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## Research Interests

My research interests include programming languages, software engineering, and compilers, with an emphasis on *approximate computing* and *probabilistic programming*.

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## Education

- Aug. 2015 **PhD, Electrical Engineering and Computer Science**, MIT, Cambridge, MA.  
Advisor: Prof. Martin Rinard.
- Aug. 2010 **MSc, Electrical Engineering and Computer Science**, MIT, Cambridge, MA.  
Advisor: Prof. Martin Rinard.
- Dec. 2008 **MSc, Computer Science and Engineering**, *University of Belgrade*, Belgrade, Serbia.  
Advisor: Prof. Dragan Milicev.
- Oct. 2007 **BSc, Computer Science and Engineering**, *University of Belgrade*, Belgrade, Serbia.  
Advisor: Prof. Dragan Milicev.

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## Employment

- 2016-now **Assistant Professor**, *Department of Computer Science, University of Illinois at Urbana-Champaign*, Urbana, IL (August 2016 – now).
- 2015-2016 **Postdoctoral Researcher**, *Federal Institute of Technology (ETH)*, Zurich, Switzerland.  
Member of Software Reliability Lab, led by Prof. Martin Vechev (October 2015 – July 2016).
- 2008-2015 **Research Assistant**, *Massachusetts Institute of Technology*, Cambridge, MA.  
Member of PAC group, led by Prof. Martin Rinard (August 2008 – August 2015).

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## Research Grants

**My share as a PI or co-PI is over 2.7 million dollars**, out of 7.1 million dollars awarded to the University. Summary per funding source: 6x NSF (including CAREER), 2x industry, 1x DARPA, 1x UIUC, 1x USDA.

- 2020-2024 **USDA (UIUC Co-PI)** National Institute of Food Award, through National Robotics Initiative, “Increasing the Level of Autonomy for Agricultural Robots Through Effective Interaction and Programming Paradigms.” UIUC Co-PI (with Katie Driggs-Campbell, Girish Chowdhary, Roy Dong, and Sayan Mitra; UIUC). Total \$1.05M; My share \$191K.
- 2020-2024 **NSF (UIUC Co-PI)**. SHF Medium Award “Software Engineering for Hardware Errors.” UIUC Co-PI (with Sarita Adve, Chris Fletcher, and Darko Marinov; UIUC). Total \$1.2M; My share \$300K.
- 2020-2023 **NSF (UIUC PI)**. SHF Small Award “Probabilistic Programming and Statistical Verification for Safe Autonomy.” UIUC PI (with Sayan Mitra; UIUC). Total \$450K; My share \$225K.
- 2020-2021 **NSF (UIUC Co-PI)** PPOSS Planning Award “A Cross-Layer Approach to Accelerate Large-Scale Graph Computations on Distributed Platforms.” UIUC Co-PI (with Josep Torrellas, Chandra Chekuri, and Edgar Solomonik; UIUC). Total \$250K; My share \$60K.
- 2020-2021 **Facebook (UIUC PI)**. Probability and Programming Award “Accelerated and Robust Probabilistic Programming for Autonomous Systems.” Sole PI. Total \$50K.
- 2020-2021 **Microsoft (UIUC PI)**. Credit for using Microsoft Azure Cloud. Total \$20K.
- 2019-2024 **NSF (UIUC PI)**. CAREER Award “Program Analyses for Improving Reliability of Probabilistic Software.” Sole PI. Total \$511K.
- 2019-2020 **UIUC (Co-PI)**. Seed funding from UIUC’s Center for Digital Agriculture. Co-PI (with Katie Driggs-Campbell, Girish Chowdhary, and Sayan Mitra). Total \$50K; My share \$12.5K.

- 2018-2022 **DARPA (UIUC Co-PI)**. MTO ERI/DSSoC Project “EPOCHS: Efficient Programmability of Cognitive Heterogeneous Systems.” UIUC Co-PI (with Sarita Adve and Vikram Adve; UIUC; Full team: IBM - lead, Harvard, Columbia). Total \$14.7M; UIUC \$2.48M; My share \$827K.
- 2017-2020 **NSF (UIUC PI)**. SHF Medium Award “Testing in the Era of Approximation.” UIUC PI (with Milos Gligoric and Sarfraz Khurshid; UT Austin). Total \$750K; My share \$250K.
- 2016-2020 **NSF (UIUC Co-PI)**. XPS Full Award “Breaking the Scalability Wall of Shared Memory through Fast On-Chip Wireless Communication.” Co-PI (with Josep Torrellas and David Padua; UIUC). Total \$879K; My share \$293K.

## Awards

- Teaching 2016-2020 Selected for the UIUC’s **List of Teachers Ranked as Excellent** five times: for CS 598 (Fall 2020, Fall 2019, Fall 2016) and CS 526 (Spring 2020, Spring 2019).
- FSE 2020 **Distinguished Reviewer Award**, Symposium on the Foundations of Software Engineering.
- ICSE-NIER 2020 **Distinguished Paper Award**, New Ideas and Emerging Results Track at the International Conference on Software Engineering.
- FB 2020 Facebook Probability and Programming Research Award.
- NSF 2019 **NSF CAREER Award**.
- CACM 2016 CACM Research Highlight for OOPSLA 2013 paper.
- OOPSLA 2014 **Best Paper Award**, Object-Oriented Programming, Systems, Languages & Applications.
- OOPSLA 2013 **Best Paper Award**, Object-Oriented Programming, Systems, Languages & Applications.
- ICSE 2007 SIGSOFT Travel Grant to attend ICSE 2007 conference.

## Students

- Current Graduate Students
- o **Vimuth Fernando** (PhD; started in Fall 2016; expected graduation 2022; Defended Thesis Proposal).
  - o **Saikat Dutta** (PhD; started in Fall 2017; expected graduation 2022; Defended Thesis Proposal); Won Facebook Graduate Fellowship 2020; Won 3M Foundation Fellowship 2018.
  - o **Keyur Joshi** (PhD; started in Fall 2017; expected graduation 2022).
  - o **Jacob Laurel** (PhD; transferred to the group in Summer 2018; expected graduation 2023); Alfred P. Sloan 2017 UCEM Scholar.
  - o **Zixin Huang** (PhD; started in Fall 2018; expected graduation 2023); Won Andrew and Shana Laursen Fellowship 2018.
  - o **Yifan Zhao** (PhD; started in Fall 2019; expected graduation 2024); co-advised by Vikram Adve; Won Computer Science Excellence Fellowship 2019.
  - o **Shubham Ugare** (PhD; started in Fall 2020; expected graduation 2025).
- Current Undergrads
- Rem Yang (Summer 2020-now), Atharva Sehgal (Summer 2020-now), Anshul Arunachalam (August 2020-now), Tommaso Bassetto (October 2020-now).
- Previous Undergrads
- Nitesh Nath (Spring 2017, next: MS at UChicago), Zixin Huang (Summer 2017-Spring 2018; next: PhD at UIUC), Zhenbang Wang (Summer-Fall 2017, next: MS at UIUC), Otto Piramuthu (Fall 2018; sophomore), Wenxian Zhang (Spring 2018-Spring 2019; next: PhD at Purdue), Hakan Tekgul (Fall 2018-Spring 2019; next: MS at Northeastern), Zhengyao Lin (Fall 2019; junior), Zhekun Zhang (Fall 2019; next: admitted to MS at UIUC, went to industry), Ziang Wan (Spring 2019-Spring 2020; next: MCS at UIUC), Aryaman Jain (Fall 2019-Summer 2020; sophomore), Enguang Fan (Summer 2020-Winter 2020), Jeeva Selvam (Summer 2020-Winter 2020).

Independent Graduate students: Shubham Ugare, Zixin Huang, Yifan Zhao, Azin Heidarshenas, Vimuth Study Fernando, Suleman Mahmood, and Chiao Hsieh. Undergraduate students: Tommaso Basseto, Rem Yang, Zixin Huang, Zhenbang Wang, and Wenxian Zhang.

Senior Theses Hakan Tekgul (ECE; May 2019), Ziang Wan (CS; December 2019).

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## Teaching

Spring 2021 Instructor for Advanced Compiler Construction (CS 526).  
Fall 2020 Instructor for Approximate and Probabilistic Computing Across the System Stack (CS 598sm).  
Spring 2020 Instructor for Advanced Compiler Construction (CS 526).  
Fall 2019 Instructor for Approximate and Probabilistic Computing Across the System Stack (CS 598sm).  
Spring 2019 Instructor for Advanced Compiler Construction (CS 526).  
Fall 2018 Instructor for Programming Languages and Compilers (CS 421).  
Fall 2017 Instructor for Programming Languages and Compilers (CS 421).  
Spring 2017 Instructor for Advanced Compiler Construction (CS 526).  
Fall 2016 Instructor for Approximate and Probabilistic Computing Across the System Stack (CS 598sm).

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## Publications Summary

- Total Citations: 3174 and H-index: 23 as of April 5, 2021. Citation counts are obtained from my Google Scholar page (<http://scholar.google.com/citations?user=3qJQjIYAAAAJ>).
- In total, I have 35 publications in rank at Illinois. Out of these, 22 are top-conference publications, one is a book chapter, two are journal articles, two are short papers, one is an invited review paper, one is a tool paper, and six are peer-reviewed workshop papers. I also have 23 publications before joining Illinois and five preprints.
- I co-authored nine conference papers solely with students (DAC 2021, ISSTA 2020, ESOP 2020, CGO 2020, OOPSLA 2019, FSE 2019, ICSE 2019, FSE 2018, and ATVA 2018). Five of these papers have at least one undergraduate co-author; one has only undergraduate co-authors. *The names of my group-members are marked in **bold** letters.*
- Representative papers: FSE 2018 (led by my student Saikat Dutta), ICSE 2019 (led by my student Keyur Joshi), OOPSLA 2019a (led by my student Vimuth Fernando), and PPOPP 2021 (co-led by my student Yifan Zhao).

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## Conference Publications

- DAC 2021 **J. Laurel, R. Yang, A. Sehgal, S. Ugare, and S. Misailovic.** Statheros: Analysis-driven Compiler for Efficient Low-Precision Probabilistic Programming. In *The 58th Design Automation Conference*, 2021. Acceptance rate 23%.
- PPOPP 2021 H. Sharif, **Y. Zhao**, M. Kotsifakou, A. Kothari, B. Schreiber, E. Wang, Y. Sarita, N. Zhao, **K. Joshi**, V. Adve, **S. Misailovic**, and S. Adve. ApproxTuner: A Compiler and Runtime System for Adaptive Approximations. In *The 26th ACM SIGPLAN Annual Symposium Principles and Practice of Parallel Programming*, 2021. Acceptance rate 21%.
- HPCA 2021 A. Franques, A. Kokolis, S. Abadal, **V. Fernando, S. Misailovic**, and J. Torrellas. WiDir: A Wireless-Enabled Directory Cache Coherence Protocol. In *The 27th IEEE International Symposium on High-Performance Computer Architecture*, 2021. Acceptance rate 24%.
- OOPSLA 2020 R. Ghosh, C. Hsieh, **S. Misailovic**, S. Mitra. Koord: A Language For Distributed Cyber Physical Systems. In *35th ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages and Applications*, 2020. Acceptance rate 36%.

- ISSTA 2020 **S. Dutta**, A. Shi, R. Choudhary, **Z. Zhang**, **A. Jain**, and **S. Misailovic**. Detecting Flaky Tests in Probabilistic and Machine Learning Applications. In *29th ACM SIGSOFT International Symposium on Software Testing and Analysis*, 2020. Acceptance rate 26%.
- ICS 2020 A. Heidarshenas, S. Yesil, D. Skarlatos, **S. Misailovic**, A. Morrison, and J. Torrellas. Speeding-up Iterative Graph Processing on a Shared-Memory Platform with Vertex Merging. In *34th International Conference on Supercomputing*, 2020. Acceptance rate 30%.
- ESOP 2020 **J. Laurel** and **S. Misailovic**. Continualization of Probabilistic Programs With Correction. In *29th European Symposium on Programming*, 2020. Acceptance rate 31%.
- CGO 2020 **K. Joshi**, **V. Fernando**, and **S. Misailovic**. Aloe: Verifying Reliability of Approximate Programs in the Presence of Recovery Mechanisms. In *18th International Symposium on Code Generation and Optimization*, 2020. Acceptance rate 29%.
- POPL 2020 S. An, R. Singh, **S. Misailovic**, and R. Samanta. Augmented Example-based Synthesis. In *47th ACM SIGPLAN Symposium on Principles of Programming Languages*, 2020. Acceptance rate 28%.
- OOPSLA 2019a **V. Fernando**, **K. Joshi**, and **S. Misailovic**. Verifying Safety and Accuracy of Approximate Parallel Programs via Canonical Sequentialization. In *34th ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages and Applications*, 2019. Acceptance rate 36%.
- OOPSLA 2019b H. Sharif, P. Srivastava, M. Huzaifa, M. Kotsifakou, **K. Joshi**, Y. Sarita, N. Zhao, V. Adve, **S. Misailovic**, S. Adve. ApproxHPVM: A Portable Compiler IR for Accuracy-aware Optimizations. In *34th ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages and Applications*, 2019. Acceptance rate 36%.
- FSE 2019 **S. Dutta**, **W. Zhang**, **Z. Huang**, **S. Misailovic**. Storm: Program Reduction for Testing and Debugging Probabilistic Programming Systems. In *27th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering*, 2019. Acceptance rate 24%.
- ICSE 2019 **K. Joshi**, **V. Fernando**, and **S. Misailovic**. Algorithmic Profiling for Randomized Approximate Programs. In *41st ACM/IEEE International Conference on Software Engineering*, 2019. Acceptance rate 21%.
- ASPLOS 2019a **V. Fernando**, A. Franques, S. Abadal, **S. Misailovic**, and J. Torrellas. Replica: A Wireless Manycore for Communication-Intensive and Approximate Data. In *24th International Conference on Architectural Support for Programming Languages and Operating Systems*, 2019. Acceptance rate 21%.
- ASPLOS 2019b A. Mahmoud, R. Venkatagiri, K. Ahmed, **S. Misailovic**, D. Marinov, C. Fletcher, and S. Adve. Minotaur: Adapting Software Testing Techniques for Hardware Errors. In *24th International Conference on Architectural Support for Programming Languages and Operating Systems*, 2019. Acceptance rate 21%.
- ICST 2019 B. Fu, **S. Misailovic**, and M. Gligoric. Resurgence of Regression Test Selection for C++. In *12th IEEE Conference on Software Testing, Validation, and Verification*, 2019. Acceptance rate 28%.
- FSE 2018 **S. Dutta**, O. Legunsen, **Z. Huang**, and **S. Misailovic**. Testing Probabilistic Programming Systems. In *Foundations of Software Engineering*, 2018. Acceptance rate 21%.
- ATVA 2018 **Z. Huang**, **Z. Wang**, and **S. Misailovic**. PSense: Automatic Sensitivity Analysis for Probabilistic Programs. In *Symposium on Automated Technology for Verification and Analysis*, 2018. Acceptance rate 40%.
- USENIX 2018 R. Xu, J. Koo, R. Kumar, P. Bai, S. Mitra, **S. Misailovic**, and S. Bagchi. VideoChef: Efficient Approximation for Streaming Video Processing Pipelines. In *Usenix Annual Technical Conference*, 2018. Acceptance rate 20%.

- PLDI 2018 T. Gehr, **S. Misailovic**, P. Tsankov, L. Vanbever, P. Wiesman, and M. Vechev. Bayonet: Probabilistic Inference for Networks. In *Programming Language Design and Implementation*, 2018. Acceptance rate 22%.
- ICST 2018 F. Hariri, A. Shi, O. Legunsen, M. Gligoric, S. Khurshid, and **S. Misailovic**. Approximate Transformations as Mutation Operators. In *IEEE Conference on Software Testing, Validation, and Verification*, 2018. Acceptance rate 25%.
- CGO 2017 S. Mitra, M. Gupta, **S. Misailovic**, and S. Bagchi. Phase-Aware Optimization in Approximate Computing. In *Code Generation and Optimization*, 2017. Acceptance rate 23%.

#### Before Joining UIUC:

- CAV 2016 T. Gehr, **S. Misailovic**, and M. Vechev. PSI: Exact Symbolic Inference for Probabilistic Programs. In *Computer Aided Verification*, 2016. Acceptance rate 28%.
- SEAMS 2015 A. Filieri, M. Maggio, K. Angelopoulos, N. D’Ippolito, I. Gerostathopoulos, A. Hempel, H. Hoffmann, P. Jamshidi, E. Kalyvianaki, C. Klein, F. Krikava, **S. Misailovic**, A. Papadopoulos, S. Ray, A. Sharifloo, S. Shevtsov, M. Ujma, and T. Vogel. Software Engineering Meets Control Theory. In *Software Engineering for Adaptive and Self-Managing Systems*, 2015. Acceptance rate 29%.
- OOPSLA 2014 **S. Misailovic**, M. Carbin, S. Achour, Z. Qi, and M. Rinard. Chisel: Reliability- and Accuracy-Aware Optimization of Approximate Computational Kernels. In *Object-Oriented Programming, Systems, Languages and Applications (Best Paper Award)*, 2014. Acceptance rate 28%.
- OOPSLA 2013 M. Carbin, **S. Misailovic**, and M. Rinard. Verifying Quantitative Reliability for Programs that Execute on Unreliable Hardware. In *Object-Oriented Programming, Systems, Languages and Applications (Best Paper Award)*, 2013. Acceptance rate 26%.
- OOPSLA 2012 M. Kling, **S. Misailovic**, M. Carbin, and M. Rinard. Bolt: On-Demand Infinite Loop Escape in Unmodified Binaries. In *Object-Oriented Programming, Systems, Languages and Applications*, 2012. Acceptance rate 26%.
- PLDI 2012 M. Carbin, D. Kim, **S. Misailovic**, and M. Rinard. Proving Acceptability Properties of Relaxed Nondeterministic Approximate Programs. In *Programming Language Design and Implementation*, 2012. Acceptance rate 19%.
- POPL 2012 Z. Zhu, **S. Misailovic**, J. Kelner, and M. Rinard. Randomized Accuracy-Aware Program Transformations for Efficient Approximate Computations. In *Principles of Programming Languages*, 2012. Acceptance rate 21%.
- SAS 2011 **S. Misailovic**, D. Roy, and M. Rinard. Probabilistically Accurate Program Transformations. In *Static Analysis Symposium*, 2011. Acceptance rate 33%.
- FSE 2011 S. Sidiroglou, **S. Misailovic**, H. Hoffmann, and M. Rinard. Managing Performance vs. Accuracy Trade-offs With Loop Perforation. In *Foundations of Software Engineering*, 2011. Acceptance rate 17%.
- ECOOP 2011 M. Carbin, **S. Misailovic**, M. Kling, and M. Rinard. Detecting and Escaping Infinite Loops with Jolt. In *European Conference on Object-Oriented Programming*, 2011. Acceptance rate 26%.
- ASPLOS 2011 H. Hoffmann, S. Sidiroglou, M. Carbin, **S. Misailovic**, A. Agarwal, and M. Rinard. Dynamic Knobs for Responsive Power-Aware Computing. In *Architectural Support for Programming Languages and Operating Systems*, 2011. Acceptance rate 21%.
- Onward! 2010 M. Rinard, H. Hoffmann, **S. Misailovic**, and S. Sidiroglou. Patterns and Statistical Analysis for Understanding Reduced Resource Computing. In *Onward! Conference*, 2010. Acceptance rate 25%.
- ICSE 2010 **S. Misailovic**, S. Sidiroglou, H. Hoffmann, and M. Rinard. Quality of Service Profiling. In *International Conference on Software Engineering*, 2010. Acceptance rate 14%.

- FSE 2007 **S. Misailovic**, A. Milicevic, N. Petrovic, S. Khurshid, and D. Marinov. Parallel Test Generation and Execution with Korat. In *Foundations of Software Engineering*, 2007. Acceptance rate 17%.

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## Book Chapters

- FPP 2020 M. Carbin and **S. Misailovic**. Programming Unreliable Hardware (*invited chapter*). In *Foundations of Probabilistic Programming (editors G. Barhe, J. P. Katoen, and A. Silva)*. Cambridge University Press, 2020.

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## Journal Publications

Below are the papers published directly in journals. In addition, OOPSLA 2020, POPL 2020, and two OOPSLA 2019 papers are included automatically in *the Proceedings of the ACM on Programming Languages (PACML)* Journal.

- ACM CSUR July 2020 P. Stanley-Marbell, A. Alaghi, M. Carbin, E. Darulova, L. Dolecek, A. Gerstlauer, G. Gillani, D. Jevdjic, T. Moreau, M. Cacciotti, A. Daglis, N. Enright Jerger, B. Falsafi, **S. Misailovic**, A. Sampson, and D. Zufferey. Exploiting Errors for Efficiency: A Survey from Circuits to Algorithms. In *ACM Computing Surveys*, July 2020.
- ACM TAAS January 2017 A. Filieri, M. Maggio, K. Angelopoulos, N. D'Ippolito, I. Gerostathopoulos, A. Hempel, H. Hoffmann, P. Jamshidi, E. Kalyvianaki, C. Klein, F. Krikava, **S. Misailovic**, A. Papadopoulos, S. Ray, A. Sharifloo, S. Shevtsov, M. Ujma, and T. Vogel. Control Strategies for Self-Adaptive Software Systems. In *ACM Transactions on Autonomous and Adaptive Systems, Vol. 11(4)* (extended version of the SEAMS 2015 paper), January 2017.

### Before Joining UIUC:

- CACM August 2016 M. Carbin, **S. Misailovic**, and M. Rinard. Verifying Quantitative Reliability for Programs that Execute on Unreliable Hardware (*invited Research Highlight*). In *Communications of the ACM Magazine*, August 2016.
- ACM TECS PEC May 2013 **S. Misailovic**, D. Kim, and M. Rinard. Parallelizing Sequential Programs With Statistical Accuracy Tests (*invited paper*). In *ACM Transactions on Embedded Computing Systems - Special Section on Probabilistic Embedded Computing*, May 2013.

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## Short, Tool, and Workshop Publications

- DOSSA 2021 Pradip Bose, Augusto Vega, Sarita Adve, Vikram Adve, **S. Misailovic**, Luca Carloni, Ken Shepard, David Brooks, Vijay Janapa Reddi, and Gu-Yeon Wei. Secure and Resilient SoCs for Autonomous Vehicles. In *The Third International Workshop on Domain Specific System Architecture (Collocated with HPCA 2021)*, 2021.
- ICSE NIER 2020 A. Almaawi, N. Dini, C. Yelen, M. Gligoric, **S. Misailovic**, and S. Khurshid. Predictive Constraint Solving and Analysis. In *Proceedings of the 41st International Conference on Software Engineering; New Ideas and Emerging Results Track (Distinguished Paper Award)*, 2020.
- VTS 2019 R. I. Bahar, U. Karpuzcu, and **S. Misailovic**. Does Approximation Make Testing Harder (or Easier)? In *IEEE VLSI Test Symposium 2019 (Special Session on Approximate Computing)*, 2019. Invited paper.
- JPF 2019 A. Almaawi, H. Converse, M. Gligoric, **S. Misailovic**, and S. Khurshid. Quantifying the Exploration of an Imperative Constraint Solver. In *Java PathFinder Workshop (Collocated with ASE 2019)*, 2019.
- WAX 2019 **V. Fernando**, **K. Joshi**, Darko Marinov, and **S. Misailovic**. Identifying Optimal Parameters for Randomized Approximate Algorithms. In *Workshop on Approximate Computing Across the Stack (Collocated with PLDI 2019)*, 2019.

- DSN 2019 R. Venkatagiri, K. Ahmed, A. Mahmoud, **S. Misailovic**, D. Marinov, C. Fletcher, and S. Adve. gem5-Approxilyzer: an Open Source Tool for Application-level Soft Error Analysis (Tool Paper). In *49th IEEE/IFIP International Conference on Dependable Systems and Networks*, 2019.
- JPF 2018 K. Wang, H. Converse, M. Gligoric, **S. Misailovic**, and S. Khurshid. A Progress Bar for the JPF Search Using Program Executions. In *Java PathFinder Workshop (Collocated with ESEC/FSE 2018)*, 2018.
- APPLIED 2018 R. Ghosh, **S. Misailovic**, and S. Mitra. Language Semantics Driven Design and Formal Analysis for Distributed Cyber-Physical Systems. In *Workshop on Advanced Tools, Programming Languages, and Platforms for Implementing and Evaluating Algorithms for Distributed Systems (Collocated with PODC 2018)*, 2018.
- ICSE NIER 2017 M. Gligoric, S. Khurshid, **S. Misailovic**, and A. Shi. Mutation Testing Meets Approximate Computing. In *International Conference on Software Engineering; New and Emerging Ideas Track*, 2017.
- WAX 2017 A. Mahmoud, R. Venkatagiri, K. Ahmed, S. Adve, D. Marinov, and **S. Misailovic**. Leveraging Software Testing to Explore Input Dependence for Approximate Computing. In *Workshop on Approximate Computing Across the Stack*, 2017.

#### Before Joining UIUC:

- CASES 2015 **S. Misailovic**. Accuracy-Aware Optimization of Approximate Programs (*invited position paper*). In *International Conference on Compilers, Architecture and Synthesis for Embedded Systems*, 2015.
- APPROX 2014 **S. Misailovic**. Accuracy-Aware Program Transformations (*invited position paper*). In *SIGPLAN Workshop on Probabilistic and Approximate Computing*, 2014.
- WACAS 2014 **S. Misailovic** and M. Rinard. Synthesis of Randomized Accuracy-Aware Map-Fold Programs. In *Workshop on Approximate Computing Across the System Stack*, 2014.
- PEPM 2013 M. Carbin, D. Kim, **S. Misailovic**, and M. Rinard. Verified Integrity Properties for Safe Approximate Program Transformations. In *Workshop on Partial Evaluation and Program Manipulation*, 2013.
- RACES 2012 **S. Misailovic**, S. Sidiroglou, and M. Rinard. Dancing With Uncertainty. In *Workshop on Relaxing Synchronization for Multicore and Manycore Scalability*, 2012.
- STEP 2007 **S. Misailovic**, A. Milicevic, S. Khurshid, and D. Marinov. Generating Test Inputs for Fault-Tree Analyzers using Imperative Predicates (*invited paper*). In *Workshop on Advances and Innovations in Systems Testing*, 2007.
- ICSE Demo 2007 A. Milicevic, **S. Misailovic**, D. Marinov, and S. Khurshid. Korat: A Tool for Generating Structurally Complex Test Inputs. In *Formal Research Demonstration at the International Conference on Software Engineering*, 2007.

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#### Invited Talks

- 06/2021 Invited speaker at the Software and Resilience Workshop organized by the EmergenCity Upcoming Initiative at University of Darmstadt (Topic: Approximate Computing and Resiliency).
- 02/2021 Invited speaker at the Software Seminar at Stanford University (Title: *Programming Systems for Bug-Free and Robust Probabilistic Software*).
- 02/2021 Invited panelist at the Special Initiative on Autonomous Systems Design within Design Automation & Test In Europe Conference, DATE 2021.
- 07/2020 Invited speaker at the Workshop on *Approximate Computing*, collocated with Design Automation Conference, DAC 2020 (Title: *Approximating Programs: Languages, Compilers, Runtimes*).
- 02/2020 Invited speaker at the programming languages seminar at the University of California San Diego (Title: *Testing Probabilistic Programming Systems*).

- 10/2019 Invited speaker at the Workshop on Dependable and Secure Software Systems at ETH Zurich (Title: *Testing Probabilistic Programming Systems*).
- 07/2019 Invited speaker at the Workshop on the Design and Analysis of Robust Systems collocated with CAV (Title: *Analysis and Testing for Probabilistic Programming*).
- 04/2019 Invited speaker at a special session on Approximate Computing at IEEE VLSI Testing Symposium 2019.
- 12/2018 Invited speaker at UT Austin ECE's Software Engineering Group (Title: *Analysis and Testing for Probabilistic Programming*).
- 11/2017 Full-day Contributed Tutorial on *Probabilistic Programming* at the International Conference on Automated Software Engineering (ASE) 2017
- 05/2017 Invited speaker at the UW Madison Programming Languages group seminar (Title: *Exact Probabilistic Inference with PSI*).
- 04/2017 Invited Tutorial on *Approximate Compilers* at the SNF International Exploratory Workshop on Theory and Practice for Error-Efficient Computing Systems.

## External Service

### Special Invitations:

- Summer 2021 Invited to Dagstuhl Seminar on Error-Efficient Computing.
- Spring 2019 Invited to NSF Workshop on Future Directions for Parallel and Distributed Computing.
- Spring 2018 Invited to CRA CCC visioning workshop on Digital Computing to Overcome the Limitations of Moore's Law.
- Spring 2018 Invited to DARPA ISAT Meeting on Toolkit of Algorithms for Machine Learning (TAMALE).
- Spring 2018 Invited to DARPA ISAT Meeting on Interfaces to Unlock the Specialized Hardware Revolution (I-USHER).
- Fall 2017 Invited to Dagstuhl Seminar on Machine Learning and Formal Methods.
- Spring 2017 Invited to the SNF International Exploratory Workshop on Theory and Practice for Error-Efficient Computing Systems.

### Proposal Reviewing:

- ERC 2020 European Research Council (ERC) External Reviewer.
- NSF 2019 NSF Panelist/Reviewer.
- NSF 2017 NSF Panelist/Reviewer.

### Conference Program Committees (15 PC - Program Committees; 5 ERC - External Review Committees):

- FSE 2018 (PC), 2019 (PC), 2020 (PC – *Distinguished Reviewer Award*).
- OOPSLA 2017 (PC), 2019 (ERC), 2020 (ERC), 2021 (PC).
- PLDI 2017 (PC), 2019 (PC), 2020 (ERC).
- ASPLOS 2020 (ERC), 2021 (PC).
- ICSE 2020 (PC).
- ESOP 2020 (PC).
- ICPP 2020 (PC).
- DATE 2019 (PC).
- ISSTA 2018 (PC).
- CGO 2018 (PC).
- QEST 2017 (PC).
- PACT 2017 (ERC).



**Journal Reviewing:**

- Reviewed papers for several journals (for some, multiple papers): ACM TOPLAS, ACM TACO, ACM TODS, IEEE Micro, IEEE TPDS, IEEE TSE, and the Programming Journal.

**Conference Organization:**

- 2017-now Steering committee member for WAX, Workshop on Approximate Computing.
- 2020 Co-chair of Student Research Competition Track at OOPSLA 2020.
- 2020 Co-chair of Brief Announcements Track at PPOPP 2020.
- 2020 Main organizer and Program Co-chair of WAX 2020 workshop on Approximate Computing (co-located with ASPLOS 2020; all satellite events cancelled last-minute due to COVID-19).
- 2017 Co-organizer of PASS 2017 workshop on Programming Across The System Stack.
- 2017 Publication Chair for ASE 2017.

**Chairing Sessions at Conferences:**

- PLDI 2020, ICSE 2020, OOPSLA 2019, SPLASH/Rebase 2019, and PLDI 2017.

**Outreach Activities:**

- 2019-2020 Mentor at the RisingStars Academic Career Workshop in 2019 and 2020.
- 2020 Referee at the HackIllinois hackaton in Spring 2020 and Summer 2020.
- 2018 Referee for the Student Research Competition Track at PLDI 2018.
- 2018 Referee for the Student Research Competition Track at CGO 2018.
- 2017 Referee for the Student Research Competition Track at ICSE 2017.

**Membership in Professional Societies:**

- ACM, ACM SIGPLAN, ACM SIGSOFT, IEEE, Sigma Xi.

**Service Before Joining UIUC:**

- Coordinator (de facto a co-organizer) for the Dagstuhl Seminar on Approximate and Probabilistic Computing: Design, Coding, Verification (November 2015).
- Conference PC member for QEST 2016 and ERC member for PLDI 2016.
- Workshop PC member for PEPM 2016, WAX 2015-2016, CTSE 2015, and APPROX 2014.
- Artifact evaluation committee member at ISSTA 2014 and OOPSLA 2013.
- External reviewer for several conferences (HCI 2016, ASPLOS 2016, CAV 2015, VMCAI 2015, MICRO 2014, ICFP 2013, LICS 2013) and journals (IEEE TMSCS, IEEE TVLSI).

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**Internal Service****CS Department Committees:**

- 2019-2021 Graduate Admissions Committee (FAA).
- 2020 Advisory Committee.
- 2017-2019 Graduate Studies Committee.
- 2016-2017 Space Committee.

**Outreach Activities:**

- 2020 College of Engineering Panelist on Preparing NSF CAREER Proposal.
- 2016-2019 Co-organizer of CS 591 ACT – Advanced Compiler Technology.
- 2017-now Co-organizer of CS 591 SE – Software Engineering Seminar.
- Jan. 2018 Referee at UIUC College of Engineering PURE Symposium.
- 2018-2019 Mentor at UIUC College of Engineering ISUR Program.