/NNA.0000000000000262.

[J17] Yuriy Brun, Jae young Bang, George Edwards, and Nenad Medvidovic. Self-Adapting Reliability in Distributed Software Systems. *IEEE Transactions on Software Engineering (TSE)*, 41(8):764–780, August 2015. Extended and revised version of [C10]. DOI: 10.1109/TSE.2015.2412134.

[J16] Kıvanç Muşlu, Yuriy Brun, Michael D. Ernst, and David Notkin. Reducing feedback delay of software development tools via continuous analyses. *IEEE Transactions on Software Engineering (TSE)*, 41(8):745–763, August 2015. Extended and revised version of [C18]. DOI: 10.1109/TSE.2015.2417161.

[J15] Ivan Beschastnikh, Yuriy Brun, Jenny Abrahamson, Michael D. Ernst, and Arvind Krishnamurthy. Using declarative specification to improve the understanding, extensibility, and comparison of model-inference algorithms. *IEEE Transactions on Software Engineering (TSE)*, 41(4):408–428, April 2015. Extended and revised version of [C17]. DOI: 10.1109/TSE.2014.2369047.

[J14] Yuriy Brun, Reid Holmes, Michael D. Ernst, and David Notkin. Early Detection of Collaboration Conflicts and Risks. *IEEE Transactions on Software Engineering (TSE)*, 39(10):1358–1375, October 2013. 🏆 Recognized as a Spotlight Paper. Extended and revised version of [C12]. DOI: 10.1109/TSE.2013.28.

[J13] Yuriy Brun and Nenad Medvidovic. Entrusting Private Computation and Data to Untrusted Networks. *IEEE Transactions on Dependable and Secure Computing (TDSC)*, 10(4):225–238, July/August 2013. DOI: 10.1109/TDSC.2013.13.

[J12] Yuriy Brun. Efficient 3-SAT algorithms in the tile assembly model. *Natural Computing*, 11(2):209–229, 2012. Extended and revised version of [C9]. DOI: 10.1007/s11047-011-9299-0.

[J11] Ivan Beschastnikh, Yuriy Brun, Michael D. Ernst, Arvind Krishnamurthy, and Thomas E. Anderson. Mining temporal invariants from partially ordered logs. *ACM SIGOPS Operating Systems Review*, 45(3):39–46, December 2011. A previous version appeared in the Proceedings of the Workshop on Managing Systems via Log Analysis and Machine Learning Techniques (SLAML), 2011. DOI: 10.1145/2094091.2094101.

[J10] Nenad Medvidovic, Hossein Tajalli, Joshua Garcia, Yuriy Brun, Ivo Krka, and George Edwards. Engineering heterogeneous robotics systems: A software architecture-based approach. *IEEE Computer*, 44(5):61–71, May 2011. DOI: 10.1109/MC.2010.368.

[J9] Sam Malek, George Edwards, Yuriy Brun, Hossein Tajalli, Joshua Garcia, Ivo Krka, Nenad Medvidovic, Marija Mikic-Rakic, and Gaurav Sukhatme. An architecture-driven software mobility framework. *Journal of Systems and Software*, 83(6):972–989, June 2010. Acceptance rate: $\frac{6}{26} \approx 23\%$. DOI: 10.1016/j.jss.2009.11.003.

[J8] Yuriy Brun and Dustin Reishus. Path finding in the tile assembly model. *Theoretical Computer Science*, 410(15):1461–1472, April 2009. Extended and revised version of [C6]. A previous version appeared as University of Southern California, Center for Software Engineering technical report USC-CSSE-2008-802. DOI: 10.1016/j.tcs.2008.12.008.

[J7] Yuriy Brun. Solving satisfiability in the tile assembly model with a constant-size tileset. *Journal of Algorithms*, 63(4):151–166, 2008. Extended and revised version of [W4]. A previous version appeared as University of Southern California, Center for Software Engineering technical report USC-CSSE-2008-801. DOI: 10.1016/j.jalgor.2008.07.002.

[J6] Yuriy Brun. Solving NP-complete problems in the tile assembly model. *Theoretical Computer Science*, 395(1):31–46, April 2008. Extended and revised version of [C5]. A previous version appeared as University of Southern California, Center for Software Engineering technical report USC-CSSE-2007-703. DOI: 10.1016/j.tcs.2007.07.052.

[J5] Yuriy Brun. Nondeterministic polynomial time factoring in the tile assembly model. *Theoretical Computer Science*, 395(1):3–23, April 2008. A previous version appeared as University of Southern California, Center for Software Engineering technical report USC-CSSE-2007-707. DOI: 10.1016/j.tcs.2007.07.051.

[J4] Yuriy Brun. Arithmetic computation in the tile assembly model: Addition and multiplication. *Theoretical Computer Science*, 378(1):17–31, June 2007. Extended and revised version of [C3]. DOI: 10.1016/j.tcs.2006.10.025.

[J3] Dustin Reishus, Bilal Shaw, Yuriy Brun, Nickolas Chelyapov, and Leonard Adleman. Self-assembly of DNA double-double crossover complexes into high-density, doubly connected, planar structures. *Journal of the American Chemical Society (JACS)*, 127(50):17590–17591, November 2005. DOI: 10.1021/ja0557177.

[J2] Nickolas Chelyapov, Yuriy Brun, Manoj Gopalkrishnan, Dustin Reishus, Bilal Shaw, and Leonard Adleman. DNA triangles and self-assembled hexagonal tilings. *Journal of the American Chemical Society (JACS)*, 126(43):13924–13925, October 2004. DOI: 10.1021/ja0458120.

[J1] Daniel Vekhter, Alex Rasin, and Yuriy Brun. Mutual exclusion algorithms in distributed networks. *Journal of Student Research, Science and Technology*, 2(1):65–67, February 1997.

Refereed Conference Publications

[C56] Zhanna Kaufman, Emily First, Alex Sanchez-Stern, Kyle Thompson, Sorin Lerner, and Yuriy Brun. ProofCoop: Collaborative Automated Formal Verification. In *Proceedings of the 48th International Conference on Software Engineering (ICSE)*, Rio de Janeiro, Brazil, April 2026. Acceptance rate: $\frac{160}{809} \approx 20\%$ (2nd cycle). DOI: 10.1145/3744916.3787783.

[C55] Saketh Ram Kasibatla, Arpan Agrawal, Yuriy Brun, Sorin Lerner, Talia Ringer, and Emily First. Cobblestone: A Divide-and-Conquer Approach for Automating Formal Verification. In *Proceedings of the 48th International Conference on Software Engineering (ICSE)*, Rio de Janeiro, Brazil, April 2026. Acceptance rate: $\frac{160}{660} \approx 24\%$ (1st cycle). DOI: 10.1145/3744916.3773178, arXiv: abs/2410.19940.

[C54] Aline Weber, Blossom Metevier, Yuriy Brun, Philip S. Thomas, and Bruno Castro da Silva. Beyond Prediction: Managing the Repercussions of Machine Learning Applications. In *Proceedings of the 39th Annual Conference on Neural Information Processing Systems (NeurIPS), Advances in Neural Information Processing Systems 38*, San Diego, CA, USA and Mexico City, Mexico, December 2025. Acceptance rate: $\frac{5,290}{21,575} \approx 25\%$.

[C53] Zhanna Kaufman, Madeline Endres, Cindy Xiong Bearfield, and Yuriy Brun. Your Model Is Unfair, Are You Even Aware? Inverse Relationship Between Comprehension and Trust in Explainability Visualizations of Biased ML Models. *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 32(1):637–647, 2026. Acceptance rate: $\frac{131}{537} \approx 24\%$. Graphics Replicability Stamp Initiative: Ⓡ Replicability Stamp. Accepted as part of IEEE Visualization & Visual Analytics (VIS) Conference, Vienna, Austria, November 2–7, 2025. DOI: 10.1109/TVCG.2025.3634245.

[C52] Kyle Thompson, Nuno Saavedra, Pedro Carrott, Kevin Fisher, Alex Sanchez-Stern, Yuriy Brun, João F. Ferreira, Sorin Lerner, and Emily First. Rango: Adaptive Retrieval-Augmented Proving for Automated Software Verification. In *Proceedings of the 47th International Conference on Software Engineering (ICSE)*, pages 347–359, Ottawa, ON, Canada, April 2025. Acceptance rate: $\frac{66}{662} \approx 10\%$ (2nd cycle direct accept, without revision). 🏆 ACM SIGSOFT Distinguished Paper Award. ACM artifact badges granted: Artifact Available, Artifact Functional, Artifact Reusable. DOI: 10.1109/ICSE55347.2025.00161, arXiv: abs/2412.14063.

[C51] Alex Sanchez-Stern, Abhishek Varghese, Zhanna Kaufman, Dylan Zhang, Talia Ringer, and Yuriy Brun. QEDCartographer: Automating Formal Verification Using Reward-Free Reinforcement Learning. In *Proceedings of the 47th International Conference on Software Engineering (ICSE)*, pages 307–320, Ottawa, ON, Canada, April 2025. Acceptance rate: $\frac{46}{523} \approx 8.8\%$ (1st cycle direct accept, without revision). ACM artifact badges granted: Artifact Available. DOI: 10.1109/ICSE55347.2025.00033, arXiv: abs/2408.09237.

[C50] Lijun Zhang, Xiao Liu, Antoni Viros i Martin, Cindy Xiong Bearfield, Yuriy Brun, and Hui Guan. Attack-Resilient Image Watermarking Using Stable Diffusion. In *Proceedings of the 38th Annual Conference on Neural Information Processing Systems (NeurIPS), Advances in Neural Information Processing Systems 37*, pages 38480–38507, Vancouver, BC, Canada, December 2024. Acceptance rate: $\frac{4,036}{15,671} \approx 26\%$. arXiv: abs/2401.04247.

[C49] Kunjal Panchal, Nisarg Parikh, Sunav Choudhary, Lijun Zhang, Yuriy Brun, and Hui Guan. Thinking Forward: Memory-Efficient Federated Finetuning of Language Models. In *Proceedings of the 38th Annual Conference on Neural Information Processing Systems (NeurIPS), Advances in Neural Information Processing Systems 37*, pages 69069–69119, Vancouver, BC, Canada, December 2024. Acceptance rate: $\frac{4,036}{15,671} \approx 26\%$.

[C48] Hadeel Eladawy, Claire Le Goues, and Yuriy Brun. Automated Program Repair, What Is It Good For? Not Absolutely Nothing! In *Proceedings of the 46th International Conference on Software Engineering (ICSE)*, pages 1017–1029, Lisbon, Portugal, April 2024. Acceptance rate: $\frac{234}{1,079} \approx 22\%$. ACM artifact badges granted: Artifact Available, Artifact Reusable. DOI: 10.1145/3597503.3639095.

[C47] Aimen Gaba, Zhanna Kaufman, Jason Cheung, Marie Shvakel, Kyle Wm Hall, Yuriy Brun, and Cindy Xiong Bearfield. My Model is Unfair, Do People Even Care? Visual Design Affects Trust and Perceived Bias in Machine Learning. *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 30(1):327–337, January 2024. Acceptance rate: $\frac{133}{539} \approx 25\%$. Accepted as part of IEEE Visualization & Visual Analytics (VIS) Conference, Melbourne, Australia, October 22–27, 2023. DOI: 10.1109/TVCG.2023.3327192, arXiv: abs/2308.03299.

[C46] Emily First, Markus Rabe, Talia Ringer, and Yuriy Brun. Baldur: Whole-Proof Generation and Repair with Large Language Models. In *Proceedings of the 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 1229–1241, San Francisco, CA, USA, December 2023. Acceptance rate: $\frac{60}{473} \approx 13\%$ (direct accept, without revision). 🏆 ACM SIGSOFT Distinguished Paper Award. DOI: 10.1145/3611643.3616243, arXiv: abs/2303.04910.

[C45] Manish Motwani and Yuriy Brun. Better Automatic Program Repair by Using Bug Reports and Tests Together. In *Proceedings of the 45th International Conference on Software Engineering (ICSE)*, pages 1229–1241, Melbourne, Australia, May 2023. Acceptance rate: $\frac{207}{796} \approx 26\%$. ACM artifact badges granted: Artifact Available, Artifact Reusable. DOI: 10.1109/ICSE48619.2023.00109.

[C44] Manish Motwani and Yuriy Brun. Understanding Why and Predicting When Developers Adhere to Code-Quality Standards. In *Proceedings of the Software Engineering in Practice Track at the 45th International Conference on Software Engineering (ICSE SEIP)*, pages 432–444, Melbourne, Australia, May 2023. Acceptance rate: $\frac{41}{146} \approx 28\%$. DOI: 10.1109/ICSE-SEIP58684.2023.00045, arXiv: abs/2011.08340.

[C43] Yixue Zhao, Saghar Talebipour, Kesina Baral, Hyojae Park, Leon Yee, Safwat Ali Khan, Yuriy Brun, Nenad Medvidovic, and Kevin Moran. AVGUST: Automating Usage-Based Test Generation from Videos of App Executions. In *Proceedings of the 29th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 421–433, Singapore, November 2022. Acceptance rate: $\frac{99}{449} \approx 22\%$. ACM artifact badges granted: Artifact Available, Artifact Functional. DOI: 10.1145/3540250.3549134, arXiv: abs/2209.02577.

[C42] Emily First and Yuriy Brun. Diversity-Driven Automated Formal Verification. In *Proceedings of the 44th International Conference on Software Engineering (ICSE)*, pages 749–761, Pittsburgh, PA, USA, May 2022. Acceptance rate: $\frac{197}{751} \approx 26\%$. 🏆 ACM SIGSOFT Distinguished Paper Award. ACM artifact badges granted: Artifact Available. DOI: 10.1145/3510003.3510138.

[C41] Stephen Giguere, Blossom Metevier, Yuriy Brun, Bruno Castro da Silva, Philip S. Thomas, and Scott Niekum. Fairness Guarantees under Demographic Shift. In *Proceedings of the 10th International Conference on Learning Representations (ICLR)*, April 2022. Acceptance rate: $\frac{1{,}095}{3{,}391} \approx 32\%$. ACM artifact badges granted: Results Reproduced.

[C40] Emily First, Yuriy Brun, and Arjun Guha. TacTok: Semantics-Aware Proof Synthesis. *Proceedings of the ACM on Programming Languages (PACMPL) Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA) issue*, 4:231:1–231:31, November 2020. Acceptance rate: $\frac{109}{302} \approx 36\%$. DOI: 10.1145/3428299.

[C39] Arman Shahbazian, Suhrid Karthik, Yuriy Brun, and Nenad Medvidovic. eQual: Informing Early Design Decisions. In *Proceedings of the 27th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 1039–1051, Sacramento,

CA, USA, November 2020. Acceptance rate: $\frac{101}{360} \approx 28\%$. ACM artifact badges granted: Artifact Available. DOI: 10.1145/3368089.3409749.

[C38] Brittany Johnson, Yuriy Brun, and Alexandra Meliou. Causal Testing: Understanding Defects' Root Causes. In *Proceedings of the 42nd International Conference on Software Engineering (ICSE)*, pages 87–99, Seoul, Republic of Korea, June 2020. Acceptance rate: $\frac{129}{617} \approx 21\%$. ACM SIGSOFT Distinguished Artifact Award. ACM artifact badges granted: Artifact Available, Artifact Reusable. DOI: 10.1145/3377811.3380377, arXiv: abs/1809.06991.

[C37] Blossom Metevier, Stephen Giguere, Sarah Brockman, Ari Kobren, Yuriy Brun, Emma Brunskill, and Philip S. Thomas. Offline Contextual Bandits with High Probability Fairness Guarantees. In *Proceedings of the 33rd Annual Conference on Neural Information Processing Systems (NeurIPS), Advances in Neural Information Processing Systems 32*, pages 14893–14904, Vancouver, BC, Canada, December 2019. Acceptance rate: $\frac{1,428}{6,743} \approx 21\%$.

[C36] Abhinav Jangda, Donald Pinckney, Yuriy Brun, and Arjun Guha. Formal Foundations of Serverless Computing. *Proceedings of the ACM on Programming Languages (PACMPL) Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA) issue*, 3:149:1–149:26, October 2019. Acceptance rate: $\frac{72}{201} \approx 35\%$. ACM SIGPLAN Distinguished Paper Award. DOI: 10.1145/3360575, arXiv: abs/1902.05870.

[C35] Manish Motwani and Yuriy Brun. Automatically Generating Precise Oracles from Structured Natural Language Specifications. In *Proceedings of the 41st International Conference on Software Engineering (ICSE)*, pages 188–199, Montreal, QC, Canada, May 2019. Acceptance rate: $\frac{109}{529} \approx 21\%$. ACM artifact badges granted: Artifact Available, Artifact Reusable. DOI: 10.1109/ICSE.2019.00035.

[C34] Daniela Seabra Oliveira, Tian Lin, Muhammad Sajidur Rahman, Rad Akefirad, Donovan Ellis, Eliany Perez, Rahul Bobhate, Lois A. DeLong, Justin Cappos, Yuriy Brun, and Natalie C. Ebner. API Blindspots: Why Experienced Developers Write Vulnerable Code. In *Proceedings of the USENIX Symposium on Usable Privacy and Security (SOUPS)*, pages 315–328, Baltimore, MD, USA, August 2018. Acceptance rate: $\frac{28}{123} \approx 23\%$.

[C33] Arman Shahbazian, Youn Kyu Lee, Duc Le, Yuriy Brun, and Nenad Medvidovic. Recovering Architectural Design Decisions. In *Proceedings of the IEEE International Conference on Software Architecture (ICSA)*, pages 95–104, Seattle, WA, USA, May 2018. Acceptance rate: $\frac{22}{86} \approx 26\%$. DOI: 10.1109/ICSA.2018.00019.

[C32] Aaron Weiss, Arjun Guha, and Yuriy Brun. Tortoise: Interactive System Configuration Repair. In *Proceedings of the 32nd IEEE/ACM International Conference on Automated Software Engineering (ASE)*, pages 625–636, Urbana-Champaign, IL, USA, October/November 2017. Acceptance rate: $\frac{65}{314} \approx 21\%$. DOI: 10.1109/ASE.2017.8115673, arXiv: abs/1709.05366.

[C31] Sainyam Galhotra, Yuriy Brun, and Alexandra Meliou. Fairness Testing: Testing Software for Discrimination. In *Proceedings of the 11th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 498–510, Paderborn, Germany, September 2017. Acceptance rate: $\frac{72}{295} \approx 24\%$. ACM SIGSOFT Distinguished Paper Award. DOI: 10.1145/3106237.3106277, arXiv: abs/1709.03221.

[C30] Jae young Bang, Yuriy Brun, and Nenad Medvidovic. Continuous Analysis of Collaborative Design. In *Proceedings of the IEEE International Conference on Software Architecture (ICSA)*, pages 97–106, Gothenburg, Sweden, April 2017. Acceptance rate: $\frac{21}{95} \approx 22\%$. Best Paper Award. DOI: 10.1109/ICSA.2017.45.

[C29] Qianqian Wang, Yuriy Brun, and Alessandro Orso. Behavioral Execution Comparison: Are Tests Representative of Field Behavior? In *Proceedings of the 10th IEEE International Conference on Software Testing, Verification, and Validation (ICST)*, pages 321–332, Tokyo, Japan, March 2017. Acceptance rate: $\frac{36}{135} \approx 27\%$. DOI: 10.1109/ICST.2017.36.

[C28] Yalin Ke, Kathryn T. Stolee, Claire Le Goues, and Yuriy Brun. Repairing Programs with Semantic Code Search. In *Proceedings of the 30th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, pages 295–306, Lincoln, NE, USA, November 2015. Acceptance rate: $\frac{55}{289} \approx 19\%$. DOI: 10.1109/ASE.2015.60.

[C27] Jeff Rasley, Eleni Gessiou, Tony Ohmann, Yuriy Brun, Shriram Krishnamurthi, and Justin Cappos. Detecting Latent Cross-Platform API Violations. In *Proceedings of the 26th IEEE International Symposium on Software Reliability Engineering (ISSRE)*, pages 484–495, Gaithersburg, MD, USA, November 2015. Acceptance rate: $\frac{33}{151} \approx 22\%$. DOI: 10.1109/ISSRE.2015.7381841.

[C26] Robert J. Walls, Yuriy Brun, Marc Liberatore, and Brian Neil Levine. Discovering Specification Violations in Networked Software Systems. In *Proceedings of the 26th IEEE International Symposium on Software Reliability Engineering (ISSRE)*, pages 496–506, Gaithersburg, MD, USA, November 2015. Acceptance rate: $\frac{33}{151} \approx 22\%$. DOI: 10.1109/ISSRE.2015.7381842.

[C25] Edward K. Smith, Earl Barr, Claire Le Goues, and Yuriy Brun. Is the Cure Worse than the Disease? Overfitting in Automated Program Repair. In *Proceedings of the 10th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 532–543, Bergamo, Italy, September 2015. Acceptance rate: $\frac{74}{291} \approx 25\%$. 🏆 FSE 2025 Test of Time Honorable Mention Award. Previous versions appeared as University of Massachusetts Computer Science technical report UM-CS-2015-007 and as UC Davis College of Engineering technical report `https://escholarship.org/uc/item/3z8926ks`. DOI: 10.1145/2786805.2786825.

[C24] Kıvanç Muşlu, Yuriy Brun, and Alexandra Meliou. Preventing Data Errors with Continuous Testing. In *Proceedings of the ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA)*, pages 373–384, Baltimore, MD, USA, July 2015. Acceptance rate: $\frac{33}{119} \approx 28\%$. Extended and revised version of [H11]. DOI: 10.1145/2771783.2771792.

[C23] Seung Yeob Shin, Yuriy Brun, Leon J. Osterweil, Hari Balasubramanian, and Philip L. Henneman. Resource Specification for Prototyping Human-Intensive Systems. In *Proceedings of the 18th International Conference on Fundamental Approaches to Software Engineering (FASE)*, pages 332–346, London, England, April 2015. Acceptance rate: $\frac{23}{82} \approx 28\%$. DOI: 10.1007/978-3-662-46675-9_22.

[C22] Ivo Krka, Yuriy Brun, and Nenad Medvidovic. Automatic Mining of Specifications from Invocation Traces and Method Invariants. In *Proceedings of the 22nd ACM SIGSOFT Symposium on the Foundations of Software Engineering (FSE)*, pages 178–189, Hong Kong, China, November 2014. Acceptance rate: $\frac{61}{273} \approx 22\%$. A previous version appeared as University of Southern California, Center for Software Engineering technical report USC-CSSE-2013-509. DOI: 10.1145/2635868.2635890.

[C21] Earl T. Barr, Yuriy Brun, Premkumar Devanbu, Mark Harman, and Federica Sarro. The Plastic Surgery Hypothesis. In *Proceedings of the 22nd ACM SIGSOFT Symposium on the Foundations of Software Engineering (FSE)*, pages 306–317, Hong Kong, China, November 2014. Acceptance rate: $\frac{61}{273} \approx 22\%$. DOI: 10.1145/2635868.2635898.

[C20] Tony Ohmann, Michael Herzberg, Sebastian Fiss, Armand Halbert, Marc Palyart, Ivan Beschastnikh, and Yuriy Brun. Behavioral Resource-Aware Model Inference. In *Proceedings of the 29th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, pages 19–30, Västerås, Sweden, September 2014. Acceptance rate: $\frac{50}{258} \approx 19\%$. DOI: 10.1145/2642937.2642988.

[C19] Ivan Beschastnikh, Yuriy Brun, Michael D. Ernst, and Arvind Krishnamurthy. Inferring Models of Concurrent Systems from Logs of their Behavior with CSight. In *Proceedings of the 36th International Conference on Software Engineering (ICSE)*, pages 468–479, Hyderabad, India, June 2014. Acceptance rate: $\frac{99}{495} = 20\%$. Previous versions appeared as University of British Columbia technical report 2429/46122 and as University of Washington technical report UW-CSE-12-10-01. DOI: 10.1145/2568225.2568246.

[C18] Kıvanç Muşlu, Yuriy Brun, Michael D. Ernst, and David Notkin. Making Offline Analyses Continuous. In *Proceedings of the 9th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 323–333, Saint Petersburg, Russia, August 2013. Acceptance rate: $\frac{51}{251} \approx 20\%$. DOI: 10.1145/2491411.2491460.

[C17] Ivan Beschastnikh, Yuriy Brun, Jenny Abrahamson, Michael D. Ernst, and Arvind Krishnamurthy. Unifying FSM-inference algorithms through declarative specification. In *Proceedings of the 35th International Conference on Software Engineering (ICSE)*, pages 252–261, San Francisco, CA, USA, May 2013. Acceptance rate: $\frac{85}{461} \approx 18\%$. A previous version appeared as University of Washington technical report UW-CSE-13-03-01. DOI: 10.1109/ICSE.2013.6606571.

[C16] Kıvanç Muşlu, Yuriy Brun, Reid Holmes, Michael D. Ernst, and David Notkin. Speculative Analysis of Integrated Development Environment Recommendations. In *Proceedings of the 27th ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, pages 669–682, Tucson, AZ, USA, October 2012. Acceptance rate: $\frac{57}{228} = 25\%$. DOI: 10.1145/2384616.2384665.

[C15] George Edwards, Yuriy Brun, and Nenad Medvidovic. Automated analysis and code generation for domain-specific models. In *the joint 10th Working IEEE/IFIP Conference on Software Architecture and 6th European Conference on Software Architecture (WICSA/ECSA)*, pages 161–170, Helsinki, Finland, September 2012. Acceptance rate: $\frac{20}{96} \approx 21\%$. Extended and revised version of [H7]. A previous version appeared as University of Southern California, Center for Software Engineering technical report USC-CSSE-2010-517. DOI: 10.1109/WICSA-ECSA.212.24.

[C14] Yuriy Brun and Nenad Medvidovic. Keeping Data Private while Computing in the Cloud. In *Proceedings of the 5th International Conference on Cloud Computing (CLOUD)*, pages 285–294, Honolulu, HI, USA, June 2012. Acceptance rate: $\frac{48}{282} \approx 17\%$. Previous versions appeared as University of Southern California, Center for Software Engineering technical reports USC-CSSE-2007-714 and USC-CSSE-2008-819. DOI: 10.1109/CLOUD.2012.126.

[C13] Jochen Wuttke, Yuriy Brun, Alessandra Gorla, and Jonathan Ramaswamy. Traffic Routing for Evaluating Self-Adaptation. In *Proceedings of the 7th International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS)*, pages 27–32, Zurich, Switzerland, June 2012. Acceptance rate: $\frac{19}{50} \approx 38\%$. DOI: 10.1109/SEAMS.2012.6224388.

[C12] Yuriy Brun, Reid Holmes, Michael D. Ernst, and David Notkin. Proactive detection of collaboration conflicts. In *Proceedings of the 8th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 168–178, Szeged, Hungary, September 2011. Acceptance rate: $\frac{34}{203} \approx 17\%$. 🏆 ACM SIGSOFT

Distinguished Paper Award. A previous version appeared as University of Washington technical report UW-CSE-10-03-01. DOI: 10.1145/2025113.2025139.

[C11] Ivan Beschastnikh, Yuriy Brun, Sigurd Schneider, Michael Sloan, and Michael D. Ernst. Leveraging existing instrumentation to automatically infer invariant-constrained models. In *Proceedings of the 8th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 267–277, Szeged, Hungary, September 2011. Acceptance rate: $\frac{34}{203} \approx 17\%$. DOI: 10.1145/2025113.2025151.

[C10] Yuriy Brun, George Edwards, Jae young Bang, and Nenad Medvidovic. Smart redundancy for distributed computation. In *Proceedings of the 31st International Conference on Distributed Computing Systems (ICDCS)*, pages 665–676, Minneapolis, MN, USA, June 2011. Acceptance rate: $\frac{87}{565} \approx 15\%$. A previous version appeared as University of Southern California, Center for Software Engineering technical report USC-CSSE-2009-510. DOI: 10.1109/ICDCS.2011.25.

[C9] Yuriy Brun. Improving efficiency of 3-SAT-solving tile systems. *Lecture Notes on Computer Science*, 6518/2011:1–12, 2011. Extended and revised in [J12]. A previous version appeared in the Proceedings of the 16th International Conference on DNA Computing (DNA10), pages 70–81, 2010. DOI: 10.1007/978-3-642-18305-8_1.

[C8] Yuriy Brun. Improving impact of self-adaptation and self-management research through evaluation methodology. In *Proceedings of Software Engineering for Adaptive and Self-Managing Systems (SEAMS)*, pages 1–9, Cape Town, South Africa, May 2010. Acceptance rate: $\frac{13}{32} \approx 41\%$. DOI: 10.1145/1808984.1808985.

[C7] Ivo Krka, Yuriy Brun, George Edwards, and Nenad Medvidovic. Synthesizing partial component-level behavior models from system specifications. In *Proceedings of the 7th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 305–314, Amsterdam, The Netherlands, August 2009. Acceptance rate: $\frac{32}{217} \approx 15\%$. Extended and revised version of [H1]. DOI: 10.1145/1595696.1595756.

[C6] Yuriy Brun and Dustin Reishus. Connecting the dots: Molecular machinery for distributed robotics. *Lecture Notes on Computer Science*, 5347/2009:102–111, 2009. Extended and revised in [J8]. A previous version appeared in the Proceedings of the 14th International Meeting on DNA Computing (DNA), pages 27–35, 2008. DOI: 10.1007/978-3-642-03076-5_9.

[C5] Yuriy Brun. Constant-size tileset for solving an NP-complete problem in nondeterministic linear time. *Lecture Notes on Computer Science*, 4848/2008:26–35, 2008. Extended and revised in [J7]. A previous version appeared as "Asymptotically Optimal Program Size Complexity for Solving NP-Complete Problems in the Tile Assembly Model" in the Proceedings of the 13th International Meeting on DNA Computing (DNA07), pages 231–240, 2007. DOI: 10.1007/978-3-540-77962-9_3.

[C4] Yuriy Brun and Nenad Medvidovic. An architectural style for solving computationally intensive problems on large networks. In *Proceedings of Software Engineering for Adaptive and Self-Managing Systems (SEAMS)*, Minneapolis, MN, USA, May 2007. Acceptance rate: $\frac{18}{26} \approx 69\%$. 🏆 SEAMS 2020 Most Influential Paper Award. DOI: 10.1109/SEAMS.2007.4.

[C3] Yuriy Brun. Adding and multiplying in the tile assembly model. In *Proceedings of the 4th Foundations of Nanoscience: Self-Assembled Architectures and Devices (FNANO)*, Snowbird, UT, USA, April 2007. Extended and revised in [J4].

[C2] Yuriy Brun, Manoj Gopalkrishnan, Dustin Reishus, Bilal Shaw, Nickolas Chelyapov, and Leonard Adleman. Building blocks for DNA self-assembly. In *Proceedings of the 1st Foundations of Nanoscience: Self-Assembled Architectures and Devices (FNANO)*, pages 2–15, Snowbird, UT, USA, April 2004.

[C1] Yuriy Brun and Michael D. Ernst. Finding latent code errors via machine learning over programs executions. In *Proceedings of the 26th International Conference on Software Engineering (ICSE)*, pages 480–490, Edinburgh, Scotland, May 2004. Acceptance rate: $\frac{58}{436} \approx 13\%$. DOI: 10.1109/ICSE.2004.1317470.

Refereed Short Publications

[H21] Austin Hoag, James E. Kostas, Bruno Castro da Silva, Philip S. Thomas, and Yuriy Brun. Seldonian Toolkit: Building Software with Safe and Fair Machine Learning. In *Proceedings of the Demonstrations Track at the 45th International Conference on Software Engineering (ICSE)*, pages 107–111, Melbourne, Australia, May 2023. Acceptance rate: $\frac{38}{80} \approx 48\%$. DOI: 10.1109/ICSE-Companion58688.2023.00035.

[H20] Arpan Agrawal, Emily First, Zhanna Kaufman, Tom Reichel, Shizhuo Zhang, Timothy Zhou, Alex Sanchez-Stern, Talia Ringer, and Yuriy Brun. Proofster: Automated Formal Verification. In *Proceedings of the Demonstrations Track at the 45th International Conference on Software Engineering (ICSE)*, pages 26–30, Melbourne, Australia, May 2023. Acceptance rate: $\frac{38}{80} \approx 48\%$. DOI: 10.1109/ICSE-Companion58688.2023.00018.

[H19] Saghar Talebipour, Hyojae Park, Kesina Baral, Leon Yee, Safwat Ali Khan, Kevin Moran, Yuriy Brun, Nenad Medvidovic, and Yixue Zhao. AVGUST: A Tool for Generating Usage-Based Tests from Videos of App Executions. In *Proceedings of the Demonstrations Track at the 45th International Conference on Software Engineering (ICSE)*, pages 83–87, Melbourne, Australia, May 2023. Acceptance rate: $\frac{38}{80} \approx 48\%$. DOI: 10.1109/ICSE-Companion58688.2023.00030.

[H18] Brittany Johnson and Yuriy Brun. Fairkit-learn: A Fairness Evaluation and Comparison Toolkit. In *Proceedings of the Demonstrations Track at the 44th International Conference on Software Engineering (ICSE)*, pages 70–74, Pittsburgh, PA, USA, May 2022. Acceptance rate: $\frac{49}{98} = 50\%$. DOI: 10.1145/3510454.3516830.

[H17] Yuriy Brun and Alexandra Meliou. Software Fairness. In *Proceedings of the New Ideas and Emerging Results Track at the 26th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 754–759, Lake Buena Vista, FL, USA, November 2018. Acceptance rate: $\frac{14}{51} \approx 27\%$. DOI: 10.1145/3236024.3264838.

[H16] Rico Angell, Brittany Johnson, Yuriy Brun, and Alexandra Meliou. Themis: Automatically Testing Software for Discrimination. In *Proceedings of the Demonstrations Track at the 26th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 871–875, Lake Buena Vista, FL, USA, November 2018. Acceptance rate: $\frac{16}{36} \approx 44\%$. DOI: 10.1145/3236024.3264590.

[H15] Claire Le Goues, Yuriy Brun, Stephanie Forrest, and Westley Weimer. Clarifications on the Construction and Use of the ManyBugs Benchmark. *IEEE Transactions on Software Engineering (TSE), comment paper*, 43(11):1089–1090, November 2017. DOI: 10.1109/TSE.2017.2755651.

[H14] Tony Ohmann, Ryan Stanley, Ivan Beschastnikh, and Yuriy Brun. Visually Reasoning about System and Resource Behavior. In *Proceedings of the Demonstrations Track of the 38th International Conference on Software Engineering (ICSE Demo)*, pages 601–604, Austin, TX, USA, May 2016. Acceptance rate: $\frac{18}{56} \approx 32\%$. DOI: 10.1145/2889160.2889166.

[H13] Kıvanç Muşlu, Luke Swart, Yuriy Brun, and Michael D. Ernst. Simplifying Development History Information Retrieval via Multi-Grained Views. In *Proceedings of the 30th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, pages 697–702, Lincoln, NE, USA, November 2015. Acceptance rate: $\frac{17}{41} \approx 41\%$. DOI: 10.1109/ASE.2015.53.

[H12] Tony Ohmann, Kevin Thai, Ivan Beschastnikh, and Yuriy Brun. Mining Precise Performance-Aware Behavioral Models from Existing Instrumentation. In *Proceedings of the New Ideas and Emerging Results Track at the International Conference on Software Engineering (ICSE)*, pages 484–487, Hyderabad, India, June 2014. Acceptance rate: $\frac{35}{146} \approx 24\%$. DOI: 10.1145/2591062.2591107.

[H11] Kıvanç Muşlu, Yuriy Brun, and Alexandra Meliou. Data Debugging with Continuous Testing. In *Proceedings of the New Ideas Track at the 9th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 631–634, Saint Petersburg, Russia, August 2013. Acceptance rate: $\frac{12}{33} \approx 36\%$. DOI: 10.1145/2491411.2494580.

[H10] Roykrong Sukkerd, Ivan Beschastnikh, Jochen Wuttke, Sai Zhang, and Yuriy Brun. Understanding Regression Failures through Test-Passing and Test-Failing Code Changes. In *Proceedings of the New Ideas and Emerging Results Track at the 35th International Conference on Software Engineering (ICSE)*, pages 1177–1180, San Francisco, CA, USA, May 2013. Acceptance rate: $\frac{31}{143} \approx 22\%$. DOI: 10.1109/ICSE.2013.6606672.

[H9] Xiang Zhao, Yuriy Brun, and Leon J. Osterweil. Supporting Process Undo and Redo in Software Engineering Decision Making. In *Proceedings of the 8th International Conference on Software and System Process (ICSSP)*, pages 56–60, San Francisco, CA, USA, May 2013. Acceptance rate: $\frac{6}{18} \approx 33\%$. A previous version appeared as University of Massachusetts, Computer Science technical report UM-CS-2013-016. DOI: 10.1145/2486046.2486057.

[H8] Kıvanç Muşlu, Yuriy Brun, Reid Holmes, Michael D. Ernst, and David Notkin. Improving IDE Recommendations by Considering Global Implications of Existing Recommendations. In *Proceedings of the New Ideas and Emerging Results Track at the 34th International Conference on Software Engineering (ICSE)*, pages 1349–1352, Zurich, Switzerland, June 2012. Acceptance rate: $\frac{26}{147} \approx 18\%$. DOI: 10.1109/ICSE.2012.6227082.

[H7] George Edwards, Yuriy Brun, and Nenad Medvidovic. Isomorphism in model tools and editors. In *Proceedings of the 26th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, pages 458–461, Lawrence, KS, USA, November 2011. Acceptance rate: $\frac{92}{252} \approx 37\%$. Extended and revised in [C15]. DOI:10.1109/ASE.2011.6100099.

[H6] Ivan Beschastnikh, Yuriy Brun, Michael D. Ernst, Arvind Krishnamurthy, and Thomas E. Anderson. Bandsaw: Log-powered test scenario generation for distributed systems. In *The Work In Progress track of the 23rd ACM Symposium on Operating Systems Principles (SOSP)*, Cascais, Portugal, October 2011. Acceptance rate: $\frac{17}{48} \approx 35\%$.

[H5] Yuriy Brun, Reid Holmes, Michael D. Ernst, and David Notkin. Crystal: Precise and unobtrusive conflict warnings. In *Proceedings of the 8th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering Tool Demonstration Track (ESEC/FSE)*, pages 444–447, Szeged, Hungary, September 2011. Acceptance rate: $\frac{14}{30} \approx 47\%$. DOI: 10.1145/2025113.2025187.

[H4] Ivan Beschastnikh, Jenny Abrahamson, Yuriy Brun, and Michael D. Ernst. Synoptic: Studying logged behavior with inferred models. In *Proceedings of the 8th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering Tool Demonstration Track (ESEC/FSE)*, pages 448–451, Szeged, Hungary, September 2011. Acceptance rate: $\frac{14}{30} \approx 47\%$. DOI: 10.1145/2025113.2025188.

[H3] Chloé Kiddon and Yuriy Brun. That's what she said: Double entendre identification. In *Proceedings of the 49th Annual Meeting of the Association for Computational Linguistics (ACL)*, pages 89–94, Portland, OR, USA, June 2011. ACM ID: 2002756.

[H2] Ivo Krka, Yuriy Brun, Daniel Popescu, Joshua Garcia, and Nenad Medvidovic. Using dynamic execution traces and program invariants to enhance behavioral model inference. In *Proceedings of the New Ideas and Emerging Results Track at the 32nd International Conference on Software Engineering (ICSE)*, pages 179–182, Cape Town, South Africa, May 2010. Acceptance rate: $\frac{19}{76} \approx 25\%$. DOI: 10.1145/1810295.1810324.

[H1] Ivo Krka, George Edwards, Yuriy Brun, and Nenad Medvidovic. From system specifications to component behavioral models. In *Proceedings of the New Ideas and Emerging Results Track at the 31st International Conference on Software Engineering (ICSE)*, pages 315–318, Vancouver, Canada, May 2009. Acceptance rate: $\frac{21}{119} \approx 18\%$. Extended and revised in [C7]. A previous version appeared as University of Southern California, Center for Software Engineering technical report USC-CSSE-2008-821. DOI: 10.1109/ICSE-COMPANION.2009.5071010.

Refereed Book Chapters

[B6] Bradley Schmerl, Jesper Andersson, Thomas Vogel, Myra B. Cohen, Cecilia M. F. Rubira, Yuriy Brun, Alessandra Gorla, Franco Zambonelli, and Luciano Baresi. Challenges in Composing and Decomposing Assurances for Self-Adaptive Systems. In Rogério de Lemos, David Garlan, Carlo Ghezzi, and Holger Giese, editors, *Software Engineering for Self-Adaptive Systems III. Assurances*, volume 9640, pages 64–89. Springer, 2018. DOI: 10.1007/978-3-319-74183-3_3.

[B5] Rogério de Lemos, David Garlan, Carlo Ghezzi, Holger Giese, Jesper Andersson, Marin Litoiu, Bradley Schmerl, Danny Weyns, Luciano Baresi, Nelly Bencomo, Yuriy Brun, Javier Camara, Radu Calinescu, Myra B. Cohen, Alessandra Gorla, Vincenzo Grassi, Lars Grunske, Paola Inverardi, Jean-Marc Jezequel, Sam Malek, Raffaela Mirandola, Marco Mori, Hausi A. Müller, Romain Rouvoy, Cecilia M. F. Rubira, Eric Rutten, Mary Shaw, Giordano Tamburrelli, Gabriel Tamura, Norha M. Villegas, Thomas Vogel, and Franco Zambonelli. Software Engineering for Self-Adaptive Systems: Research Challenges in the Provision of Assurances. In Rogério de Lemos, David Garlan, Carlo Ghezzi, and Holger Giese, editors, *Software Engineering for Self-Adaptive Systems III*, volume 9640, pages 3–30. Springer, 2018. DOI: 10.1007/978-3-319-74183-3_1.

[B4] Yuriy Brun, Ron Desmarais, Kurt Geihs, Marin Litoiu, Antonia Lopes, Mary Shaw, and Mike Smit. A design space for adaptive systems. In Rogério de Lemos, Holger Giese, Hausi A. Müller, and Mary Shaw, editors, *Software Engineering for Self-Adaptive Systems II*, volume 7475, pages 33–50. Springer-Verlag, 2013. DOI: 10.1007/978-3-642-35813-5_2.

[B3] Rogério de Lemos, Holger Giese, Hausi A. Müller, Mary Shaw, Jesper Andersson, Luciano Baresi, Basil Becker, Nelly Bencomo, Yuriy Brun, Bojan Cukic, Ron Desmarais, Schahram Dustdar, Gregor Engels, Kurt Geihs, Karl M. Goeschka, Alessandra Gorla, Vincenzo Grassi, Paola Inverardi, Gabor

Karsai, Jeff Kramer, Marin Litoiu, Antonia Lopes, Jeff Magee, Sam Malek, Serge Mankovskii, Raffaela Mirandola, John Mylopoulos, Oscar Nierstrasz, Mauro Pezzè, Christian Prehofer, Wilhelm Schäfer, Rick Schlichting, Bradley Schmerl, Dennis B. Smith, João P. Sousa, Gabriel Tamura, Ladan Tahvildari, Norha M. Villegas, Thomas Vogel, Danny Weyns, Kenny Wong, and Jochen Wuttke. Software engineering for self-adaptive systems: A second research roadmap. In Rogério de Lemos, Holger Giese, Hausi A. Müller, and Mary Shaw, editors, *Software Engineering for Self-Adaptive Systems II*, volume 7475, pages 1–32. Springer-Verlag, 2013. DOI: 10.1007/978-3-642-35813-5_1.

[B2] Yuriy Brun, Giovanna Di Marzo Serugendo, Cristina Gacek, Holger Giese, Holger Kienle, Marin Litoiu, Hausi Müller, Mauro Pezzè, and Mary Shaw. Engineering self-adaptive systems through feedback loops. In Betty H.C. Cheng, Rogério de Lemos, Holger Giese, Paola Inverardi, and Jeff Magee, editors, *Software Engineering for Self-Adaptive Systems*, volume 5525, pages 48–70. Springer-Verlag, 2009. DOI: 10.1007/978-3-642-02161-9_3.

[B1] Betty H.C. Cheng, Rogério de Lemos, Holger Giese, Paola Inverardi, Jeff Magee, Jesper Andersson, Basil Becker, Nelly Bencomo, Yuriy Brun, Bojan Cukic, Giovanna Di Marzo Serugendo, Schahram Dustdar, Anthony Finkelstein, Cristina Gacek, Kurt Geihs, Vincenzo Grassi, Gabor Karsai, Holger M. Kienle, Jeff Kramer, Marin Litoiu, Sam Malek, Raffaela Mirandola, Hausi A. Müller, Sooyong Park, Mary Shaw, Matthias Tichy, Massimo Tivoli, Danny Weyns, and Jon Whittle. Software engineering for self-adaptive systems: A research roadmap. In Betty H.C. Cheng, Rogério de Lemos, Holger Giese, Paola Inverardi, and Jeff Magee, editors, *Software Engineering for Self-Adaptive Systems*, volume 5525, pages 1–26. Springer-Verlag, 2009. DOI: 10.1007/978-3-642-02161-9_1.

Refereed Workshop Publications

[W12] Donald Pinckney, Arjun Guha, and Yuriy Brun. Wasm/k: Delimited Continuations for WebAssembly. In *Proceedings of the ACM SIGPLAN International Symposium on Dynamic Languages (DLS)*, pages 16–28, Chicago, IL, USA, November 2020. Acceptance rate: $\frac{9}{14} \approx 64\%$. DOI: 10.1145/3426422.3426978, arXiv: abs/1902.05870.

[W11] Seung Yeob Shin, Yuriy Brun, and Leon J. Osterweil. Specification and Analysis of Human-Intensive System Resource-Utilization Policies. In *Proceedings of the 8th International Workshop on Software Engineering in Healthcare Systems (SEHS)*, pages 8–14, Austin, TX, USA, May 2016. Acceptance rate: $\frac{10}{16} \approx 63\%$. DOI: 10.1145/2897683.2897688.

[W10] Seung Yeob Shin, Hari Balasubramanian, Yuriy Brun, Philip L. Henneman, and Leon J. Osterweil. Resource Scheduling through Resource-Aware Simulation of Emergency Departments. In *Proceedings of the 5th International Workshop on Software Engineering in Health Care (SEHC)*, pages 64–70, San Francisco, CA, USA, May 2013. Acceptance rate: $\frac{16}{30} \approx 53\%$. DOI: 10.1109/SEHC.2013.6602480.

[W9] Xiang Zhao, Emery R. Boose, Yuriy Brun, Barbara Staudt Lerner, and Leon J. Osterweil. Supporting Undo and Redo in Scientific Data Analysis. In *Proceedings of the 5th USENIX Workshop on the Theory and Practice of Provenance (TaPP)*, Lombard, IL, USA, April 2013. Acceptance rate: $\frac{12}{19} \approx 63\%$. A previous version appeared as University of Massachusetts, Computer Science technical report UM-CS-2013-015.

[W8] Yuriy Brun, Kıvanç Muşlu, Reid Holmes, Michael D. Ernst, and David Notkin. Predicting Development Trajectories to Prevent Collaboration Conflicts. In *the Future of Collaborative Software Development (FCSD)*, Seattle, WA, USA, February 2012.

[W7] Yuriy Brun, Reid Holmes, Michael D. Ernst, and David Notkin. Speculative analysis: Exploring future states of software. In *Proceedings of the 2010 Foundations of Software Engineering Working Conference on the Future of Software Engineering Research (FoSER)*, pages 59–63, Santa Fe, NM, USA, November 2010. Acceptance rate: $\frac{87}{139} \approx 63\%$. DOI: 10.1145/1882362.1882375.

[W6] Sigurd Schneider, Ivan Beschastnikh, Slava Chernyak, Michael D. Ernst, and Yuriy Brun. Synoptic: Summarizing system logs with refinement. In *Proceedings of the Workshop on Managing Systems via Log Analysis and Machine Learning Techniques (SLAML)*, Vancouver, Canada, October 2010. Acceptance rate: $\frac{9}{19} \approx 47\%$. DOI: 10.1145/1928991.1928995.

[W5] Yuriy Brun and Nenad Medvidovic. Crystal-growth-inspired algorithms for computational grids. In *Proceedings of the Workshop on Bio-Inspired Algorithms for Distributed Systems (BADS)*, pages 19–26, Barcelona, Spain, June 2009. DOI: 10.1145/1555284.1555288.

[W4] Yuriy Brun. Reducing tileset size: 3-SAT and beyond. In *Proceedings of the 14th International Meeting on DNA Computing (DNA)*, page 178, Prague, Czech Republic, June 2008. Extended and revised in [J7].

[W3] Yuriy Brun and Nenad Medvidovic. Fault and adversary tolerance as an emergent property of distributed systems' software architectures. In *Proceedings of the 2nd International Workshop on Engineering Fault Tolerant Systems (EFTS)*, pages 38–43, Dubrovnik, Croatia, September 2007. DOI: 10.1145/1316550.1316557.

[W2] Yuriy Brun. A discreet, fault-tolerant, and scalable software architectural style for Internet-sized networks. In *Proceedings of the Doctoral Symposium at the 29th International Conference on Software Engineering (ICSE)*, pages 83–84, Minneapolis, MN, USA, May 2007. Acceptance rate: $\frac{11}{48} \approx 23\%$. DOI: 10.1109/ICSECOMPANION.2007.12.

[W1] Yuriy Brun and Manoj Gopalkrishnan. Toward in vivo disease diagnosis and treatment using DNA. In *Proceedings of the 2006 International Conference on Bioinformatics & Computational Biology (BIOCOMP)*, pages 182–186, Las Vegas, NV, USA, June 2006.

Refereed Poster and Unconventional Publications

[U3] Arman Shahbazian, Youn Kyu Lee, Yuriy Brun, and Nenad Medvidovic. Poster: Making Well-Informed Software Design Decisions. In *Proceedings of the Poster Track at the International Conference on Software Engineering (ICSE)*, pages 262–263, Gothenburg, Sweden, May 2018. Acceptance rate: $\frac{297}{397} \approx 75\%$. DOI: 10.1145/3183440.3194961.

[U2] Jenny Abrahamson, Ivan Beschastnikh, Yuriy Brun, and Michael D. Ernst. Shedding Light on Distributed System Executions. In *Proceedings of the Poster Track at the International Conference on Software Engineering (ICSE)*, pages 598–599, Hyderabad, India, June 2014. Acceptance rate: $\frac{19}{52} \approx 37\%$. DOI: 10.1145/2591062.2591134.

[U1] Jochen Wuttke, Ivan Beschastnikh, and Yuriy Brun. Effects of Centralized and Distributed Version Control on Commit Granularity. *Tiny Transactions on Computer Science*, 1, September 2012. Acceptance rate: $\frac{50}{64} = 78\%$.

Edited Proceedings

[E1] Yuriy Brun, Brittany Johnson, and Alexandra Meliou, editors. *Proceedings of the IEEE/ACM International Workshop on Software Fairness (FairWare)*, Gothenburg, Sweden, May 2018. DOI: 10.1145/3194770.

Non-Refereed Publications

[N6] Yuriy Brun. The Promise and Perils of Using Machine Learning When Engineering Software (Keynote Paper). In *Proceedings of the International Workshop on Machine Learning Techniques for Software Quality Evaluation (MaLTeSQuE)*, pages 1–4, Singapore, November 2022. DOI: 10.1145/3549034.3570200.

[N5] Yuriy Brun and Mehdi Mirakhorli. Summary of Co-located Workshops. In *Proceedings of the 24th ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE)*, pages vi–vii, Seattle, WA, USA, November 2016.

[N4] Yuriy Brun. *Self-assembly for discreet, fault-tolerant, and scalable computation on Internet-sized distributed networks*. PhD dissertation, University of Southern California, Los Angeles, CA, USA, May 2008. Proquest URL: http://proquest.umi.com/pqdlink?did=1564036421&Fmt=7&clientId=79356&RQT=309&VName=PQD.

[N3] Yuriy Brun. Building biologically-inspired self-adapting systems. In Betty H.C. Cheng, Rogério de Lemos, Holger Giese, Paola Inverardi, and Jeff Magee, editors, *Proceedings of the Schloss Dagstuhl seminar 08031: Software Engineering for Self-Adaptive Systems*, Dagstuhl, Germany, January 2008. Dagstuhl URL: http://drops.dagstuhl.de/opus/volltexte/2008/1499.

[N2] Yuriy Brun. Software fault identification via dynamic analysis and machine learning. Master's thesis, Massachusetts Institute of Technology, Cambridge, MA, USA, August 2003.
URL: http://hdl.handle.net/1721.1/17939.

[N1] Yuriy Brun. The four-color theorem. *Undergraduate Journal of Mathematics*, pages 21–28, May 2002.

Patents

[P2] Alexandra Meliou and Yuriy Brun. Efficient Software Testing Systems. United States Patent # US 10,691,585, June 23, 2020.

[P1] Yuriy Brun and Nenad Medvidovic. Tile Architectural Style for Privacy-Preserved Distributed Computing. United States Patent # US 8,332,458 B2, December 11, 2012.

Software and Software Artifacts

Nearly all listed software is developed collaboratively. Linked project pages list the collaborators.

[S27] **Blues**: An unsupervised, information-retrieval-based fault localization technique. `https://github.com/LASER-UMASS/Blues`

[S26] **RAFL**: An unsupervised rank-aggregation-based fault localization technique. `https://github.com/LASER-UMASS/RAFL`

[S25] **Passport**: An identifier-aware automated Coq proof script synthesis tool. https://github.com/LASER-UMASS/Passport/

[S24] **Diva**: A diversity-based automated Coq proof script synthesis tool. https://github.com/LASER-UMASS/Diva/

[S23] **Shifty**: A classification learning algorithm with fairness guarantees under demographic-shift. https://github.com/sgiguere/Fairness-Guarantees-under-Demographic-Shift

[S22] **TacTok**: An automated Coq proof script synthesis tool. https://github.com/LASER-UMASS/TacTok/

[S21] **Fairkit-learn**: A toolkit for evaluating and exploring machine learning models with respect to quality and fairness metrics simultaneously. https://github.com/brittjay0104/fairkit-learn/

[S20] **Holmes**: A causal testing prototype. https://holmes.cs.umass.edu/

[S19] **JaRFly**: Java repair framework. http://JaRFly.cs.umass.edu/

[S18] **SOSRepair**: Expressive semantic search for real-world program repair. https://github.com/squaresLab/SOSRepair/

[S17] **Seldonian Framework**: Machine learning framework with fairness guarantees. https://doi.org/10.5281/zenodo.3490615

[S16] **Themis**: An automated test suite generator for fairness testing. http://fairness.cs.umass.edu/

[S15] **FLAME**: Framework for logging and analyzing modeling events. http://flamedesign.org/

[S14] **Repair Applicability**: Data, scripts, and methodology for evaluating the applicability of automated program repair. https://github.com/LASER-UMASS/AutomatedRepairApplicabilityData/

[S13] **SearchRepair**: A semantic-search-based automated program repair technique. https://github.com/ProgramRepair/SearchRepair/

[S12] The **ManyBugs** and **IntroClass** benchmarks for automated repair of C programs. http://repairbenchmarks.cs.umass.edu/

[S11] **Perfume**: A performance-aware model inference tool that produces concise and precise time-range automate models from a system's execution log (distributed as part of Synoptic). http://people.cs.umass.edu/ohmann/perfume/

[S10] **Solstice**: A code replication and synchronization framework for Eclipse. https://bitbucket.org/kivancmuslu/solstice/

[S9] **CSight**: A model inference tool for concurrent systems that produces concise and precise communicating finite state machine models from a concurrent system's log (distributed as part of Synoptic). https://github.com/ModelInference/synoptic

[S8] **InvariMint**: A declarative specification engine for model-inference algorithms (distributed as part of Synoptic). https://github.com/ModelInference/synoptic

[S7] **Quick Fix Scout**: Compilation-error-fix explorer for Eclipse. https://github.com/brunyuriy/quick-fix-scout/

[S6] **Crystal**: A proactive conflict detector for distributed version control. https://github.com/brunyuriy/crystalvc/

[S5] **Synoptic**: A model inference tool that produces concise and precise finite state machine models that describe logged system executions. https://github.com/ModelInference/synoptic

[S4] **Adasim**: A traffic routing exemplar for evaluating self-adaptive systems. https://github.com/brunyuriy/adasim

[S3] **Iterative Redundancy**: Self-adapting reliability in distributed software systems. http://softarch.usc.edu/~ronia/sr/

[S2] **Mahjong**: A sTile framework for distributing NP-complete computations onto untrusted networks in a trustworthy manner. https://bitbucket.org/brunyuriy/privatecloud/

[S1] **Fault-Invariant Classifier**: An error-detection tool based on models of past errors. Distributed as part of the Daikon invariant detector. http://pag.csail.mit.edu/daikon/

Teaching Activities

Instructor

University of Massachusetts, Amherst

Q10 (Q11 before Fall 2018) refers to 5.0-scale, student-rated "Overall rating of the instructor's teaching."

		2024		
COMPSCI 320	Fall	Introduction to Software Engineering	(ugrad)	Q10: 4.5
COMPSCI 429	Fall	Software Engineering Project Management	(ugrad)	Q10: 5.0
COMPSCI 692P	Fall	(seminar) Hot Topics in Software Engineering Research co-taught with Juan Zhai	(ugrad)	Q10: 3.8
COMPSCI 320	Spring	Introduction to Software Engineering	(ugrad)	Q10: 4.3
COMPSCI 429	Spring	Software Engineering Project Management	(ugrad)	Q10: 5.0
		2023		
COMPSCI 621	Spring	Advanced Software Engineering: Analysis and Evaluation	(grad)	Q10: 4.3
		2022		
COMPSCI 320	Fall	Introduction to Software Engineering	(ugrad)	Q10: 4.6
COMPSCI 429	Fall	Software Engineering Project Management	(ugrad)	Q10: 4.3
		2019		
COMPSCI 520	Fall	Theory and Practice of Software Engineering	(ugrad)	Q10: 4.6
		2018		
COMPSCI 520	Fall	Theory and Practice of Software Engineering	(ugrad)	Q10: 4.7
COMPSCI 692P	Fall	(seminar) Hot Topics in Software Engineering Research	(grad)	Q10: 4.8
COMPSCI 621	Spring	Advanced Software Engineering: Analysis and Evaluation	(grad)	Q11: 4.7
COMPSCI 692P	Spring	(seminar) Programming Languages & Systems co-taught with Emery Berger and Arjun Guha	(grad)	Q11: 4.9
		2017		
COMPSCI 520	Fall	Theory and Practice of Software Engineering co-taught with René Just	(ugrad)	Q11: 4.7
COMPSCI 621	Spring	Advanced Software Engineering: Analysis and Evaluation	(grad)	Q11: 4.0
521	Spring	(held jointly)	(ugrad)	Q11: 3.8

		2015		
CMPSCI 621	Fall	Advanced Software Engineering: Analysis and Evaluation	(grad)	Q11: 4.9
521	Fall	(held jointly)	(ugrad)	Q11: 4.7
CMPSCI 320	Spring	Introduction to Software Engineering	(ugrad)	Q11: 4.6
CMPSCI 529	Spring	Software Engineering Project Management	(ugrad)	Q11: 4.7
CMPSCI H320	Spring	(seminar) Software Engineering Honors Colloquium	(ugrad)	Q11: 5.0
		2014		
CMPSCI 621	Fall	Advanced Software Engineering: Analysis and Evaluation	(grad)	Q11: 5.0
521	Fall	(held jointly)	(ugrad)	Q11: 4.8
		2013		
CMPSCI 621	Fall	Advanced Software Engineering: Analysis and Evaluation	(grad)	Q11: 4.6
521	Fall	(held jointly)	(ugrad)	Q11: 4.7
CMPSCI 320	Spring	Introduction to Software Engineering	(ugrad)	Q11: 4.6
CMPSCI 529	Spring	Software Engineering Project Management	(ugrad)	Q11: 5.0
CMPSCI H320	Spring	(seminar) Software Engineering Honors Colloquium	(ugrad)	Q11: 4.5
		2012		
CMPSCI 621	Fall	Advanced Software Engineering: Analysis and Evaluation	(grad)	Q11: 4.4
521	Fall	(held jointly)	(ugrad)	Q11: 4.5

University of Washington

Q3 refers to 5.0-scale, student-rated "The instructor's contribution to the course."

		2012		
CSE 590N	Winter, Spring	(seminar) Software Engineering co-taught with Michael D. Ernst and David Notkin	(grad)	
		2011		
CSE 590N	Autumn	(seminar) Software Engineering co-taught with Michael D. Ernst and David Notkin	(grad)	
CSE 403	Winter	Software Engineering	(ugrad)	Q3: 4.7

Guest Lecturer

University of Washington

		2010		
CSE 331	Autumn	Software Design and Implementation	(ugrad)	
CSE 599X	Spring	Molecular Programming	(grad)	
CSEP 504	Winter	Advanced Topics in Software Systems	(grad)	

University of Southern California

		2007		
CSCI 599	Spring	Organic Computing	(grad)	
CSCI 303	Spring	Design and Analysis of Algorithms	(ugrad)	

Teaching Assistant

University of Southern California

		2007		
CSCI 578	Spring	Software Architectures	(grad)	
CSCI 303	Spring	Design and Analysis of Algorithms	(ugrad)	
		2006		
CSCI 303	Fall	Design and Analysis of Algorithms	(ugrad)	

Massachusetts Institute of Technology

2003

6.170	Spring	Software Engineering Laboratory	(ugrad)

Student Supervision

Postdoctoral Advisor

2024	Alex Sanchez-Stern	now a Senior Research Scientist at d_{model}
2022	Yixue Zhao	now a Research Computer Scientist at University of Southern California ISI
2020	Brittany Johnson	now an Assistant Professor at George Mason University

PhD Advisor

current Zhanna Kaufman (started 2021)
Hadeel Eladawy (started 2022)
Abhishek Varghese (started 2023)
Yesugen Baatartogtokh (started 2024)
Anders Freeman (started 2024) (co-advised with Madeline Endres)

2023 Emily First
Dissertation title: Automating the Formal Verification of Software
now a Postdoctoral Researcher at the University of California San Diego

2022 Manish Motwani
Dissertation title: High-Quality Automatic Program Repair
now an Assistant Professor at Oregon State University

2021 Stephen Giguere (co-advised with Philip S. Thomas)
Dissertation title: Safe and Practical Machine Learning
now a Postdoctoral Researcher at the University of Texas at Austin

2016 Seung Yeob Shin (co-advised with Leon J. Osterweil)
Dissertation title: Specification and Analysis of Resource Utilization Policies for Human-Intensive Systems
now a Research Scientist at the University of Luxembourg

2015 Kıvanç Muşlu (co-advised with Michael D. Ernst)
Dissertation title: Enhancing Software Development Techniques via Copy Codebases
now a Principal Lead Software Engineer at Microsoft TSE

PhD Dissertation Committee Member

current Aimen Gaba
Kunjal Panchal
Juan Altmayer Pizzorno

2025	Blossom Metevier	now a postdoctoral fellow at Princeton University
	Lijun Zhang	now a postdoctoral researcher at Amazon.com, Inc.
2021	Pinar Ozisik	now a research scientist at the Massachusetts Institute of Technology
2019	Qianqian Wang (at GATech)	now a Senior Software Engineer at Microsoft
2018	John Vilk	now a software engineer at Stripe
2016	Kaituo Li	now a software engineering at Amazon Web Services
2015	Thomas Helmuth	now an Assistant Professor at Hamilton College
	Charlie Curtsinger	now an Assistant Professor at Grinnell College
2014	Robert J. Walls	now an Assistant Professor at Worcester Polytechnic Institute
	Tongping Liu	now an Assistant Professor at the University of Massachusetts Amherst, ECE
2013	Ivan Beschastnikh	now an Associate Professor at the University of British Columbia

Masters

current	Sabrina Zaman Ishita (started 2021)	
2021	Sarah Brockman	now a research and development engineer at Kitware
2020	Jennifer Halbleib	now a data scientist at Mass Mutual
	Donald Pinckney	now PhD student at Northeastern University
2019	Rico Angell	now PhD student at UMass Amherst
2018	Natcha Simsiri	now a senior project software engineer at Lutron Electronics
2016	Ted Smith	now a software engineer at Bloomberg
2015	Karthik Kannappan	now a software engineer at Juniper Networks
	Armand Halbert	now a software engineer at IBM
2013	Xiang Zhao (co-advised with Leon J. Osterweil)	now a software engineer at Google, Inc.

Undergraduate

current	Morgan Waterman	
	Marie Shvakel	
	Simran Lekhwani	
2021	Declan Gray-Mullen (honors thesis)	now a Masters student at UMass Amherst
2019	Tanya Asnani (honors thesis reader)	now a software engineer at Bank of America Merrill Lynch
	Jesse Bartola	now a senior software engineer at Hubspot
	Sarah Brockman (honors thesis reader)	now a Masters student at UMass Amherst
	Aisiri Murulidhar (honors thesis reader)	now a software engineer at Google, Inc.
2018	Nicholas Perello (honors thesis reader)	now a PhD student at UMass Amherst
2016	Natcha Simsiri (honors thesis)	now a Masters student at UMass Amherst
	Ryan Stanley (honors thesis)	now a software engineer at Amazon.com, Inc.
2015	Chris Ciollaro (honors thesis reader)	now a software engineer at Localytics
2014	Sebastian Fiss	now a Masters student at the Technical University of Munich
	Michael Herzberg	now a PhD student at the University of Sheffield
	Nicholas Braga (honors thesis)	now a software engineer at BookBub
	Brian Stapleton (honors thesis reader)	now a software engineer at AdHarmonics, Inc.
2013	Brandon McNew (REU)	now software developer at CUSi
	Jeanderson Barros (REU)	now a Masters student at the Federal University of Pernambuco
	Roykrong Sukkerd	now a PhD student at Carnegie Mellon University
	Haochen Wei	now a software developer at LinkedIn
	Alice Ouyang	now an IT Analyst at Liberty Mutual Insurance
2012	Jonathan Ramaswamy	now an associate consultant at Cirrus10

Litigation Consulting

[L1] Afterwords Inc. v. Gettattle Inc. June 2024 – ongoing.
Retaining party: Afterwords Inc. Venue: U.S. District Court for the Middle District of Florida.
Case No.: 8:24-cv-01386. Counsel: Shumaker Loop & Kendrick, LLP.
Nature of suit: Intellectual Property — Patent.

Formal Presentations

[T65] In software we trust.
– Georgia Institute of Technology, Atlanta, GA, USA, March 4, 2025
– Kennesaw State University **Dean's Lecture Series**, Marietta, GA, USA, March 5, 2025.

[T64] Ya'll are APRing the wrong thing.
– Dagstuhl Seminar 24431. Automated Programming and Program Repair. Wadern, Germany, October 23, 2024.

[T63] Automated program repair, what is it good for? Not absolutely nothing!
– 46th International Conference on Software Engineering (ICSE), Lisbon, Portugal, April 17, 2024.

[T62] Automated formal verification.
– Invited talk at Deep Learning-Aided Verification Networking (DAV), Paris, France, July 18, 2023.

[T61] Automatically proving software correct.
– Invited talk at the Networking and Information Technology Research and Development Program (NITRD.GOV) Interagency Working Group (IWG) on Computing Enabled Networked Physical Systems (CNPS), (held virtually), June 6, 2023.

[T60] Blindspots in Python and Java APIs result in vulnerable code.
– 45th International Conference on Software Engineering (ICSE), Melbourne, Australia, May 17, 2023.

[T59] The promise and perils of using machine learning when engineering software.
– **Keynote** at the 6th International Workshop on Machine Learning Techniques for Software Quality Evolution (MaLTeSQuE), Singapore, November 18, 2022.

[T58] Reducing bias in software systems.
– Google's Let's Talk Tech, virtual, November 19, 2021.

[T57] The societal disparities software creates and how to avoid them.
– **Keynote** at the 32nd International Symposium on Software Reliability Engineering (ISSRE), Wuhan, China, October 25, 2021.

[T56] Engineering software to prevent undesirable behavior of intelligent machines.
– Invited talk at the Networking and Information Technology Research and Development Program (NITRD.GOV) Interagency Working Group (IWG) on Software Productivity, Sustainability, and Quality (SPSQ), (held virtually), January 14, 2021.

[T55] SEAMS 2020 Most Influential Paper Award: An architectural style for solving computationally intensive problems on large networks.
– Software Engineering for Adaptive and Self-Managing Systems (SEAMS), Seoul, South Korea, July 3, 2020.

[T54] Preventing undesirable behavior of intelligent machines.
– **Keynote** at the Joint 8th International Conference on Software and System Processes (ICSSP) and 15th IEEE/ACM International Conference on Global Software Engineering (ICGSE), Seoul, South Korea, May 24, 2020.

[T53] Causality and fairness in software.
– **Keynote** at the 1st International Workshop on Explainable Software (EXPLAIN), San Diego, CA, USA, November 15, 2019.

[T52] Software fairness.
– University of California San Diego, La Jolla, CA, USA, November 15, 2019.
– Northeastern University, Boston, MA, USA, October 30, 2019.
– Bloomberg, New York, NY, USA, October 14, 2019.

– Cornell University, Ithaca, NY, USA, September 13, 2019.
– Google Inc., Los Angeles, CA, USA, April 23, 2019.
– Raytheon BBN Technologies, Waltham, MA, USA, January 15, 2019.
– University of Nebraska — Lincoln, NE, USA, January 8, 2019.
– Oracle Corporation, Burlington, MA, USA, November 20, 2018.
– The 26th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE) New Ideas and Emerging Results Track, Orlando, FL, USA, November 7, 2018.

[T51] Software fairness.
– Computer Science Department **Distinguished Lecture Series**, University of Virginia, Charlottesville, VA, USA, November 2, 2018.

[T50] Testing software for discrimination.
– The Essence of Software Engineering (EoSE), Essos, Germany, November 16, 2017.

[T49] Fairness testing: Testing software for discrimination.
– 11th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE), Paderborn, Germany, September 7, 2017.

[T48] Fairness testing.
– New England Programming Languages and Systems Symposium. Lowell, MA, USA, June 2, 2017.

[T47] Quality and applicability of automated repair.
– Dagstuhl Seminar 17022. Automated Program Repair. Wadern, Germany, January 9, 2017.

[T46] Measuring and improving quality of automated program repair.
– The 45th CREST Open Workshop, London, England, UK, January 25, 2016.

[T45] Preventing data errors with continuous testing.
– The 26th ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA15), Baltimore, MD, USA, July 17, 2015.

[T44] Interactive classroom games for teaching software engineering.
– Software Engineering Educators Symposium (SEES), Hong Kong, China, November 17, 2014.

[T43] Inferring models to help developers understand behavior.
– Workshop on the State of the Art in Automated Software Engineering Research, Toronto, ON, Canada, June 25, 2014.

[T42] Secure-multiparty software systems: Privacy and security on untrusted hardware.
– The Security and Privacy Assurance Research — Multi-party Computation (SPAR-MPC) Workshop, Cambridge, MA, USA, May 29, 2014.

[T41] Factors affecting success in automatic program repair.
– Brown University, Providence, RI, USA, May 7, 2014.
– University of Washington, Seattle, WA, USA, April 21, 2014.

[T40] Inferring models for verification: Ensuring assurances.
– Dagstuhl Seminar 13511. Software Engineering for Self-Adaptive Systems: Assurances. Wadern, Germany, December 17, 2013.

[T39] What's wrong with the program I haven't written yet?
– Harvard University, Cambridge, MA, USA, September 26, 2014.
– Carnegie Mellon University, Pittsburgh, PA, USA, January 24, 2014.
– The International Software Engineering @ 45 Symposium (SE@45), Los Angeles, CA, USA, October 4, 2013.
– INRIA Paris-Rocquencourt, Paris, France, May 15, 2013.
– Massachusetts Institute of Technology, Cambridge, MA, USA, October 5, 2012.

[T38] Fortune-telling developer tools.
– University of California, Davis, CA, USA, May 21, 2013.

[T37] Privacy and reliability in an untrusted cloud.
– RiSE group at Microsoft Research, Redmond, WA, USA, March 19, 2013.

[T36] Reducing notification delays: What will happen if I change my code?
– Augmenting Software Developer Support to Improve Productivity (ASDS13), Monte Verità, Ascona, Switzerland, March 11, 2013.

[T35] Keeping data private while computing in the cloud.
– 5th IEEE International Conference on Cloud Computing (CLOUD12), Honolulu, HI, USA, June 28, 2012.

[T34] Speculative analysis: What's wrong with the program I haven't written yet?
– University of Michigan, Ann Arbor, MI, USA, April 24, 2012.
– IMDEA: Madrid Institute for Advanced Studies, Software Institute, Madrid, Spain, April 12, 2012.
– Oregon State University, Corvallis, OR, USA, April 5, 2012.
– University of Massachusetts, Amherst, MA, USA, March 29, 2012.
– Carnegie Mellon University, Silicon Valley campus, Mountain View, CA, USA, March 21, 2012.
– University of Maryland, College Park, MD, USA, March 12, 2012.
– University of Illinois, Chicago, IL, USA, March 5, 2012.
– Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA, USA, February 27, 2012.
– University of Chicago, Chicago, IL, USA, February 14, 2012.
– Purdue University, West Lafayette, IN, USA, February 9, 2012.

[T33] What does my program do today, and what will it do tomorrow?
– **Keynote** at the 2nd International Workshop on Regression Testing (Regression12), Montreal, QC, Canada, April 17, 2012.

[T32] Isomorphism in model tools and editors.
– 26th IEEE ACM International Conference On Automated Software Engineering (ASE11), Lawrence, KS, USA, November 9, 2011.

[T31] Speculative analysis: Exploring future states of software.
– The 15th CREST Open Workshop, London, England, UK, October 24, 2011.
– The 2010 Foundations of Software Engineering Working Conference on the Future of Software Engineering Research (FoSER10), Santa Fe, NM, USA, November 7, 2010.

[T30] Crystal: Precise and unobtrusive conflict warnings.
– The 8th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering Tool Demonstration Track (ESEC/FSE11), Szeged, Hungary, September 8, 2011.

[T29] Proactive detection of collaboration conflicts.
– The 8th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE11), Szeged, Hungary, September 7, 2011.
– Testing Automation Group, Google Inc., Mountain View, CA, USA, December 5, 2011.

[T28] Smart redundancy for distributed computation.
– The 31st IEEE International Conference on Distributed Computing Systems (ICDCS11), Minneapolis, MN, USA, June 23, 2011.

[T27] Software self-adaptation: Automating decision making.
– Brown University, Providence, RI, USA, March 16, 2011.
– Oregon State University, Corvallis, OR, USA, February 15, 2011.
– University of Memphis, Memphis, TN, USA, February 4, 2011.

[T26] Self-assembling distributed Internet software.
– Politecnico di Milano, Milano, Italy, November 4, 2010.
– University of Lugano, Lugano, Switzerland, November 2, 2010.
– University of Zurich, Zurich, Switzerland, October 21, 2010.
– ETH Zurich, Zurich, Switzerland, October 19, 2010.
– Carnegie Mellon University, Pittsburgh, PA, USA, September 23, 2010.
– Massachusetts Institute of Technology, Cambridge, MA, USA, September 21, 2010.
– Harvard University, Cambridge, MA, USA, September 17, 2010.
– Hong Kong University of Science and Technology, Hong Kong, China, June 18, 2010.
– University of Victoria, Victoria, BC, Canada, June, 3, 2010.
– George Mason University, Fairfax, VA, USA, February 25, 2010.
– University of Maryland, College Park, MD, USA, February 24, 2010.

[T25] Improving efficiency of 3-SAT-solving tile systems.
– The 16th International Conference on DNA Computing and Molecular Programming (DNA10), Hong Kong, China, June 16, 2010.

[T24] Improving impact of self-adaptation and self-management research through evaluation methodology.
– Software Engineering for Adaptive and Self-Managing Systems (SEAMS10), Cape Town, South Africa, May 4, 2010.

[T23] Self-assembly in engineering.
– Molecular Programming Project. California Institute of Technology, Pasadena, CA, USA, July 10, 2009.

[T22] Crystal-growth-inspired algorithms for computational grids.
– Workshop on Bio-Inspired Algorithms for Distributed Systems (BADS09), Barcelona, Spain, June 19, 2009.

[T21] Improving reliability through smart redundancy.
– ISR Research Forum, University of California, Irvine, CA, USA, June 5, 2009.

[T20] How nature's self-assembly can guide computational grid design.
– Center for Systems and Software Engineering Annual Research Review, Los Angeles, CA, USA, March 17, 2009.

[T19] Mahjong.
– First Look L.A. University of California Los Angeles (UCLA), Los Angeles, CA, USA, November 12, 2008.

[T18] Tile-inspired software.
– The Winfree Group. California Institute of Technology, Pasadena, CA, USA, June 17, 2008.

[T17] Reducing tileset size: 3-SAT and beyond.
– The 14th International Meeting on DNA Computing (DNA08), Prague, Czech Republic, June 4, 2008.

[T16] Connecting the dots: Molecular machinery for distributed robotics.
– The 14th International Meeting on DNA Computing (DNA08), Prague, Czech Republic, June 3, 2008.

[T15] Harnessing biology to inspire software system design.
– Applied Computer Science Colloquium. Universität Karlsruhe, Karlsruhe, Germany, May 16, 2008.

[T14] Building biologically-inspired self-adapting systems.
– Dagstuhl Seminar 08031. Software Engineering for Self-Adaptive Systems. Wadern, Germany, January 14, 2008.

[T13] Self-assembly: Biology as a guide for system design.
– The Shakhnovich Biophysics Lab Seminar. Department of Chemistry and Chemical Biology of Harvard University, Cambridge, MA, USA, January 7, 2008.

[T12] Fault and adversary tolerance as an emergent property of distributed systems' software architectures.
– The 2nd International Workshop on Engineering Fault Tolerant Systems (EFTS07), Dubrovnik, Croatia, September 4, 2007.

[T11] Software deployment architecture and quality-of-service in pervasive environments.
– International Workshop on the Engineering of Software Services for Pervasive Environments (ESSPE07), Dubrovnik, Croatia, September 4, 2007.

[T10] Asymptotically optimal program size complexity for solving NP-complete problems in the tile assembly model.
– The 13th International Meeting on DNA Computing (DNA07), Memphis, TN, USA, June 5, 2007.

[T9] Fault-tolerant, and scalable software architectural style for Internet-sized networks.
– Institute for Software Research (ISR) Research Forum 2007, Irvine, CA, USA, June 1, 2007.

[T8] An architectural style for solving computationally intensive problems on large networks.
– Software Engineering for Adaptive and Self-Managing Systems (SEAMS07), Minneapolis, MN, USA, May 26, 2007.

[T7] Fault-tolerant, and scalable software architectural style for Internet-sized networks.
– Doctoral Symposium at the 29th International Conference on Software Engineering (ICSE07), Minneapolis, MN, USA, May 21, 2007.

[T6] Adding and multiplying in the tile assembly model.
– The 4th Foundations of Nanoscience: Self-Assembled Architectures and Devices (FNANO07), Snowbird, UT, USA, May 19, 2007.

[T5] Toward in vivo disease diagnosis and treatment using DNA.
– The 2006 International Conference on Bioinformatics & Computational Biology (BIOCOMP06), Las Vegas, NV, USA, June 29, 2006.

[T4] Building blocks for DNA self-assembly.
– USC Molecular Biology Retreat, Laguna Beach, CA, USA, November 14, 2004.

[T3] Finding latent code errors via machine learning over programs executions.
– The 26th International Conference on Software Engineering (ICSE04), Edinburgh, Scotland, UK, May 27, 2004.

[T2] Building blocks for DNA self-assembly.
– The 1st Foundations of Nanoscience: Self-Assembled Architectures and Devices (FNANO04), Snowbird, UT, USA, April 21, 2004.

[T1] Finding latent code errors via machine learning over program executions.
– EECS Masterworks Colloquium, Cambridge, MA, USA, April 30, 2003.

Professional Service

Associate Editor

IEEE TSE	IEEE Transactions on Software Engineering	2025–current
IEEE TSE	IEEE Transactions on Software Engineering	2018–2023

Conference Organization and Committee Chairpersonship

	2023
ICSE	General co-chair, 4th Intl. Workshop on Automated Program Repair
	2022
ICSE	Workshops co-chair, 44th IEEE/ACM Intl. Conference on Software Engineering
ESEC/FSE	Journal-First track co-chair, 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering
	2020
SIGSOFT EC	ACM SIGSOFT Early Career Researcher Award committee chair
ESEC/FSE	Childcare Chair, ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering
	2019
SIGSOFT EC	ACM SIGSOFT Early Career Researcher Award committee chair
ICSE	Formal Demonstrations track co-chair, 41st IEEE/ACM Intl. Conference on Software Engineering
	2018
ICSE	Poster track co-chair, 40th IEEE/ACM Intl. Conference on Software Engineering
FairWare	General co-chair, Intl. Workshop on Software Fairness
	2017
ISSTA	Demonstration track co-chair, 25th ACM SIGSOFT Intl. Symposium on Software Testing and Analysis
	2016
ASE	Review process co-chair, 31st IEEE/ACM Intl. Conference on Automated Software Engineering
FSE	Workshop co-chair, 24th ACM SIGSOFT Intl. Symposium on the Foundations of Software Engineering

	2015
ICSE	IEEE/ACM Intl. Conference on Software Engineering Double Blind Review Task Force
NESD	Co-organizer, New England Security Day
	2013
FuSE	General co-chair, Future of Software Engineering Symposium
ICSE	Publication co-chair, 35th IEEE/ACM Intl. Conference on Software Engineering

Program Committee Membership

	2026
FAccT	ACM Conference on Fairness, Accountability, and Transparency (Area Chair)
	2025
ICML	42nd International Conference on Machine Learning Ethics Review Committee
ICSE	41st IEEE/ACM Intl. Conference on Software Engineering (Area Chair)
SIGSOFT JA	ACM SIGSOFT Junior Awards Committee
NeurIPS	39th Conference on Neural Information Processing Systems Ethics Review Committee
	2024
FSE	32nd Intl. Conference on the Foundations of Software Engineering (Discussion Leader)
NeurIPS	38th Conference on Neural Information Processing Systems Ethics Review Committee
	2023
NeurIPS	37th Conference on Neural Information Processing Systems Ethics Review Committee
	2022
ASE JF	37th IEEE/ACM Intl. Conference on Automated Software Engineering Journal First track
	2020
ASE	35th IEEE/ACM Intl. Conference on Automated Software Engineering (Rapid Response Reliable Reviewer)
ICSE	42nd IEEE/ACM Intl. Conference on Software Engineering
	2019
FAT*	2nd ACM Conference on Fairness, Accountability, and Transparency
ICSE	41st IEEE/ACM Intl. Conference on Software Engineering
ESEC/FSE	27th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering
	2018
ICSE	40th IEEE/ACM Intl. Conference on Software Engineering (Rapid Response Reliable Reviewer)
ESEC/FSE	26th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering
ESEC/FSE NIER	26th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering New Ideas and Emerging Results Track
	2017
ASE	32nd IEEE/ACM Intl. Conference on Automated Software Engineering
SIGSOFT DDA	ACM SIGSOFT Distinguished Dissertation Award
NENS	New England Network and Systems Day
ICSE	39th IEEE/ACM Intl. Conference on Software Engineering
ICSE TB	39th IEEE/ACM Intl. Conference on Software Engineering Technical Briefings Track

	2016
ICSE	38th IEEE/ACM Intl. Conference on Software Engineering
SEAMS	11th Intl. Symposium on Software Engineering for Adaptive and Self-Managing Systems
	2015
ASE	30th IEEE/ACM Intl. Conference on Automated Software Engineering
ICSE	37th IEEE/ACM Intl. Conference on Software Engineering
ESEC/FSE Demo	10th Joint Meeting: European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering Tool Demonstrations Track
SEAMS	10th Intl. Symposium on Software Engineering for Adaptive and Self-Managing Systems
SEFM	13th Intl. Conference on Software Engineering and Formal Methods
	2014
ASE	29th IEEE/ACM Intl. Conference on Automated Software Engineering
ICSE	36th IEEE/ACM Intl. Conference on Software Engineering
ICSE Demo	36th IEEE/ACM Intl. Conference on Software Engineering Formal Demonstrations Track
SEAMS	9th Intl. Symposium on Software Engineering for Adaptive and Self-Managing Systems
	2013
ASE	28th IEEE/ACM Intl. Conference on Automated Software Engineering (expert reviewer panel)
ADAPTIVE	5th Intl. Conference on Adaptive and Self-Adaptive Systems and Applications
ICSE NIER	35th IEEE/ACM Intl. Conference on Software Engineering New Ideas and Emerging Results Track
SEAMS	8th Intl. Symposium on Software Engineering for Adaptive and Self-Managing Systems
SCORE	Student Contest on Software Engineering at the 35th Intl. Conference on Software Engineering
ICSE SRC	ACM Student Research Competition at the 35th Intl. Conference on Software Engineering
SESENA	4th Intl. Workshop on Software Engineering for Sensor Network Applications
	2012
ADAPTIVE	4th Intl. Conference on Adaptive and Self-Adaptive Systems and Applications
IWSOS	6th Intl. Workshop on Self-Organizing Systems
NCA	11th IEEE Intl. Symposium on Network Computing and Applications
RACS	ACM Research in Applied Computation Symposium
SCET	Spring World Congress on Engineering and Technology
SEAMS	7th Intl. Symposium on Software Engineering for Adaptive and Self-Managing Systems
TOOLS Europe	50th Intl. Conference on Objects, Models, Components, Patterns
Regression	2nd Intl. Workshop on Regression Testing
	2011
IWSOS	5th Intl. Workshop on Self-Organizing Systems
NCA	10th IEEE Intl. Symposium on Network Computing and Applications
RACS	ACM Research in Applied Computation Symposium
SASO	5th IEEE Intl. Conference on Self-Adaptive and Self-Organizing Systems
SEAMS	6th Intl. Symposium on Software Engineering for Adaptive and Self-Managing Systems

	2010
AAMAS	9th Intl. Conference on Autonomous Agents and Multiagent Systems
AOSE	11th Intl. Workshop on Agent-Oriented Software Engineering
ICAC	7th IEEE Intl. Conference on Autonomic Computing and Communications
RACS	Intl. Conference on Reliable and Autonomous Computational Science
SOAR	2nd Intl. Workshop on Self-Organizing Architectures
SSS	12th Intl. Symposium on Stabilization, Safety, and Security of Distributed Systems, track on Self-Organizing Systems
	2009
SASO	3rd IEEE Intl. Conference on Self-Adaptive and Self-Organizing Systems
SOAR	1st Intl. Workshop on Self-Organizing Architectures
SSS	11th Intl. Symposium on Stabilization, Safety, and Security of Distributed Systems, track on Self-Organizing Systems
	2008
GSRS	Graduate Student Research Symposium, University of California, Irvine
	2007
GSRS	Graduate Student Research Symposium, University of California, Irvine

Refereeing and Reviewing

	2025
CACM	Communications of the ACM
	2024
EMSE	Empirical Software Engineering
IEEE TSE	IEEE Transactions on Software Engineering
ACM TOSEM	ACM Transactions on Software Engineering and Methodology
	2023
ACM TOSEM	ACM Transactions on Software Engineering and Methodology
	2020
CIFellows	Computing Innovation Fellows
IEEE TDSC	IEEE Transactions on Dependable and Secure Computing
IEEE TSE	IEEE Transactions on Software Engineering
	2018
JASE	Automated Software Engineering
IEEE Software	IEEE Software
IEEE TSE	IEEE Transactions on Software Engineering
	2017
JASE	Automated Software Engineering
ACM TAAS	ACM Transactions on Autonomous and Adaptive Systems
EMSE	Empirical Software Engineering
IEEE TSE	IEEE Transactions on Software Engineering
	2016
JASE	Automated Software Engineering
ACM TAAS	ACM Transactions on Autonomous and Adaptive Systems
IEEE TSE	IEEE Transactions on Software Engineering
ACM TOSEM	ACM Transactions on Software Engineering and Methodology

	2015
ACM TAAS	ACM Transactions on Autonomous and Adaptive Systems
PLOS ONE	Public Library of Science ONE
JSERD	Journal of Software Engineering Research and Development
IEEE TSE	IEEE Transactions on Software Engineering
ACM TOSEM	ACM Transactions on Software Engineering and Methodology
	2014
ACM TAAS	ACM Transactions on Autonomous and Adaptive Systems
JCSS	Journal of Computer and System Sciences
	Computing
ICDCS	34th Intl. Conference on Distributed Computing Systems
HLPP	7th Intl. Symposium on High-level Parallel Programming and Applications
IEEE TSE	IEEE Transactions on Software Engineering
	Journal of Supercomputing
	2013
IEEE TAAS	ACM Transactions on Autonomous and Adaptive Systems
JOC	Journal of Complexity
JCSS	Journal of Computer and System Sciences
SODA	24th ACM/SIAM Symposium on Discrete Algorithms
IEEE TSE	IEEE Transactions on Software Engineering
ACM TOSEM	ACM Transactions on Software Engineering and Methodology
JSPE	Software: Practice and Experience
	2012
CHI	ACM SIGCHI Conference on Human Factors in Computing Systems
FOCS	53rd IEEE Symposium on Foundations of Computer Science
IEEE TPDS	IEEE Transactions on Parallel and Distributed Systems
	Software Engineering for Self-Adaptive Software Systems II
JSS	Journal of Systems and Software
IEEE TSE	IEEE Transactions on Software Engineering
ACM TOSEM	ACM Transactions on Software Engineering and Methodology
ACM ToC	ACM SIGACT Theory of Computing
UIST	25th ACM Symposium on User Interface Software and Technology

	2011
ASL	Advanced Science Letters
SCP	Science of Computer Programming
IEEE TC	IEEE Transactions on Computers
	Concurrency and Computation: Practice and Experience
ICSE	33rd IEEE/ACM Intl. Conference on Software Engineering
ISSRE	22nd Intl. Symposium on Software Reliability Engineering
MATCH	Communications in Mathematical and in Computer Chemistry
	Mathematical and Computer Modelling of Dynamic Systems
NaCo	Natural Computing
OOPSLA	Object-Oriented Programming, Systems, Languages and Applications
SODA	22nd ACM/SIAM Symposium on Discrete Algorithms
IEEE TSE	IEEE Transactions on Software Engineering
ACM TOSEM	ACM Transactions on Software Engineering and Methodology
STVR	Software Testing, Verification and Reliability
JSS	Journal of Systems and Software
ACM ToC	ACM SIGACT Theory of Computing
	2010
IJCM	Intl. Journal of Computer Mathematics
	Concurrency and Computation: Practice and Experience
	Discrete Applied Mathematics
ISARCS	1st Intl. Symposium on Architecting Critical Systems
	Mathematical and Computer Modelling of Dynamical Systems
TIMACS	Mathematics and Computers in Simulation
NaCo	Natural Computing
SCP	Science of Computer Programming
IEEE TSE	IEEE Transactions on Software Engineering
JSS	Journal of Systems and Software
JZUS	Journal of Zhejiang University Science C (Computers & Electronics)
	2009
ASE	24th IEEE/ACM Intl. Conference on Automated Software Engineering
	BioSystems
IJCM	Intl. Journal of Computer Mathematics
DSN WADS	8th DSN Workshop on Architecting Dependable Systems
FNCOM	Frontiers in Computational Neuroscience
ICAC	6th IEEE Intl. Conference on Autonomic Computing and Communications
IEEE TBN	IEEE Transactions on Nanobioscience
NaCo	Natural Computing
JSS	Journal of Systems and Software
	2008
ASE	23rd IEEE/ACM Intl. Conference on Automated Software Engineering
ACM TAAS	ACM Transactions on Autonomous and Adaptive Systems
	Bentham Science Publishers e-books
	Discrete Applied Mathematics
QoSA	Quality of Software-Architectures
SEAMS	3rd Intl. Workshop on Software Engineering for Adaptive and Self-Managing Systems
	Software Engineering for Self-Adaptive Software Systems

2007

CBSE	10th Intl. ACM SIGSOFT Component-Based Software Engineering Symposium
DSN WADS	7th DSN Workshop on Architecting Dependable Systems
SASO	1st IEEE Intl. Conference on Self-Adaptive and Self-Organizing Systems

2006

AIIM	Artificial Intelligence in Medicine

Institutional Service

2024–2025

Chair: UMass CICS Distinguished Lecture Series committee
Chair: UMass CICS Rising Stars Lecture Series committee
UMass CICS Promotion & Tenure committee
UMass CICS Cultural Standards committee
University Relations and Advancement Council
UMass Research and Scholarly Misconduct Board

2023–2024

Chair: UMass CICS Distinguished Lecture Series committee
Chair: UMass CICS Rising Stars Lecture Series committee
Chair: UMass CICS Opportunity Faculty Hiring committee
UMass CICS annual faculty review (AFR) personnel committee
UMass CICS Faculty Hiring committee, Associate Dean of Inclusive Community
UMass Research and Scholarly Misconduct Board

2022–2023

Chair: UMass CICS Faculty Hiring committee
Chair: UMass CICS Distinguished Lecture Series committee
Chair: UMass CICS Rising Stars Lecture Series committee
UMass CICS curriculum committee

2020–2021

Chair: UMass CICS Faculty Hiring committee
Chair: UMass CICS Rising Stars committee
UMass CICS Diversity committee

2019–2020

Chair: UMass CICS annual faculty review (AFR) personnel committee
Chair: UMass CICS Rising Stars committee
UMass CICS faculty hiring committee

2018–2019

Chair: UMass CICS PhD admissions committee
Founding Chair: UMass CICS Rising Stars committee
UMass CICS faculty hiring committee
UMass CICS annual faculty review (AFR) personnel committee
NCWIT ES-Grad committee

2017–2018

Chair: UMass CICS PhD admissions committee
UMass CICS executive and budget committee
UMass CICS teaching evaluation task force

2016–2017

UMass CICS PhD admissions committee

2015–2016
UMass CICS executive and budget committee
UMass CICS teaching-track faculty recruiting committee
UMass CICS curriculum committee
2014–2015
UMass CS tenure-track faculty recruiting committee
UMass CS teaching-track faculty recruiting committee
UMass CS annual faculty review (AFR) personnel committee
2013–2014
UMass CS graduate admissions committee
UMass CS computing committee
2012–2013
UMass CS graduate admissions committee
2011–2012
President of the UW Computer Science & Engineering postdoctoral researchers

Other Service

Los Angeles county science fair judge 2008–09
USC graduate mentor 2007–08

Professional Associations

ACM	Distinguished Member, Association for Computing Machinery
ACM SIGSOFT	ACM Special Interest Group on Software Engineering
IEEE	Fellow, The Institute of Electrical and Electronics Engineers