

ZHENDONG SU

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RESEARCH INTERESTS

- *Programming languages & compilers, software engineering, computer security, deep learning*: novel methodologies, programming models, techniques and tools for improving software quality & programmer productivity
- *Transformative technologies for K-12 and college education*

PROFESSIONAL PREPARATION

- Ph.D., Computer Science (with minor in Mathematics), University of California, Berkeley, 2002
- M.S., Computer Science, University of California, Berkeley, 1997
- B.A., Mathematics (*with the Highest Honor*), University of Texas at Austin, 1995
- B.S., Computer Science (*with the Highest Honor*), University of Texas at Austin, 1995
- Undergraduate Study, Business School, University of Wisconsin, Eau Claire, 1991–1992
- Undergraduate Study, International Trade, Fudan University, Shanghai, China, 1988–1991

Names of Research Advisors

- **Ph.D.** Alex Aiken, UC Berkeley (now at Stanford), June 1996–December 2002
- **M.S.** Alex Aiken, UC Berkeley (now at Stanford), June 1996–December 1997
- **B.S.** Vladimir Lifschitz, UT Austin, August 1994–August 1995

APPOINTMENTS

- Professor, Department of Computer Science, ETH Zürich, 8/2018–present
- Professor, Department of Computer Science, UC Davis, 7/2011–present (on leave in 2018-19)
- Chancellor’s Fellow, UC Davis, 2010–2015
- Associate Professor, Department of Computer Science, UC Davis, 7/2007–6/2011
- Assistant Professor, Department of Computer Science, UC Davis, 11/2002–06/2007
- Visiting Fellow, Automated Software Engineering Group, RIACS/NASA Ames, 9/2002–12/2002
- Graduate Student Instructor, Computer Science Division, UC Berkeley, 1/2000–5/2000
- Graduate Student Researcher, Computer Science Division, UC Berkeley, 6/1996–8/2002
- Research Intern, Computing Sciences Research Center, Bell Laboratories, 5/1997–8/1997

VISITING AND CONSULTING POSITIONS

- Visiting Professor, Aarhus University, Denmark, 6/2011-8/2011
- Visiting Professor, Stanford University, 2011-12
- Consultant, Huawei Technologies, 2013-14
- Consultant, Microsoft, 2012, 2017-18

HONORS AND AWARDS

- Keynote, International Conference on Engineering of Complex Computer Systems (ICECCS), 2018
- Plenary Panelist and Invited Speaker, China National Computer Congress (CNCC), 2018
- ACM SIGSOFT Distinguished Paper Award (at ICSE), 2018
- ACM SIGSOFT Impact Paper Award and Keynote at ESEC/FSE, 2018
- Google Faculty Research Award, 2018
- Most Published Author in top PL/SE venues (csrankings.org), 2018
- Mozilla Faculty Research Award, 2017
- Google Scholar Computer Security & Cryptography Classic Paper Award, 2017
- Top 100 (#47) Most Influential Scholars in Software Engineering (aminer.org), 2017
- Keynote, International Conference on Software Maintenance and Evolution (ICSME), 2017
- Distinguished Lecture, ETH Zurich, 2017
- Google Faculty Research Award, 2016
- Cisco Faculty Research Award, 2016
- ACM CACM Research Highlight for “On the Naturalness of Software”, 2016
- ACM SIGPLAN PLDI 2014 Distinguished Paper Award, 2014
- ACM SIGPLAN OOPSLA 2013 Best Paper Award, 2013
- Zuhair A. Munir Best Dissertation Award, UC Davis, PhD Advisor, 2013
- ACM SIGSOFT Outstanding Dissertation Award, PhD Advisor, 2012
- Software Engineering Innovation Foundation Award (SEIF), Microsoft, 2012
- Chancellor’s Faculty Fellow, UC Davis, 2010–present
- ACM SIGSOFT Distinguished Paper Award (at ISSTA’10), Trento, Italy, 2010
- IBM Software Quality Innovation Award, 2008
- Distinguished Visitor, IBM Thomas J. Watson Research Center, New York, 2008
- Outstanding Junior Faculty Award, College of Engineering, UC Davis, 2007
- Marquis Who’s Who in America, 2007–
- NSF CAREER Award (CISE CCF “Software Engineering and Languages” Program), 2006
- ACM SIGSOFT Distinguished Paper Award (at ICSE’04), Edinburgh, UK, 2004 (*five out of 436*)
- Award Paper selected by TACAS’04 program committee, Barcelona, Spain, 2004 (*seven out of 145*)
- The EAPLS Best Paper Award (at ETAPS’98), Lisbon, Portugal, 1998 (*one out of 290*)
- UC Regents Fellowship, UC Berkeley, 1995–1996
- Named the Dean’s Honored Graduate of the Year in Computer Science, UT Austin, 1995
- Presidential Scholarship, UT Austin, 1994–1995
- Ranked in the Top 150 (US & Canada) in the William Lowell Putnam Math Competition, 1993
- Directly Admitted into Fudan University without College Entrance Examination, China, 1988
- First Prize Winner in the Shanghai High School Mathematics Competition, China, 1987

PUBLICATIONS

Google Scholar Profile: Citations: 8,285 **h-index:** 45 (as of November 12, 2018)

Three Recent Representative Publications

1. Q. Zhang and Z. Su. Context-Sensitive Data Dependence Analysis via Linear Conjunctive Language Reachability. In *Proceedings of the 44th Annual ACM SIGPLAN–SIGACT Symposium on Principles of Programming Languages (POPL’17)*, Paris, France, January 18-20, 2017.
2. Z. Fu and Z. Su. XSat: A Fast Floating-Point Satisfiability Solver. In the *International Conference on Computer Aided Verification (CAV’16)*, Toronto, Canada, July 17-23, 2016.
3. V. Le, M. Afshari, and Z. Su. Compiler Validation via Equivalence Modulo Inputs. In *ACM SIGPLAN 2014 Conference on Programming Language Design and Implementation (PLDI’14)*, Edinburgh, UK, June 2014 (**SIGPLAN Distinguished Paper Award**).

Refereed Conference and Workshop Publications

Flagship: 73

Top: 12

Selective: 7

Workshop: 6

Flagship: ICSE (18), FSE (11), OOPSLA (9), PLDI (9), ISSTA (7), POPL (5), IJCAI (3), USENIX Security (2), CCS (2), ASPLOS (1), CAV (1), MobiSys (1), NDSS (1), S&P (1), ATC (1), ICLR (1)

Top: ASE (3), ESOP (2), TACAS (2), ESORICS (1), FOSSACS (1), FSTTCS (1), CC (1), ICDM (1)

Selective: Onward! (3), ACSAC (2), NOMS (1), SDM (1)

Workshop: ICSE Demo (2), ASID (1), SAVCBS (1), TIC (1), MobiSys Video (1)

1. C. Cai, Q. Zhang, Z. Zuo, K. Nguyen, G. Xu, and Z. Su. Calling-to-Reference Context Translation via Constraint-Guided CFL-Reachability. In *ACM SIGPLAN 2018 Conference on Programming Language Design and Implementation (PLDI’18)*, Philadelphia, PA, June 2018. (**20%**)
2. K. Wang, R. Singh, and Z. Su. Search, Align, and Repair: Data-Driven Feedback Generation for Introductory Programming Exercises. In *ACM SIGPLAN 2018 Conference on Programming Language Design and Implementation (PLDI’18)*, Philadelphia, PA, June 2018. (**20%**)
3. K. Wang, R. Singh, and Z. Su. Dynamic Neural Program Embeddings for Program Repair. In the *Sixth International Conference on Learning Representations (ICLR’18)*, Vancouver, Canada, April-May 2018. (**34%**)
4. C. Sun, Y. Li, Q. Zhang, T. Gu, and Z. Su. Perses: Syntax-Guided Program Reduction. In the *40th International Conference on Software Engineering (ICSE’18)*, Gothenburg, Sweden, May 2018. (**21%**)
5. L. Fan, T. Su, S. Chen, G. Meng, Y. Liu, L. Xu, G. Pu, and Z. Su. Large-Scale Analysis of Framework-Specific Exceptions in Android Apps. In the *40th International Conference on Software Engineering (ICSE’18)*, Gothenburg, Sweden, May 2018 (**ACM SIGSOFT Distinguished Paper Award**). (**21%**)
6. H. Yu, Z. Chen, J. Wang, Z. Su, and W. Dong. Symbolic Verification of Regular Properties. In the *40th International Conference on Software Engineering (ICSE’18)*, Gothenburg, Sweden, May 2018. (**21%**)
7. T. Su, G. Meng, Y. Chen, K. Wu, W. Yang, Y. Yao, G. Pu, Y. Liu, and Z. Su. Guided, Stochastic Model-Based GUI Testing of Android Apps. In the *11th Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE’17)*, Paderborn, Germany, September 2017. (**24%**)
8. Q. Zhang, C. Sun, and Z. Su. Skeletal Program Enumeration for Rigorous Compiler Testing. In *ACM SIGPLAN 2017 Conference on Programming Language Design and Implementation (PLDI’17)*, Barcelona, Spain, June 2017. (**14.6%**)

9. Z. Fu and Z. Su. Achieving High Coverage for Floating-point Code via Unconstrained Programming. In *ACM SIGPLAN 2017 Conference on Programming Language Design and Implementation (PLDI'17)*, Barcelona, Spain, June 2017. **(14.6%)**
10. H. Liu, C. Sun, Z. Su, Y. Jiang, M. Gu, and J. Sun. Stochastic Optimization of Program Obfuscation. In the *39th International Conference on Software Engineering (ICSE'17)*, Beunos Aires, Argentina, May 2017. **(16%)**
11. Q. Zhang and Z. Su. Context-Sensitive Data Dependence Analysis via Linear Conjunctive Language Reachability. In *Proceedings of the 44th Annual ACM SIGPLAN–SIGACT Symposium on Principles of Programming Languages (POPL'17)*, Paris, France, January 18-20, 2017. **(23%)**
12. T. Gu, C. Sun, X. Ma, J. Lv, and Z. Su. Automatic Runtime Recovery via Error Handler Synthesis. In the *IEEE/ACM International Conference on Automated Software Engineering (ASE'16)*, Singapore, September 3-7, 2016. **(19%)**
13. C. Sun, V. Le, and Z. Su. Finding Compiler Bugs via Live Code Mutation. In the *ACM SIGPLAN Conference on Object-Oriented Programming Systems, Languages and Applications (OOPSLA'16)*, Amsterdam, October/November 2016. **(25.6%)**
14. M. Afshari and Z. Su. Building White-Box Abstractions by Program Refinement. In *ACM Symposium on New Ideas in Programming and Reflections on Software (SPLASH/Onward!'16)*, Amsterdam, October/November 2016.
15. C. Sun, V. Le, and Z. Su. Toward Understanding Compiler Bugs in GCC and LLVM. In the *International Symposium on Software Testing and Analysis (ISSTA'16)*, Saarbrucken, Germany, July 18-20, 2016. **(25%)**
16. Z. Fu and Z. Su. XSat: A Fast Floating-Point Satisfiability Solver. In the *International Conference on Computer Aided Verification (CAV'16)*, Toronto, Canada, July 17-23, 2016. **(28%)**
17. K. Wang and Z. Su. Dimensionally Guided Synthesis of Mathematical Word Problems. In the *International Joint Conference on Artificial Intelligence (IJCAI'16)*, New York City, July 9-15, 2016. **(25%)**
18. Y. Chen, T. Su, C. Sun, Z. Su, and J. Zhao. Coverage-Directed Differential Testing of JVM Implementations. In *ACM SIGPLAN 2016 Conference on Programming Language Design and Implementation (PLDI'16)*, Santa Barbara, CA, June 2016. **(16%)**
19. C. Sun, V. Le, and Z. Su. Randomized Stress-Testing of Link-Time Optimizers. In the *38th International Conference on Software Engineering (ICSE'16)*, Austin, TX, May 2016. **(19%)**
20. V. Le, C. Sun, and Z. Su. Finding Deep Compiler Bugs via Guided Stochastic Program Mutation. In the *ACM SIGPLAN Conference on Object-Oriented Programming Systems, Languages and Applications (OOPSLA'15)*, Pittsburgh, PA, October 2015.
21. Z. Fu, Z. Bai, and Z. Su. Automated Backward Error Analysis for Numerical Code. In the *ACM SIGPLAN Conference on Object-Oriented Programming Systems, Languages and Applications (OOPSLA'15)*, Pittsburgh, PA, October 2015.
22. Y. Chen and Z. Su. Guided Differential Testing of Certificate Validation in SSL/TLS Implementations. In the *10th Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE'15)*, Bergamo, Italy, August-September 2015. **(25%)**
23. K. Wang and Z. Su. Automated Geometry Theorem Proving for Human-Readable Proofs. In the *International Joint Conference on Artificial Intelligence (IJCAI'15)*, Buenos Aires, Argentina, July 2015. **(28.8%)**
24. K. Wang and Z. Su. Automatic Generation of Raven's Progressive Matrices. In the *International Joint Conference on Artificial Intelligence (IJCAI'15)*, Buenos Aires, Argentina, July 2015. **(28.8%)**
25. K. Wang, G. Xu, Z. Su, and Y. Liu. GraphQ: Graph Query Processing with Abstraction Refinement. In the *USENIX Annual Technical Conference (ATC'15)*, Santa Clara, CA, July 2015. **(15.8%)**

26. V. Le, C. Sun, and Z. Su. Randomized Stress-Testing of Link-Time Optimizers. In the *International Symposium on Software Testing and Analysis (ISSTA'15)*, Baltimore, MD, July 2015. **(27.7%)**
27. H. Zhong and Z. Su. An Empirical Study on Fixing Real Bugs. In the *37th International Conference on Software Engineering (ICSE'15)*, Firenze, Italy, May 2015. **(18.5%)**
28. T. Su, Z. Fu, G. Pu, J. He, and Z. Su. Combining Symbolic Execution and Model Checking for Data Flow Testing. In the *37th International Conference on Software Engineering (ICSE'15)*, Firenze, Italy, May 2015. **(18.5%)**
29. D. Zou, R. Wang, Y. Xiong, L. Zhang, Z. Su, and H. Mei. A Genetic Algorithm for Detecting Significant Floating-Point Inaccuracies. In the *37th International Conference on Software Engineering (ICSE'15)*, Firenze, Italy, May 2015. **(18.5%)**
30. Z. Tu, Z. Su, and P. Devanbu. On the Localness of Software. In the *ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE'14)*, Hong Kong, November 2014. **(22%)**
31. Q. Zhang, X. Xiao, C. Zhang, H. Yuan, and Z. Su. Efficient Subcubic Alias Analysis for C. In the *ACM SIGPLAN Conference on Object-Oriented Programming Systems, Languages and Applications (OOPSLA'14)*, Portland, OR, October 2014.
32. Z. Gu, D. Schleck, E. Barr, and Z. Su. Capturing and Exploiting IDE Interactions. In *ACM Symposium on New Ideas in Programming and Reflections on Software (SPLASH/Onward!'14)*, Portland, OR, October 2014.
33. F. Peng, Z. Deng, X. Zhang, D. Xu, Z. Lin, and Z. Su. X-Force: Force-Executing Binary Programs for Security Applications. In the *25th USENIX Security Symposium*, San Diego, CA, August 2014. **(19%)**
34. V. Le, M. Afshari, and Z. Su. Compiler Validation via Equivalence Modulo Inputs. In *ACM SIGPLAN 2014 Conference on Programming Language Design and Implementation (PLDI'14)*, Edinburgh, UK, June 2014. **(SIGPLAN Distinguished Paper Award)**. **(18%)**
35. F. Sun, L. Xu, and Z. Su. Detecting Logic Vulnerabilities in E-commerce Applications. In the *2014 Network and Distributed System Security (NDSS'14)*, San Diego, CA, February 2014. **(19%)**
36. Y. Li, Z. Su, L. Wang, and X. Li. Steering Symbolic Execution to Less Traveled Paths. In the *ACM SIGPLAN Conference on Object-Oriented Programming Systems, Languages and Applications (OOPSLA'13)*, Indianapolis, IN, 2013. **(Best Paper Award)**. **(26%)**
37. H. Zhong and Z. Su. Detecting API Documentation Errors. In the *ACM SIGPLAN Conference on Object-Oriented Programming Systems, Languages and Applications (OOPSLA'13)*, Indianapolis, IN, 2013. **(26%)**
38. D. Qiu, B. Li, and Z. Su. An Empirical Analysis of the Co-evolution of Schema and Code in Database Applications. In the *9th Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE'13)*, Saint Petersburg, Russia, August 2013. **(20%)**
39. C. Jensen, A. Moller, and Z. Su. Server Interface Descriptions for Automated Testing of JavaScript Web Applications. In the *9th Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE'13)*, Saint Petersburg, Russia, August 2013. **(20%)**
40. V. Le, J. de Halleux, S. Gulwani, and Z. Su. Keyword Programming for TouchDevelop. In *11th International Conference on Mobile Systems, Applications, and Services (MobiSys'13)*, Video Demo Track, Taipei, Taiwan, June 2013.
41. V. Le, S. Gulwani, and Z. Su. SmartSynth: Synthesizing Smartphone Automation Scripts from Natural Language. In *11th International Conference on Mobile Systems, Applications, and Services (MobiSys'13)*, Taipei, Taiwan, June 2013. **(16%)**
42. Q. Zhang, M. Lyu, H. Yuan, and Z. Su. Fast Algorithms for Dyck-CFL Reachability with Applications to Alias Analysis. In *ACM SIGPLAN 2013 Conference on Programming Language Design and Implementation (PLDI'13)*, Seattle, WA, June 2013. **(17%)**

43. E. Barr, T. Vo, V. Le, and Z. Su. Automatic Detection of Floating-Point Exceptions. In *Proceedings of the 40th Annual ACM SIGPLAN–SIGACT Symposium on Principles of Programming Languages (POPL’13)*, Rome, Italy, January 23-25, 2013. **(18%)**
44. T. Kwon and Z. Su. Detecting and Analyzing Insecure Component Usage. In the *ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE’12)*, Cary, NC, November 2012. **(17%)**
45. M. Gabel and Z. Su. Testing Mined Specifications. In the *ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE’12)*, Cary, NC, November 2012. **(17%)**
46. Z. Gu, E. Barr, D. Schleck, and Z. Su. Reusing Debugging Knowledge via Trace-based Bug Search. In *ACM SIGPLAN Conference on Object-Oriented Programming Systems, Languages and Applications (OOPSLA’12)*, Tucson, AZ, October 2012. **(25%)**
47. M. Afshari, E. Barr, and Z. Su. Liberating the Programmer with Prorogued Programming. In *ACM Symposium on New Ideas in Programming and Reflections on Software (SPLASH/Onward!’12)*, Tucson, AZ, October 2012. **(26%)**
48. A. Hindle, E. Barr, M. Gabel, Z. Su, and P. Devanbu. On the "Naturalness" of Software. In the *34th International Conference on Software Engineering (ICSE’12)*, Zurich, Switzerland, June 2012 **(ACM CACM Research Highlight)**. **(21%)**
49. T. Kwon and Z. Su. Static Detection of Unsafe Component Loadings. In the *International Conference on Compiler Construction (CC’12)*, Tallinn, Estonia, March 2012. **(25%)**
50. T. Kwon and Z. Su. Modeling High-Level Behavior Patterns for Precise Similarity Analysis of Software. In the *International Conference on Data Mining (ICDM’11)*, Vancouver, Canada, December 2011. **(18%)**
51. S. Thummalapenta, T. Xie, N. Tillmann, J. de Halleux, and Z. Su. Synthesizing Method Sequences for High-Coverage Testing. In the *ACM SIGPLAN Conference on Object-Oriented Programming Systems, Languages and Applications (OOPSLA’11)*, Portland, OR, October 2011. **(37%)**
52. F. Sun, L. Xu, and Z. Su. Static Detection of Access Control Vulnerabilities in Web Applications. In the *20th USENIX Security Symposium*, San Francisco, CA, August 2011 **(Finalist for 2012 Kaspersky American Cup, IT Security for the Next Generation)**. **(17%)**
53. Z. Gu, E. Barr, and Z. Su. BQL: Capturing and Reusing Debugging Knowledge. Formal Research Demonstrations Track, in *Proceedings of the 33rd International Conference on Software Engineering (ICSE’11)*, Honolulu, Hawaii, May 2011. **(37%)**
54. M. Gabel and Z. Su. A Study of the Uniqueness of Source Code. To appear in the *18th ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE 18)*, Santa Fe, NM, November 7-11, 2010. **(20%)**
55. M. Gabel, J. Yang, Y. Yu, M. Goldszmidt, and Z. Su. Scalable and Systematic Detection of Buggy Inconsistencies in Source Code. To appear in the *ACM SIGPLAN Conference on Object-Oriented Programming Systems, Languages and Applications (OOPSLA’10)*, Reno/Tahoe, NV, October 2010. **(27%)**
56. E. Tang, E. Barr, X. Li, and Z. Su. Perturbing Numerical Calculations for Statistical Analysis of Floating-Point Program (In)Stability. To appear in the *International Symposium on Software Testing and Analysis (ISSTA’10)*, Trento, Italy, July 2010. **(23%)**
57. T. Kwon and Z. Su. Automatic Detection of Unsafe Component Loadings. To appear in the *International Symposium on Software Testing and Analysis (ISSTA’10)*, Trento, Italy, July 2010 **(Top ranked submission; ACM SIGSOFT Distinguished Paper Award)**. **(23%)**
58. Z. Gu, E.T. Barr, D.J. Hamilton, and Z. Su. Has the Bug Really Been Fixed? In the *32nd International Conference on Software Engineering (ICSE’10)*, Cape Town, South Africa, May 2010. **(14%)**
59. M. Gabel and Z. Su. Online Inference and Enforcement of Temporal Properties. Mark Gabel and Zhendong Su. In the *32nd International Conference on Software Engineering (ICSE’10)*, Cape Town, South Africa, May 2010. **(14%)**

60. A. Saebjoernsen, L. Jiang, D. Quinlan, and Z. Su. Static Validation of C Preprocessor Macros. In the *24th IEEE/ACM International Conference on Automated Software Engineering (ASE'09)*, Auckland, New Zealand, November 2009. **(17%)**
61. F. Sun, L. Xu, and Z. Su. Client-Side Detection of XSS Worms by Monitoring Payload Propagation. In the *European Symposium on Research in Computer Security (ESORICS'09)*, Saint Malo, France, September 2009. **(19%)**
62. L. Jiang and Z. Su. Automatic Mining of Functionally Equivalent Code Fragments via Random Testing. In the *International Symposium on Software Testing and Analysis (ISSTA'09)*, Chicago, IL, July 2009. **(27%)**
63. A. Saebjoernsen, J. Willcok, T. Panas, D. Quinlan, and Z. Su. Detecting Code Clones in Binary Executables. In the *International Symposium on Software Testing and Analysis (ISSTA'09)*, Chicago, IL, July 2009. **(27%)**
64. C. Bird, E. Barr, A. Nash, P. Devanbu, V. Filkov, and Z. Su. Structure and Dynamics of Research Collaboration in Computer Science. In the *SIAM International Conference on Data Mining (SDM'09)*, Sparks, Nevada, April 2009. **(30%)**
65. L. Jiang and Z. Su. Profile-Guided Program Simplification for Effective Testing and Analysis. In the *16th ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE 16)*, Atlanta, GA, November 2008. **(20%)**
66. M. Gabel and Z. Su. Javert: Fully Automatic Mining of General Temporal Properties from Dynamic Traces. In the *16th ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE 16)*, Atlanta, GA, November 2008. **(20%)**
67. G. Wassermann, D. Yu, A. Chander, D. Dhurjati, H. Inamura, and Z. Su. Dynamic Test Input Generation for Web Applications. In the *International Symposium on Software Testing and Analysis (ISSTA'08)*, Seattle, WA, July 2008. **(26%)**
68. M. Gabel, L. Jiang, and Z. Su. Scalable Detection of Semantic Clones. In the *the 30th International Conference on Software Engineering (ICSE'08)*, Leipzig, Germany, May 2008. **(15%)**
69. M. Gabel and Z. Su. Symbolic Mining of Temporal Specifications. In the *the 30th International Conference on Software Engineering (ICSE'08)*, Leipzig, Germany, May 2008. **(15%)**
70. G. Wassermann and Z. Su. Static Detection of Cross-Site Scripting Vulnerabilities. In the *the 30th International Conference on Software Engineering (ICSE'08)*, Leipzig, Germany, May 2008. **(15%)**
71. D. A. S. de Oliveria, J. R. Crandall, G. Wassermann, S. Ye, S. F. Wu, Z. Su, and F. T. Chong. Bezoar: Automated Virtual Machine-based Full-System Recovery from Control-Flow Hijacking Attacks. In the *IEEE/IFIP Network Operations and Management Symposium (NOMS'08)*, Salvador, Bahia, Brazil, April 2008. **(27%)**
72. M. Van Gundy, H. Chen, Z. Su, and G. Vigna. Feature Omission Vulnerabilities: Thwarting Signature Generation for Polymorphic Worms. In the *Annual Computer Security Applications Conference (ACSAC'07)*, Miami Beach, Florida, December 2007. **(22%)**
73. L. Jiang and Z. Su. Context-Aware Statistical Debugging: From Bug Predictors to Faulty Control Flow Paths. In the *22nd IEEE/ACM International Conference on Automated Software Engineering (ASE'07)*, Atlanta, Georgia, November 2007. **(12%)**
74. J. R. Crandall, D. Zinn, M. Byrd, E. T. Barr, Rich East (Z. Su). ConceptDoppler: A Weather Tracker for Internet Censorship. In *Proceedings of the 14th ACM Conference on Computer and Communications Security (CCS'07)*, Alexandria, Virginia, October 2007. **(18%)**
75. L. Jiang, Z. Su, and E. Chiu. Context-Based Detection of Clone-Related Bugs. In the *Sixth Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE'07)*, Dubrovnik, Croatia, September 2007. **(17%)**
76. G. Wassermann and Z. Su. Sound and Precise Analysis of Web Applications for Injection Vulnerabilities. In *ACM SIGPLAN 2007 Conference on Programming Language Design and Implementation (PLDI'07)*, San Diego, CA, June 2007. **(25%)**

77. L. Jiang, G. Misherghi, Z. Su, and S. Glondu. DECKARD: Scalable and Accurate Tree-based Detection of Code Clones. In *the 29th International Conference on Software Engineering (ICSE'07)*, Minneapolis, MN, May 2007 (**2018 ACM SIGSOFT Impact Paper Award**). (15%)
78. F. Hsu, H. Chen, T. Ristenpart, J. Li, and Z. Su. Back to the Future: A Framework for Automatic Malware Removal and System Repair. In *Annual Computer Security Applications Conference (ACSAC'06)*, Miami Beach, Florida, December 2006. (30%)
79. G. Wassermann and Z. Su. Validity Checking for Finite Automata over Linear Arithmetic Constraints. In *the 26th Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS'06)*, Kolkata, India, December 2006. (22%)
80. J. Crandall, G. Wassermann, D. de Oliveira, Z. Su, S. F. Wu, and F. Chong. Temporal Search: Detecting Hidden Malware Timebombs with Virtual Machines. In *Twelfth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS'06)*, San Jose, California, October 2006. (22%)
81. D. de Oliveira, J. Crandall, G. Wassermann, S. F. Wu, Z. Su, and F. Chong. ExecRecorder: VM-Based Full-System Replay for Attack Analysis and System Recovery (*short paper, 6 pages*). In *the Workshop on Architectural and System Support for Improving Software Dependability (ASID'06)*, San Jose, California, October 2006.
82. L. Yuan, J. Mai, Z. Su, H. Chen, C. Chuah, and P. Mohapatra. FIREMAN: A Toolkit For FIREwall Modeling and ANalysis. In *2006 IEEE Symposium on Security and Privacy (S&P'06)*, Oakland, California, May 2006. (9%)
83. L. Jiang and Z. Su. Osprey: A Practical Type System for Validating Dimensional Unit Correctness of C Programs. In *the 28th International Conference on Software Engineering (ICSE'06)*, Shanghai, China, May 2006. (9%)
84. G. Misherghi and Z. Su. HDD: Hierarchical Delta Debugging. In *the 28th International Conference on Software Engineering (ICSE'06)*, Shanghai, China, May 2006. (9%)
85. Z. Su and G. Wassermann. The Essence of Command Injection Attacks in Web Applications. In *ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL'06)*, Charleston, South Carolina, January 2006. (19%)
86. J. Crandall, Z. Su, S. F. Wu, F. Chong. On Deriving Unknown Vulnerabilities from Zero-Day Polymorphic and Metamorphic Worm Exploits. In *Proceedings of the 12th ACM Conference on Computer and Communications Security (CCS'05)*, Alexandria, Virginia, November 2005. (15%)
87. J. Niehren, T. Priesnitz, and Z. Su. Complexity of Subtype Satisfiability over Posets. In *Proceedings of European Symposium On Programming (ESOP'05)*, Edinburgh, Scotland, UK, April 2005. (24%)
88. G. Wassermann and Z. Su. An Analysis Framework for Security in Web Applications. In *Proceedings of the Workshop on Specification and Verification of Component-Based Systems (SAVCBS)*, November 2004. (43%)
89. C. Gould, Z. Su, and P. Devanbu. JDBC Checker: A Static Analysis Tool for SQL/JDBC Applications. Formal Research Demonstrations Track, in *Proceedings of the 26th International Conference on Software Engineering (ICSE'04)*, Edinburgh, Scotland, UK, May 2004. (35%)
90. C. Gould, Z. Su, and P. Devanbu. Static Checking of Dynamically Generated Queries in Database Applications. In *Proceedings of the 26th International Conference on Software Engineering (ICSE'04)*, Scotland, UK, May 23-28, 2004 (**ACM SIGSOFT Distinguished Paper Award**). (13%)
91. Z. Su and D. Wagner. A Class of Polynomially Solvable Range Constraints for Interval Analysis without Widening and Narrowing. In *Proceedings of the 10th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'04)*, Barcelona, Spain, March 29-April 2, 2004. Among **Best Papers** of TACAS'04 (7/145, **4.8%**), invited paper in *Theoretical Computer Science*). (25%)

92. Z. Su, A. Aiken, J. Niehren, T. Priesnitz, and R. Treinen. The First-Order Theory of Subtyping Constraints. In *Proceedings of the 29th Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL'02)*, pages 203–216, Portland, USA, January 16–18, 2002.
93. Z. Su and A. Aiken. Entailment with Conditional Equality Constraints. In *Proceedings of European Symposium On Programming (ESOP'01)*, pages 170–189, Genova, Italy, April 2–6, 2001.
94. Z. Su, M. Fähndrich, and A. Aiken. Projection Merging: Reducing Redundancies in Inclusion Constraint Graphs. In *Proceedings of the 27th Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL'00)*, pages 81–95, Boston, USA, January 19–21, 2000.
95. M. Fähndrich, J.S. Foster, Z. Su, and A. Aiken. Partial Online Cycle Elimination in Inclusion Constraint Graphs. In *Proceedings of the 1998 ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'98)*, pages 85–96, Montreal, Canada, June 1998.
96. A. Aiken, M. Fähndrich, and Z. Su. Detecting Races in Relay Ladder Logic Programs. In *Proceedings of the International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'98)*, pages 184–200, Lisbon, Portugal, March 1998. **EAPLS Best Paper Award at ETAPS'98.**
97. A. Aiken, M. Fähndrich, J.S. Foster, and Z. Su. A Toolkit for Constructing Type- and Constraint-Based Program Analyses. In *Proceedings of the Second International Workshop on Types in Compilation (TIC'98)*, pages 78–96, Kyoto, Japan, March 1998.
98. A. Muscholl, D. Peled, and Z. Su. Deciding Properties for Message Sequence Charts. In *Proceedings of the International Conference on Foundations of Software Science and Computation Structures (FoSSaCS'98)*, pages 226–242, Lisbon, Portugal, March 1998.

Journal Publications

1. T. Su, K. Wu, W. Miao, G. Pu, J. He, Y. Chen, and Z. Su. A Survey on Data Flow Testing. *ACM Computing Surveys*, 2017.
2. D. Qiu, B. Li, E. Barr, and Z. Su. Understanding the Syntactic Rule Usage in Java. *Journal of Systems and Software* 123, 2017.
3. A. Hindle, E. Barr, M. Gabel, Z. Su, and P. Devanbu. On the Naturalness of Software. *Communications of the ACM (CACM Research Highlights)*, 59(5), 2016.
4. M. Marron, C. Sanchez, Z. Su, and M. Fähndrich. Abstracting Runtime Heaps for Program Understanding. *IEEE Transactions on Software Engineering (TSE)*, 39(6), 2013.
5. T. Kwon and Z. Su. Automatic Detection of Unsafe Dynamic Component Loadings. *IEEE Transactions on Software Engineering (TSE)*, 38(2), 2012 (**invited paper**).
6. G. Misherghi, L. Yuan, Z. Su, C. Chuah, and H. Chen. A General, Formal Framework for Evaluating Firewall Optimization Techniques. In the *IEEE Transactions on Network and Service Management (TNSM)*, 2009.
7. J. R. Crandall, J. Brevik, S. Ye, G. Wassermann, D. A.S. de Oliveira, Z. Su, S. F. Wu, and F. T. Chong. Putting Trojans on the Horns of a Dilemma: Redundancy for Information Theft Detection. In the *Special Issue on Security in Computing of the Transactions on Computational Sciences Journal (Springer LNCS)*, 2009.
8. G. Wassermann, C. Gould, Z. Su, and P. Devanbu. Static Checking of Dynamically Generated Queries in Database Applications. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 16(4), 2007 (**invited paper**).
9. Z. Su and D. Wagner. A Class of Polynomially Solvable Range Constraints for Interval Analysis without Widening. In *Theoretical Computer Science (TCS)*, 345(1), 122–138, 2005 (**invited paper**).
10. A. Aiken, M. Fähndrich, and Z. Su. Detecting Races in Relay Ladder Logic Programs. In *Springer International Journal on Software Tools for Technology Transfer (STTT)*, 3(1), pages 93–105, Springer Verlag, 2000 (**invited paper**).

Edited Books and Conference Proceedings

1. T. Zimmermann, J. Cleland-Huang, and Z. Su (Eds). *Proceedings FSE'16, the 24th ACM SIGSOFT International Symposium on Foundations of Software Engineering*, ACM 2016. ISBN 978-1-4503-4218-6.
2. M. Heimdahl and Z. Su (Eds). *Proceedings of ISSTA'12, International Symposium on Software Testing and Analysis*, ACM 2012. ISBN: 978-1-4503-1454-1.
3. J. Palsberg and Z. Su (Eds). *Proceedings of SAS'09, International Static Analysis Symposium*, LNCS 5673, 361 pages, Springer 2009. ISBN: 978-3-642-03236-3.

Dissertations, Theses, Technical Reports, and Unpublished Manuscripts

1. Q. Zhang, C. Sun, and Z. Su. Skeletal Program Enumeration for Rigorous Compiler Testing. CoRR abs/1610.03148 (2016). <https://arxiv.org/abs/1610.03148>.
2. Z. Fu and Z. Su. Mathematical Execution: A Unified Approach for Testing Numerical Code. CoRR abs/1610.01133 (2016). <https://arxiv.org/abs/1610.01133>.
3. M. Afshari and Z. Su. Toward Rapid Transformation of Ideas into Software. CoRR abs/1602.01075 (2016). <https://arxiv.org/abs/1602.01075>.
4. M. Velez, D. Qiu, Y. Zhou, E. Barr, Z. Su. A Study of “Wheat” and “Chaff” in Source Code. CoRR abs/1502.01410 (2015). <https://arxiv.org/abs/1502.01410>.
5. V. Le. Program Synthesis for Empowering End Users and Stress-Testing Compilers. Ph.D. Dissertation, University of California, Davis, August 2015.
6. A. Saebjoernsen. Detecting Fine-Grained Similarity in Binaries. Ph.D. Dissertation, University of California, Davis, July 2014.
7. Z. Gu. Toward Effective Debugging by Capturing and Reusing Knowledge. Ph.D. Dissertation, University of California, Davis, December 2013.
8. F. Sun. Program Analyses of Web Applications for Detecting Application-Specific Vulnerabilities. Ph.D. Dissertation, University of California, Davis, December 2013.
9. L. Xu. Techniques and Tools for Analyzing and Understanding Android Applications. Ph.D. Dissertation, University of California, Davis, June 2013.
10. M. Marron, C. Sanchez, Z. Su, M. Fahndrich. Abstracting Runtime Heaps for Program Understanding. CoRR abs/1201.1327 (2012). <https://arxiv.org/abs/1201.1327>. (*Revision appeared in IEEE TSE, 2013*)
11. T. Kwon. Detecting and Analyzing Insecure Component Integration. Ph.D. Dissertation, University of California, Davis, December 2011.
12. T. Vo. Automatic Detection of Floating-Point Exceptions. Master’s Thesis, University of California, Davis, November 2011.
13. M. Gabel. Inferring Programmer Intent and Related Errors from Software. Ph.D. Dissertation, University of California, Davis, July 2011.
14. T. Kwon and Z. Su. Automatic Detection of Vulnerable Dynamic Component Loadings. Technical Report UCD//CSE-2010-2, UC Davis, 2010. (*Revision appeared in ISSTA 2010*)
15. L. Xu, F. Sun, and Z. Su. Constructing Precise Control Flow Graphs from Binaries. Technical Report UCD//CSE-2009-27, UC Davis, 2009.
16. L. Xu and Z. Su. Dynamic Detection of Process-Hiding Kernel Rootkits. Technical Report UCD//CSE-2009-24, UC Davis, 2009.
17. L. Jiang. Scalable Detection of Similar Code: Techniques and Applications. Ph.D. Dissertation, University of California, Davis, October 2009.

18. G. Wassermann. Techniques and Tools for Engineering Secure Web Applications. Ph.D. Dissertation, University of California, Davis, September 2008.
19. J. Crandall. Capturing and Analyzing Internet Worms. Ph.D. Dissertation, University of California, Davis, May 2007.
20. G. Misherghi. Hierarchical Delta Debugging. Master's Thesis, University of California, Davis, May 2007.
21. G. Wassermann and Z. Su. Validity Checking for Finite Automata over Linear Arithmetic Constraints. Technical Report UCD//CSE-2006-16, UC Davis, 2006. (*Revision appeared in FSTTCS 2006*)
22. L. Jiang and Z. Su. Automatic Isolation of Cause-Effect Chains with Machine Learning. Technical Report UCD//CSE-2005-32, UC Davis, 2005. (*Revision appeared in ASE 2007*)
23. H. Chen, F. Hsu, J. Li, T. Ristenpart, and Z. Su. Back to the Future: A Framework for Automatic Malware Removal and System Repair. Technical Report UCD//CSE-2005-6, UC Davis, 2005. (*Revision appeared in ACSAC 2006*)
24. Z. Su and G. Wassermann. Type-based Inference of Size Relationships for XML Transformations. Technical Report UCD//CSE-2004-8, UC Davis, April 2004.
25. Z. Su and D. Wagner. Polynomial Time Algorithms for Solving Integer Range Constraints. Computer Science Technical Report UCD//CSE-2003-5, UC Davis, February 2003. (*Revisions appeared in TACAS and TCS*)
26. Z. Su. Algorithms for and the Complexity of Constraint Entailment. Ph.D. Dissertation, University of California, Berkeley, December 2002.
27. Z. Su and A. Aiken. Entailment with Conditional Equality Constraints. Computer Science Division Tech Report UCB//CSD-00-1113 University of California at Berkeley, October 2000. (*Revision appeared in ESOP 2001*)
28. Z. Su. Stutter Equivalence for Infinite State Systems. Unpublished manuscript, May 1998.
29. Z. Su. Automatic Analysis of Relay Ladder Logic Programs. Computer Science Division Tech Report UCB//CSD-97-969 University of California at Berkeley, September 1997. (*Revisions appeared in TACAS and STTT*)
30. Z. Su and M. Zhou. A Comparative Analysis of Branch Prediction Schemes. Unpublished manuscript, December 1995.
31. Z. Su. Automating the Computation of Nested Abnormality Theories. Undergraduate Honor's Thesis, Department of Computer Sciences The University of Texas at Austin, June 1995.

FUNDING (AWARDED)

- **[Current]** NSF, Software and Hardware Foundations (SHF) Grant CCF-1816812, “SHF: Small: Scalable and Precise Program Analyses via Linear Conjunctive Language Reachability,” \$500,000, 2018–2021, **PI** (with UCD co-PI: Q. Zhang).
- **[Current]** Google, Google Faculty Research Award, “Practical Automated Android App Testing via Abstraction Refinement”, \$69,659, 2018, **sole PI**.
- **[Current]** Mozilla, Mozilla Faculty Research Award, “Practical, Rigorous Testing of the Mozilla Rust and bindgen Compilers”, \$46,848, 2017, **PI** (with UCD co-PI: Q. Zhang).
- **[Current]** NSF, Software and Hardware Foundations (SHF) Grant CCF-1618158, “SHF: Small: Testing and Analysis for Reliable Numerical Software,” \$500,000, 2016–2019, **PI** (with UCD co-PI: Z. Fu).
- **[Current]** Google, Google Faculty Research Award, “Deep, Guided Testing of LLVM via Equivalence Modulo Inputs”, \$67,070, 2016, **sole PI**.
- **[Current]** Cisco, Cisco Research Award, “Practical Validation of SSL/TLS Implementations”, \$100,000, 2016, **sole PI**.

- **[Current]** Huawei, Huawei Innovation Research Program (HIRP) FLAGSHIP Award, “PWE: Programming with the Essence,” \$433,572, 2016-2018, **sole PI**.
- **[Current]** NSF, CCF-1414172, “SHF: Large: Collaborative Research: Exploiting the Naturalness of Software,” \$1,000,000 (total \$2,000,000 across all collaborative institutions) 2014-2019, **co-PI** (with PI: P. Devanbu, UCD; co-PI: V. Filkov, UCD).
- **[past]** NSF, Software and Hardware Foundations (SHF) Grant CCF-1528133, “SHF: Small: Compiler Validation via Equivalence Modulo Inputs,” \$500,000, 2015–2018, **PI** (with UCD co-PI: C. Sun).
- **[past]** U.S. ARL, “MACRO: Models for Enabling Continuous Reconfigurability of Secure Missions Cyber-Security Collaborative Research Alliance (CRA),” approx. \$30M, 2013-2023, **co-PI** (with PSU, UCD, CMU, UCR, and Indiana).
- **[past]** NSF, CNS-1319187, “TWC: Small: Collaborative: Similary-Based Program Analyses for Eliminating Vulnerabilities,” \$250,000, 2013–2017, **sole PI**.
- **[Past]** NSF, CCF-1349528, “EAGER: Toward Numerically Robust Software,” \$300,000, 2013-2016, **PI** (with UCD co-PI: Z. Bai and P. Devanbu).
- **[Past]** NSF, CCF-1247280, “EAGER: Exploiting the Naturalness of Software,” \$310,000, 2012-2016, **co-PI** (with PI: P. Devanbu, UCD; co-PI: E. Barr).
- **[Past]** Microsoft Software Engineering Innovation Foundation Award (SEIF), \$25,000, 2012, **sole PI**.
- **[Past]** NSF, Software and Hardware Foundations (SHF) Grant CCF-1117603, “SHF: Small: Reusing Debugging Knowledge,” \$515,988, 2011–2016, **PI** (with UCD co-PI: E. Barr).
- **[Past]** NSF, Software and Hardware Foundations (SHF) Medium Grant CCF-0964703, “SHF:Medium:How Do Static Analysis Tools Affect End-user Quality?,” \$722,118, 2010-2015, **co-PI** (with PI: P. Devanbu, UCD; co-PI: E. Barr, UCD; and co-PI: V. Filkov, UCD).
- **[Past]** NSF, Trustworthy Computing (TC) Grant CNS-0917392, “TC: Small: Runtime and Static Analysis for Web Application Security,” \$455,967, 2009–2014, **sole PI**.
- **[Past]** AFOSR, DURIP, “Helix Project Testbed: Towards the Self-Regenerative Incorruptible Enterprise,” \$240,000 (UCD portion: \$60,000), 2010–2011, **co-PI** (with PI: John Knight, University of Virginia and co-PIs from University of Virginia, UC Davis, UCSB, and University of New Mexico).
- **[Past]** DHS, I3P Research Fellowship, “Understanding the Malware Arms Race,” \$150,000, 2009-2010, **PI** (I3P Postdoctoral Fellow supported: E. Barr, UCD).
- **[Past]** IBM Software Quality Innovation Award, “Precise and Scalable Static Analysis of Web Applications,” \$25,000, 2008, **sole PI**.
- **[Past]** NSF-China, “A Unified Analysis, Testing, and Verification Framework for Evaluating Software Dependability,” RMB 3,000,000 (approx. \$440,000), 2008-2011, **International Co-PI** (joint project with Nanjing University, China).
- **[Past]** Intel, California Public Affairs Higher Education Equipment Grant, “Bringing Multi-core Technologies to the Classrooms,” 15 dual-core workstations with an approximated value of \$50,000, 2007–2008, **PI**.
- **[Past]** NSF, Computing Processes and Artifacts (CPA) Grant CCF-0702622, “Program Analysis for Reliable Numerical Software,” \$400,000, 2007–2010, **sole PI**.
- **[Past]** AFOSR, MURI, “Helix: A Self-Regenerative Architecture for the Incorruptible Enterprise,” \$4,589,449 (UCD portion: \$1,621,605), 2007–2012, **co-PI** (with PI: John Knight, University of Virginia and co-PIs from University of Virginia, UC Davis, UCSB, and University of New Mexico).
- **[Past]** UCD College of Engineering, Outstanding Junior Faculty Award, \$2,500, 2007.
- **[Past]** DOE LLNL subcontract to UC Davis, “Software Security Analysis,” \$280,000 (total award approx. \$1,500,000), 2006-2009, **sole PI** (LLNL PI: Daniel J. Quinlan).

- **[Past]** NSF, CyberTrust Team Grant, “Collaborative Research: CT-T: A Vertical Systems Framework for Effective Defense against Memory-based Attacks,” \$750,000, 2006-2010, **PI** (with co-PI: S. Felix Wu, UCD and co-PI: Frederic Chong, UCSB).
- **[Past]** NSF, CAREER Grant CCF-0546844, “CAREER: Reliability and Security of Database and Web Applications,” \$450,000, 2006–2010, **sole PI**.
- **[Past]** NSF NeTS-NBD Grant CNS-0520320, “Automatic Validation, Optimization, and Adaptation of Distributed Firewalls for Network Performance and Security,” \$400,000, 2005–2009, **co-PI** (with PI: C-N. Chuah and co-PI: H. Chen).
- **[Past]** Intel, “Containing Malicious Software,” \$50,000, gift, 2005 (with H. Chen).
- **[Past]** DARPA, Self Regenerative Systems (BAA03-44), Subcontract from Global Infotek, Inc. (GITI), \$400,000, 2004–2006, **co-PI** (with PI: K. Levitt and co-PI: J. Rowe).
- **[Past]** HP, Education Grant, “Proposal for Bringing the Power of Itanium 2 to the Classroom,” \$127,141, 2004, **co-PI** (with PI: Z. Bai, other co-PIs include M. Farrens, R. Olsson, R. Pandey, K. Wilken, and K. Jones).
- **[Past]** UC Davis, Junior Faculty Research Grant, \$2,500, 2003–2006, **sole PI**.

PROFESSIONAL SERVICE ACTIVITIES

- **Associate Editor:** ACM Transactions on Software Engineering and Methodology (TOSEM; 2008-14); ICST Transactions on Security and Safety.
- **Program (Co-)Chair:** The 16th International Static Analysis Symposium (SAS 2009); International Symposium on Software Testing and Analysis (ISSTA 2012); 2013 ACM SIGSOFT Outstanding Research Award Committee; Workshops Co-Chair, the 37th International Conference on Software Engineering (ICSE 2015); ACM SIGSOFT Symposium on Foundations of Software Engineering (FSE 2016)
- **Steering Committee:** International Symposium on Software Testing and Analysis (ISSTA), 2011 – present; ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), 2017 – present
- **Dissertation Award Committee:** ACM SIGSOFT Outstanding Dissertation Award Committee (2013, 2017); ACM SIGPLAN Outstanding Dissertation Award Committee (2007)
- **Program Committee Member:** ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA: 2011, 2013, 2015 ERC, 2018 EPC); ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI: 2010, 2012, 2015 ERC, 2016, 2019); ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL: 2012 ERC, 2018); International Conference on Software Engineering (ICSE: 2008-10, 2012, 2017-19); International Symposium on Software Testing and Analysis (ISSTA: 2009-10, 2014, 2017); International Conference on Computer Aided Verification (CAV: 2015, 2017); Network and Distributed System Security Symposium (NDSS: 2008-09); Compiler Construction (CC: 2009); World Wide Web Conference (WWW: 2008-09); International Conference on Security and Privacy in Communication Networks (SecureComm: 2008); IEEE International Symposium on Theoretical Aspects of Software Engineering (TASE: 2008); ASIAN Symposium on Programming Languages and Systems (APLAS: 2007-08); ACM SIGSOFT Symposium on Foundations of Software Engineering (FSE: 2006, 2010-11, 2015, 2018-19); Static Analysis Symposium (SAS: 2006, 2010-11); International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS: 2006, 2019).
- **Conference/Journal Reviewer:** Information and Computation (I&C), Journal of Functional Programming (JFP), ACM Transactions on Programming Languages and Systems (TOPLAS), IEEE/ACM Transactions on Networking (TON), Higher-Order and Symbolic Computation (HOSC); Symposium on Principles of Programming Languages (POPL), ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI), International Conference on Software Engineering (ICSE), Foundations of Software Engineering (FSE), Static Analysis Symposium (SAS), Conference on Rewriting Techniques and Applications (RTA), International Colloquium on Automata, Languages and Programming (ICALP), Computer-Aided Verification (CAV).
- **NSF Panelist:** 2005-08, 2012-15; **AFOSR Proposal Reviewer:** 2007; **ARO Proposal Reviewer:** 2010.