

CURRICULUM VITAE

Dinghao Wu

Contact Information

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The Pennsylvania State University
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<http://faculty.ist.psu.edu/wu/>

Research Interests

Cybersecurity, Machine Learning, and Software Systems.

Education

Princeton University, Ph.D., Computer Science, 2005.

Ph.D. Dissertation: *Interfacing Compilers, Proof Checkers, and Proofs for Foundational Proof-Carrying Code*. (Advisor: Andrew W. Appel)

Princeton University, M.A., Computer Science, 2002.

Nanjing University, M.E., Computer Software and Theory, 1999.

Thesis: *A State-Space Based Approach to the Specification and Verification of Hybrid Systems and Its Axiomatic Basis*. (Advisor: Jian Lü)

Nanjing University of Chemical Technology, B.E., Chemical Engineering, 1996.

Thesis: *Numerical Simulation of Free Turbulent Jets*. (Advisor: Daiqing Zhao)

Appointments

College of Information Sciences & Technology, Pennsylvania State University, University Park.

Dewey Walker Professor, since 2023;

Professor, since 2021;

Associate Professor, 2017–2021;

PNC Technologies Career Development Professorship, 2017–2020;

Institute for Computational and Data Sciences (ICDS) Faculty Associate, 2019–present;

Institute for CyberScience (ICS) Faculty Associate, 2017–2019;

Assistant Professor, 2012–2017;

Senior Lecturer and Research Scientist, 2009–2012.

École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland.

Visiting Professor, 2018–2019.

Center for Software Excellence (Test Effectiveness Team and Program Analysis Team) & Windows Azure Division, Microsoft Corporation. Redmond, WA. Research engineer, 2005–2009.

Princeton University, Princeton, NJ. Research and teaching assistant, 2000–2005.

Microsoft Research, Redmond, WA. Research intern in the Software Productivity Tools (SPT) group, summers 2003, 2004.

Nanjing University, Nanjing, China. Research and teaching assistant, 1996–1999.

Research Grants

1. *Software Cruising for System Security*, Dinghao Wu (PI) and Peng Liu, National Science Foundation (NSF) CNS-1223710, \$499,745, 2012–2016.
2. *Towards Secure Lean Software*, Dinghao Wu (PI) and Peng Liu, Office of Naval Research (ONR) N00014-13-1-0175, \$423,520, 2013–2017.
3. *Towards Obfuscation-Resilient Software Plagiarism Detection*, Sencun Zhu, Dinghao Wu (Co-PI), and Peng Liu, National Science Foundation (NSF) CCF-1320605, \$500,000, 2013–2017.
4. *Greater Philadelphia Innovation Cluster for Energy Efficient Buildings (GPIC)*, Henry C. Foley (PI, 2011-2013), Martha Krebs (PI, 2013-2016), Chimay J. Anumba, John Messner, William P. Bahnfleth, Ali M. Memari, Richard G. Mistrick, Kevin W. Houser, Jelena Srebric, Stephen J. Treado, David R. Riley, Jeffrey Brownson, Seth A. Blumsack, Ralph A. Oliva, John Yen, Daniel E. Willis, Brian A. Orland, Mallika Bose, Stuart P. Echols, Andrew N. Kleit, Arvind Rangaswamy, Martin J. Sliwinski, James Freihaut, Paul M. Hallacher, Dinghao Wu (Co-PI), Robert M. Leicht. U.S. Department of Energy (DOE), National Energy Technology Laboratory (NETL), DE-EE0004261, \$129 million, 2011–2016. (The project was later renamed as the Energy Efficient Buildings Hub (EEB Hub), and then the Consortium for Building Energy Innovation (CBEI). Wu is assigned with 4% credit.)
5. *A Model Checking Approach to Counter-acting of the Dynamics of Infection Propagation over Networks*, Dinghao Wu (PI), Vasant Honavar, and John Yen, College of Information Sciences and Technology, Penn State University, \$9,499.00, 2014–2015.
6. *An Intelligent Adaptive Network Defense Architecture*, Dinghao Wu (PI), The Penn State Fund for Innovation. \$73,556.00, 2015–2016.
7. *Secure Lean Binary Code*, Dinghao Wu (PI) and Peng Liu, Office of Naval Research (ONR) N00014-16-1-2265, \$504,930, 2016–2019.
8. *Reverse Engineering Based Software Diversification for Cyber Fault Tolerance*, Dinghao Wu (PI), Office of Naval Research (ONR) N00014-16-1-2912, \$509,378, 2016–2019.
9. *CAREER: Advanced Trace-oriented Binary Code Analysis*, Dinghao Wu (PI), National Science Foundation (NSF) CNS-1652790, \$494,703, 2017–2022.

10. *A New Direction for Software Reverse Engineering and Binary Code Retrofitting*, Dinghao Wu (PI), Office of Naval Research (ONR) N00014-17-1-2894, \$3,568,941, 2017–2022.
11. *NVIDIA GPU Grant*. Two Titan Xp GPU. 2018–2019.
12. *Workshop on Forming an Ecosystem around Software Transformationa*, Dinghao Wu (PI), Office of Naval Research (ONR) N00014-18-1-2895, \$10,000, 2018–2020.
13. *Turning Attacks into Protection: Social Media Privacy Protection Using Adversarial Attacks*, Dinghao Wu (PI), Center for Security Research and Education (CSRE) Open Topic Seed Grant Award, The Pennsylvania State University, \$30,197, 2020–2021.
14. *Scalable Near-Real-Time Identification and Characterization of Malware Behaviors Using Darknet Data*, Benjamin Hanrahan, Vasant Honavar, Peng Liu, Dinghao Wu (Co-PI), and John Yen (PI), Department of Homeland Security (DHS) S&T Center for Accelerating Operational Efficiency (CAOE), Arizona State University, Award Agreement number: ASUB00000367, \$499,690 (\$249,914 awarded so far), 2019–2021.
15. *SaTC: CORE: Small: Automatic Software Patching against Microarchitectural Attacks*, Danfeng Zhang (PI), Mahmut Kandemir, Gang Tan, and Dinghao Wu (Co-PI). National Science Foundation (NSF), \$500,000, 2020–2023.
16. *A Community Research Infrastructure for Integrated AI-Enabled Malware and Network Data Analytics*, John Yen (PI), Vasant Honavar, Dinghao Wu (Co-PI), Michael Kallitsis, and Forough Ghahramani. National Science Foundation (NSF) CNS-2213794, \$99,424, 2022-2023.
17. *NSF REU Supplement: An Interface for Binary Code Analysis*, Dinghao Wu (PI). National Science Foundation (NSF) CNS-1652790, \$14,400, 2022-2023.

Awards and Honors

College Senior Faculty Excellence in Research Award, Penn State University, 2023.
 NSF CAREER Award, 2017–2022.
 PNC Technologies Career Development Professorship, 2017–2020.
 Best Paper Award, IEEE International Symposium on High Assurance Systems Engineering (HASE), 2019.
 Top 10 finalists in CSAW Applied Research Competition, 2017.
 Best Paper Award, International Conference on Software Security and Assurance, 2017.
 George J. McMurtry Junior Faculty Excellence in Teaching and Learning Award, 2016.
 College Junior Faculty Excellence in Research Award, Penn State University, 2014.
 Distinguished paper award nomination, FSE 2014.
 Distinguished Graduate Student Award, Nanjing University, 1998.
 Distinguished Student Award, Nanjing University of Chemical Technology, 1995.
 Award for Excellence in Organizing Student Activities, Nanjing University of Chemical Technology, 1993, 94, 95.
 Honorable Mention, National Mathematical Contest in Modeling (MCM), Chinese Society for Industrial and Applied Mathematics, 1994.
 University Scholarship, Nanjing University of Chemical Technology, 1992–1996.

Awards to Advisees

- Xiaoting Li, WiCyS (Women in Cybersecurity) Scholarship, 2020.
- Jiexiao Sherry He, WiCyS (Women in Cybersecurity) Scholarship, 2020.
- Xiao Liu, Yufei Jiang, and Dinghao Wu. Best Paper Award, IEEE International Symposium on High Assurance Systems Engineering (HASE), 2019.
- Xiao Liu, CRA-W Scholarship, 2018.
- Xiao Liu, Facebook Women in Research Scholarship, 2018.
- Xiao Liu, Women in Cyber Security (WiCyS) Scholarship, 2018.
- Shuai Wang, The College of IST Circle of Ph.D. Research Distinction Award, 2018.
- Dongpeng Xu, The College of IST Circle of Ph.D. Research Distinction Award, 2018.
- Xiaoting Li, WiCyS (Women in Cybersecurity) Scholarship, 2018.
- Xiao Liu, Grace Hopper Schorlar Award, 2017.
- Xiao Liu, GREPSEC Travel Award, 2017.
- Xiao Liu, Programming Languages Mentoring Workshop (PLMW) Scholarship, 2017.
- Dongpeng Xu and Jiang Ming, Top 10 finalists in CSAW Applied Research Competition, 2017.
- Xiao Liu, Brett Holden, and Dinghao Wu. Best Paper Award, International Conference on Software Security and Assurance, July 2017.
- Xiao Liu, Bronze Medal, ACM Graduate Student Research Competition, PLDI'17, Barcelona, Spain, June 2017.
- Lannan Luo and Jiang Ming, Distinguished paper award nomination, FSE 2014.
- Yufei Jiang, Robert W. Graham Endowed Graduate Fellowship, Pennsylvania State University, 2011.
- Jiang Ming, Jordan H. Rednor Graduate Fellowship, Pennsylvania State University, 2011.

Teaching

- Instructor, College of Information Sciences and Technology, Pennsylvania State University.
 - Foundations of Software Security (IST 543: Spring 2020, Fall 2020)
 - Security and Privacy in Emerging Platforms (IST 597B: Fall 2015, Spring 2017, Spring 2018)
 - Software Security and Analysis (IST 597A: Spring 2015)
 - Programming Languages (IST 402: Spring 2014)
 - Information Security (SRA 221: Fall 2010, Fall 2011, Spring 2012, Spring 2013, Fall 2013)
 - Network Security (IST 451, online MPS and residence: Spring 2010, Spring 2011, Fall 2011, Fall 2012, Spring 2014, Fall 2014, Spring 2016, Fall 2016)
 - Discrete Mathematics (IST 230: Fall 2010)
 - Networking and Telecommunications (IST 220: Spring 2011, Spring 2012)
- New Courses Developed and Taught, Pennsylvania State University.
 - IST 597A: Software Security and Analysis
 - IST 597B: Security and Privacy in Emerging Platforms

- IST 402: Programming Languages
- New Course Proposals Developed or Co-developed, Pennsylvania State University.
 - IST 543: Foundations of Software Security
 - CYBER 366: Malware Analytics
 - DS 120: Scripting for Data Sciences
- New Programs Co-Developed, Pennsylvania State University.
 - Cybersecurity Analytics and Operations
 - Data Sciences
- Guest Lecturer, College of Information Sciences and Technology, The Pennsylvania State University.
 - IST 220: Networking and Telecommunications (Fall 2012)
 - IST 110: Information, People, and Technology (Fall 2012)
 - CMPSC 443: Introduction to Computer Security (Spring 2011)
 - IST 451: Network Security (Spring 2010)
 - IST 110S: Information, People and Technology (Fall 2010)
- Volunteer Teacher, Princeton Chinese Language School.
 - Teaching children the game of Go (Wei-Qi) (Fall 2002)
- Assistant in Instruction, Department of Computer Science, Princeton University.
 - COS 111: Computers and Computing (Spring 2002)
 - COS 109: Computers in Our World (Fall 2001)
- Advisor for Summer Programming Experience (SPE) program, Department of Computer Science, Princeton University.
 - Advising a freshman programming project (Summer 2001)
- Teaching Assistant, Department of Computer Science, Nanjing University.
 - UNIX and C (Spring 1997)

Service

- Peer Review of Grant Proposals
 - National Science Foundation (NSF), Secure and Trustworthy Cyberspace (SaTC) Program, Panelist. (2021).
 - National Science Foundation (NSF), Secure and Trustworthy Cyberspace (SaTC) Program, Panelist. (2018).
 - Cariverona Foundation, Italy, Evaluation Panel for Engineering and Natural Sciences of the Cariverona Foundation. (2017)

National Science Foundation (NSF), Secure and Trustworthy Cyberspace (SaTC) Program, Panelist. (2015–2016).

National Science Foundation (NSF), CISE CCF SHF, Panelist. (2014).

- Lions Center Lunch Seminar Organizer (2010–2013)
I initiated and organized the Lions Center Seminar Series from Spring 2010 to 2013. There were about 50 research seminars with an average attendance of about 30 participants for each seminar. Speakers include faculty, researchers, and students from and outside of Penn State University. Some speakers are international researchers.
- Faculty Honors Adviser, IST/PSU (2012–present)
- Faculty Interview: Millennium Scholars Program, PSU (2020)
- Schreyer Honors Scholar Advisor
Thoet, A. (2019–Present), Donnelly, C. (2017–Present), Eberhardt, G. (2017–18). Matthew Kennedy (2016–18), Alejandro Villalba (2016–18), Ryan Kohler (2015–18), Daniel Servich (2014–15), Brett Holden (2013–15).
- Schreyer Honors Thesis Advisor
Brett Holden (2013–15).
- Internship Advisor
Wei Le, Center for Software Excellence, Microsoft (2006), Songtao Liu, Penn State (2019), Austin William Pietrak, Penn State (2020), Vishweshwar Ramanakumar (2021, NSF REU student).
- Summer Program Advisor
Thais Melo (2001), Summer Programming Experience (SPE) program, Princeton University.
- IST Ph.D. Candidacy Examination Committee
Chu Huang (2010), Ryan Kaulakis (2010), Chu Huang (2011), Sushama Karumanchi (2011), Bin Zhao (2011), Changkun Zhao (2011), Xiaoyan Sun (2012), Stephen Carmen (2012), Siqiong He (2013), Jun Xu (2014), Yu Pu (2014), Dafang He (2015), Pena Joslenne (2016), Zhu Haining (2016), Zhuomin Zhang (2017), Agnese Chiatti (2017), Scott Pezanowski (2017), Xi-anfeng Tang (2017), Guanjie Huang (2017), Chacha Chen (2020), Chieh-Yang Huang (2020), Yu Liang (2020), Tianxiang Zhao (2020).
- Master’s Thesis Committee
Chu Huang (May 2011. Co-advised with Sencun Zhu), Ke Dang (August 2011), Jung-woo Sohn (2011–12), Qi Fang (2011–12), Shandan Zhou (2012), Stephen Carmen (2013), Nan Yu (Chair, 2014), Yinan Wan (2014), Gaoyao Xiao (2015), Matthew Tentilucci (2015), Pinyao Guo (2015), Vishal More (2015), Can Zhang (Chair, 2016), Xiao Liu (Chair, 2016), Yan Wang (Chair, 2015–2017), Pengwei Lan (Chair, 2013–2017), Tyler Frederick (2017), Lawrence Wu (Chair, 2016–2018), Tao Zhang (2017–2018), Sean Parsons (2020).
- Ph.D. Comprehensive Exam Committee
Eun Yeong Ahn (2011), Smitha Sundareswaran (2011), Bing Liu (2011), Jung-woo Sohn (2011), Hau-Wen Chang (2012), Chu Huang (2012), Wei Ding (2012), Seong Jo Kim (2012),

Sushama Karumanchi (2013), Praveen Yedlapalli (2014), Xiao Yuan (2014), Xiaoyao Sun (2014), Issa Ramaji (2014), Yi Yang (2015), Gaoyao Xiao (2015), Yufei Jiang (Chair, 2015), Jiang Ming (Chair, 2015–16), Pei Wang (Chair, 2016), Shuai Wang (Chair, 2016), Dongpeng Xu (Chair, 2016), Li Wang (Chair, 2016), Jagadish Kotra (2016), Priya Anand (2016), Xiao Liu (Chair, 2018), Wonil Choi (2018), Prasanna Rengasamy (2018), Peixuan Li (2018), Xulong Tang (2018), Robert Brotzman-Smith (2019), Joslenne Pena (2019), Jihyun Ryoo (2019), Haibo Zhang (2019), Qinkun Bao (Chair, 2020), Yuxin Wang (2020), Yueqi Chen (2020), Narges Shahidi (2020), Xiaoting Li (Chair, 2021).

- Ph.D. Thesis Committee

Eun Yeong Ahn (2011–12). Smitha Sundareswaran (2011–14), Bing Liu (2011–15), Jung-woo Sohn (2011–13), Hau-Wen Chang (2012–14), Chu Huang (2012–15), Wei Ding (2012–14), Seong Jo Kim (2012–14), Sushama Karumanchi (2013–16), Praveen Yedlapalli (2014–15), Xiao Yuan (2014–16), Xiaoyao Sun (2014–16), Issa Ramaji (2014–16), Yi Yang (2015–17), Gaoyao Xiao (2015–), Yufei Jiang (Chair, 2015–17), Jiang Ming (Chair, 2015–16), Diana Guttman (2015–), Pei Wang (Chair, 2016–18), Shuai Wang (Chair, 2016–18), Dongpeng Xu (Chair, 2016–18), Li Wang (Chair, 2016–), Jagadish Kotra (2016–17), Priya Anand (2016–), Narges Shahidi (2016–), Robert Brotzman-Smith (2019–), Joslenne Pena (2019–20), Jihyun Ryoo (2019–), Wonil Choi (2018–20), Xiao Liu (Chair, 2018–19), Haibo Zhang (2019–20), Prasanna Rengasamy (2018–19), Peixuan Li (2018–), Xulong Tang (2018–19), Robert Brotzman-Smith (2019–), Qinkun Bao (Chair, 2020–), Yuxin Wang (2020–), Narges Shahidi (2020–).

- Program Committee

The 43rd International Conference on Software Engineering (ICSE 2021)

The 16th International Conference on Evaluation of Novel Approaches to Software Engineering (ENASE 2021)

Machine Learning for Binary Analysis (MLBA 2020) workshop, co-located with IJCAI-PRICAI 2020

The IEEE International Conference on Software Quality, Reliability and Security (QRS 2020)

The 16th EAI International Conference on Security and Privacy in Communication Networks (SecureComm 2020)

The Workshop on Forming an Ecosystem Around Software Transformation (FEAST 2020)

The ACM Conference on Computer and Communications Security (CCS 2019)

The 15th EAI International Conference on Security and Privacy in Communication Networks (SecureComm 2019)

The 3rd International Workshop on Software PROtection (SPRO 2019)

The IEEE International Conference on Software Quality, Reliability and Security (QRS 2019)

The Workshop on Forming an Ecosystem Around Software Transformation (FEAST 2019)

The ACM Conference on Computer and Communications Security (CCS 2018)

The 5th Annual Hot Topics in the Science of Security Symposium (HoTSoS 2018)

The IEEE International Conference on Software Quality, Reliability and Security (QRS 2018)

The 14th EAI International Conference on Security and Privacy in Communication Networks (SecureComm 2018)

The Workshop on Forming an Ecosystem Around Software Transformation (FEAST 2018)

The ACM Conference on Computer and Communications Security (CCS 2017)

The 2017 Workshop on Forming an Ecosystem Around Software Transformation (FEAST),
Co-chair

The 2017 IEEE International Conference on Software Quality, Reliability and Security (QRS
2017)

The 13th EAI International Conference on Security and Privacy in Communication Networks
(SecureComm 2017)

The 2016 IEEE International Conference on Software Quality, Reliability and Security (QRS
2016)

The 38th International Conference on Software Engineering (ICSE 2016), Software Engineer-
ing in Practice (SEIP) Track

The 9th IEEE International Conference on Social Computing and Networking (SocialCom
2016)

The 8th IEEE International Conference on Social Computing and Networking (SocialCom
2015)

The 2015 IEEE International Conference on Software Quality, Reliability and Security (QRS
2015)

The 10th International Conference on Evaluation of Novel Approaches to Software Engineer-
ing (ENASE 2015)

The Third ASE International Conference on Cyber Security (CyberSecurity 2014)

The 7th IEEE International Conference on Social Computing and Networking (SocialCom
2014)

The Sixth ASE International Conference on Social Computing (SocialCom - Stanford)

SocialCom 2013: ASE/IEEE International Conference on Social Computing

PASSAT 2013: ASE/IEEE International Conference on Privacy, Security, Risk and Trust

CATS 2013: The 19th Computing: the Australasian Theory Symposium

SocInfo 2012: ASE/IEEE International Conference on Social Informatics

SocialCom 2012: IEEE International Conference on Social Computing.

- Journal Guest Editor
Springer Cybersecurity journal guest editor for a special series on Binary Analysis, 2020
- Reviewer for Conferences and Journals
ACM Computing Surveys, (2019–2020).
IEEE Access, (2019).
IEEE Transactions on Software Engineering (TSE), (2019).
Elsevier Computers & Security (COSE), (2018).
IEEE Transactions on Information Forensics & Security (TIFS), (2018).
IEEE Transactions on Software Engineering (TSE), (2018).
Journal of Systems and Software (2017)
IEEE Transactions on Dependable and Secure Computing (2017)
Elsevier Computers & Security (COSE) (2017)
ACM Transactions on Privacy and Security (TOPS) (2016)
Electronics and Telecommunications Research Institute (ETRI) Journal (2016)
Elsevier Computers & Security (COSE) (2016)
IEEE Transactions on Information Forensics & Security (TIFS) (2016)
IEEE Transactions on Software Engineering (TSE) (2016)

Electronics and Telecommunications Research Institute (ETRI) Journal (2015)
 Frontiers of Computer Science, Springer (2015)
 IEEE Transactions on Dependable and Secure Computing (2015)
 IEEE Transactions on Reliability (2015)
 IEEE Transactions on Software Engineering (2015)
 Journal of Applied Logic, Elsevier (2015)
 Journal of Computer Science and Technology, Springer (2015)
 Springer Journal of Language Resources and Evaluation (2015)
 Applied Mathematical Sciences (2014)
 The Fifth ACM Conference on Data and Application Security and Privacy (CODASPY) (2014)
 Journal of Systems and Software, Elsevier (2013)
 Journal of Computer Science and Technology, Springer (2013)
 Journal of Information Processing Systems (JIPS), 2011
 IEEE Transactions on Parallel and Distributed Systems (TPDS)
 International Conference on Information Systems 2011 (ICIS)
 ACM Transactions on Programming Languages and Systems (TOPLAS)
 The 6th International Conference on Security and Privacy in Communication Networks (SecureComm 2010)
 iConference 2010
 IEEE Symposium on Security and Privacy (Oakland 2010)
 The 28th International Conference on Software Engineering (ICSE 2006).

- Service to the University: College Committees
 - Cybersecurity Faculty Search Committee, Chair. (2019–2020)
 - Graduate Student Travel Awards Committee, Evaluator. (2019)
 - IST Seed Grant Proposal Review Committee, Evaluator. (2019)
 - Graduate Advisory Committee, Committee Member. (2017–2019)
 - Awards Committee, Chair. (2018)
 - Masters Advisory Committee (2018–Present)
 - Virtual Labs Committee (2017–Present)
 - Faculty Annual Review Committee (2017–2018)
 - CYBER 366 Malware Analytics Course Committee, Chair, (2017–Present)
 - Human Centered Design Faculty Search Committee (2017–2018)
 - IST 451 Network Security Course Committee, Chair, (2011–2018)
 - SRA 221 Overview of Information Security Course Committee (2010–Present)
 - IST Awards Committee (2016–2017)
 - Security & Privacy Faculty Search Committee (2016–2017)
 - Ph.D. Student Candidacy Exam Committee (2010–2018)
 - Cybersecurity Program Committee (2016)
 - TA/LA Task Force (2016)
 - Information and Cyber Security (ICS) Option curriculum review Task Force, Member. (2015–2016)
 - Data Analytics Task Force (2014–2015)
 - MYFT Search Committee (2014–2015)
 - (Recruited 2 MYFT faculty) Graduate Recruiting Committee (2012–2014)

IST 140/240/311 Course Committee (2010–2014)
IST 451 Network Security Course Committee (2010–2011).

- Service to the University: University Committees
University Graduate Council Subcommittee on New and Revised Programs and Courses, Representative. (2015–2017, 2020–present)
University Graduate Council, Representative. (2014–2015).
Faculty Honors Advisor, Schreyer Honors College. (2012–Present).
- Assistance to Student Organizations
Advisor for Student Organizations, Reading Enlightening and Delighting (READ) Club, Advisor. (2015).

Membership

- AAAS (2017–Present).
- USENIX Association (2015–Present).
- ACM (2004–2007, 2010–Present).
- IEEE (2004–2007, 2010–Present)
IEEE Computer Society (2004–2007, 2010–Present);
IEEE Reliability Society (Since 2015).

Invited Talks and Seminars

- “Identifying Cache-Based Timing Channels in Production Software,” École Polytechnique Fédérale de Lausanne (EPFL), Switzerland, 2018,19.
- “Advanced Semantics Based Binary Code Similarity Comparison Methods.” Institute of Software, Chinese Academy of Science, August 10, 2017.
- “Advanced Semantics Based Binary Code Similarity Comparison Methods.” Tsinghua University and InForSec Forum, August 9, 2017.
- “CacheD: Identifying Cache-Based Timing Channels in Production Software.” Tsinghua University and InForSec Forum, August 9, 2017.
- “Advanced Semantics Based Binary Code Similarity Comparison Methods.” Institute of Information Engineering, Chinese Academy of Science, August 8, 2017.
- “Advanced Semantics Based Binary Code Similarity Comparison Methods.” Peking University, August 7, 2017.
- “Uroboros: Reassembleable Disassembling.” Dagstuhl Seminar 17281: Malware Analysis: From Large-Scale Data Triage to Targeted Attack Recognition, Dagstuhl, Germany, July 14, 2017.

- “Advanced Semantics Based Binary Code Similarity Comparison Methods.” Dagstuhl Seminar 17281: Malware Analysis: From Large-Scale Data Triage to Targeted Attack Recognition, Dagstuhl, Germany, July 14, 2017.
- “Software Customization and Bloatware Mitigation Based on Static Analysis.” Invited Talk at DOD Cyber Community of Interest (CoI), Office of Naval Research (ONR), September 28, 2016.
- “Semantics-based Binary Diffing and Code Block Semantics Memoization with Application to Malware Detection.” Invited Talk at FireEye, August 9, 2016.
- “Obfuscation-resilient Software Plagiarism and Mobile App Repackaging Detection.” Invited Talk at Samsung Research America, August 8, 2016.
- “Systematic Program Semantics Based Opaque Predicate Detection.” Invited Talk at Baidu XLab, August 8, 2016.
- “Towards Obfuscation-Resilient Software Plagiarism Detection.” Invited Talk at Institute of Information Engineering, Chinese Academy of Sciences, Beijing, July 30, 2015.
- “Pipelined Symbolic Taint Analysis.” Colloquium Talk at Department of Computer Science, University of Texas at Dallas, April 3, 2015.
- “Lock-free Concurrent Security Monitoring.” Institute of Information Engineering, Chinese Academy of Sciences, Beijing, December 12, 2013.
- “Lock-free Concurrent Security Monitoring.” Colloquium Talk at Department of Computer Science and Engineering, Lehigh University, April 23, 2013.
- “Lightweight Concurrent Heap Buffer Overflow Detection.” Lions Center Seminar, The Pennsylvania State University. February 9, 2010.
- “Data Center Energy Optimization: Opportunities and Challenges.” Smart Building Meeting. The Pennsylvania State University. November 11, 2009.
- “Software Correctness, Verification, and Proofs in the Real World,” Department of Computer Science, University of Houston, April 12, 2007.
- “Software Correctness, Verification, and Mathematical Proofs in the Real World,” Department of Computer Science, Drexel University, April 9, 2007.
- “Software Correctness, Verification, and Mathematical Proofs,” Department of Electrical Engineering & Computer Science, University of Kansas, March 12, 2007.
- “Software Correctness, Verification, and Mathematical Proofs,” Department of Software and Information Systems, University of North Carolina, Charlotte, March 1, 2007.
- “Verification via Proof-Carrying Code and Model Checking,” Center for Software Excellence, Microsoft Corporation. May 19, 2005.
- “Verification via Proof-Carrying Code and Model Checking,” NEC Labs, Princeton, NJ. April 22, 2005.

- “Interfacing Compilers, Proof Checkers, and Proofs for Foundational Proof-Carrying Code,” Department of Computer Science and Engineering, Texas A&M University. May 9, 2005.
- “Interfacing Compilers, Proof Checkers, and Proofs for Foundational Proof-Carrying Code,” Department of Computer Science, University of Massachusetts Amherst (UMASS). February 22, 2005.
- “Interfacing Compilers, Proof Checkers, and Proofs for Foundational Proof-Carrying Code,” Department of Computer Science, Northwestern University. February 14, 2005.
- “Precise Race Detection Using Sequential Program Analysis and Model Checking.” TACL Seminar: Tool and Algorithms for Compilers and Languages, Department of Computer Science, Princeton University. October 3, 2003.

Posters

- Wu, D. (2019). “Advanced Trace-oriented Binary Code Analysis,” NSF Secure and Trustworthy Cyberspace (SaTC) Program PI Meeting, NSF, Arlington, VA. poster
- Wu, D. (2019). “Dynamic and Static Program Analysis for Side Channel Vulnerability Detection and Mitigation,” NSF Secure and Trustworthy Cyberspace (SaTC) Program PI Meeting, NSF.
- Wang, S., Wang, P., Wu, D. (Presenter), (January 2017). “Reassembleable Disassembling,” NSF Secure and Trustworthy Cyberspace (SaTC) Program PI Meeting, NSF, Arlington, VA.
- Wang, S., Wang, P., Ming, J., Jiang, Y., Wu, D. (Presenter), (January 2017). “Translingual Obfuscation,” NSF Secure and Trustworthy Cyberspace (SaTC) Program PI Meeting, NSF, Arlington, VA.
- Ming, J., Wu, D. (Presenter), Xiao, G., Wang, J., Liu, P., (January 2015). “Pipelined Symbolic Taint Analysis,” NSF Secure and Trustworthy Cyberspace (SaTC) Program PI Meeting, NSF, Arlington, VA.
- Luo, L., Ming, J., Wu, D. (Presenter), Liu, P., Zhu, S., (January 2015). “Semantics-Based Obfuscation-Resilient Binary Code Similarity Comparison with Applications to Software Plagiarism Detection,” NSF Secure and Trustworthy Cyberspace (SaTC) Program PI Meeting, NSF, Arlington, VA.
- Jiang, Y. (Co-Presenter), Yu, N. (Co-Presenter), Ming, J., Luo, L., Zhou, C., Lee, S., Jallow, A., Mitra, P., Yen, J., Leicht, R. M., Messner, J., Wu, D., (April 16, 2013). “Building Information Modeling (BIM) Data Hub,” EEB Hub Graduate Student Poster Session, The Energy Efficient Buildings (EEB) Hub, U.S. DOE, University Park, PA, Invited.
- Jiang, Y. (Co-Presenter), Yu, N. (Co-Presenter), Ming, J., Luo, L., Zhou, C., Lee, S., Jallow, A., Mitra, P., Yen, J., Leicht, R. M., Messner, J., Wu, D., (March 20, 2013). “Building Information Modeling (BIM) Data Hub,” Building syEnergy Conference, The Energy Efficient Buildings (EEB) Hub, U.S. DOE, Navy Yard, Philadelphia, PA, Invited.

- Yen, J. (Presenter), Caragea, C., Kim, H.-W., Mitra, P., Giles, C. L., Tapia, A. H., Jansen, B. J., Wu, D., Jaiswal, A., Traylor, G., Maslowski, A., Tchouakeu, L.-M. N., (September 2010). “EMERSE: Enhanced Messaging for the Emergency Response Sector,” The EERI-NSF Haiti RAPIDs and Research Needs Workshop, The Earthquake Engineering Research Institute (EERI) and the National Science Foundation (NSF), Arlington, VA, Invited.
- Wu, D. (Co-Presenter), Li, L., (April 2, 2010). “Developing Advanced Computational Techniques for Complex Multiphase and Multicomponent Reactive Transport Simulations at Large Spatial and Time Scales,” PSIEE-NETL (National Energy Technology Laboratory, Department of Energy) Jointed Workshop, University Park, PA, Invited.

Presentations

- Wu, D. (2019). “A New Approach to Binary Code Analysis and Reverse Engineering,” ONR TPCP PI Meeting.
- Wu, D., (October 28, 2016). “A New Direction for Reverse Engineering,” The 2016 Workshop on Forming an Ecosystem Around Software Transformation (FEAST 2016), ONR, Vienna, Austria.
- Wu, D., (October 28, 2016). “Software Customization and Bloatware Mitigation Based on Static Analysis,” The 2016 Workshop on Forming an Ecosystem Around Software Transformation (FEAST 2016), ONR, Vienna, Austria.
- Wu, D., (November 4, 2014). “Program Logic Based Software Plagiarism Detection,” The 25th IEEE International Symposium on Software Reliability Engineering (ISSRE 2014), IEEE, Naples, Italy.
- Wu, D., (September 19, 2014). “PiE: Programming in Eliza,” The 29th IEEE/ACM International Conference on Automated Software Engineering (ASE 2014), IEEE/ACM, Vasteras, Sweden.
- Wu, D., (May 15, 2013). “BIM Data Hub,” Building Energy Informatics Summit, The Energy Efficient Buildings (EEB) Hub, U.S. DOE, Navy Yard, Philadelphia, PA, Invited.
- Wu, D., (May 18, 2011). “Concurrent Security Monitoring Using Semi-synchronized and Lock-free Algorithms,” PSU-PKU Joint Workshop on Energy Efficient Computing and Applications, Beijing, China, Invited.
- Wu, D., (May 18, 2011). “Cloud Computing Security and Privacy,” PSU-PKU Joint Workshop on Smart Health and Wellbeing, Beijing, China, Invited.
- Wu, D., (March 22, 2011). “EMERSE in Cloud,” Microsoft Campus Visit to Penn State (Research Track), University Park, PA.
- Wu, D., (August 23, 2010). “Cruiser: Concurrent Buffer Overflow Monitoring Using Lock-free Data Structures,” DOD MURI Project Meeting on Cyber Situation Awareness, DOD, UC Santa Barbara.

- Qadeer, S., Wu, D., (2004). “KISS: Keep It Simple and Sequential,” Technical Review by Bill Gates, Microsoft Corporation, Redmond, WA. The BillG Review was the highest level technical review at Microsoft. Shaz Qadeer (presenter), Dinghao Wu (intern).
- Wu, D., (August 2003). “Foundational Proof Checkers with Small Witnesses,” The Fifth ACM-SIGPLAN International Conference on Principles and Practice of Declarative Programming (PPDP 2003), ACM, Uppsala, Sweden.

Current Postdoctoral Researchers

- Ajay Kumara
- Lingwei Chen

Current Students

Undergraduate students

- Austin R. Thoet (Schreyer Honors College student)
- Austin William Pietrak, (summer intern, 2020).

Ph.D. students

- Rupesh Prajapati
- Neeraj Karamchandani (co-advisor)
- Zihao Wang
- Jinquan Zhang
- Rui Zhong
- Shixiong Jing
- Tianrou Xia
- Quan Li
- Hangfan Zhang
- Songtao Liu

Former Students

- Chu Huang (M.S., 2011). Thesis: Towards Trusted Computational Services: Result Verification Schemes for MapReduce. Co-advised with Sencun Zhu. Continued Ph.D. study at Penn State University.
- Nan Yu (M.S., 2014). Thesis: Information Interoperability Between Building Information Modeling Authoring Tools and Simulation Tools to Support Energy Efficient Building Design. Software Engineer, IBM Watson Group.

- Brett Holden (B.S., 2015). Schreyer Honors Scholar Honors Thesis: Eliza for Access Control Lists. Continued graduate study at Virginia Commonwealth University.
- Can Zhang (M.S., 2016). Thesis: A Model Checking Approach to Countering the Dynamics of Infection Propagation Over Network. Software Engineer. Deloitte.
- Xiao Liu (M.S., 2016). Thesis: Programming in Eliza. Continued graduate study at Penn State University.
- Jiang Ming (Ph.D., 2016). Thesis: Pipelined Symbolic Taint Analysis. Tenure-Track Assistant Professor, University of Texas at Arlington.
- Pengwei Lan (M.S., 2017). Thesis: Lambda Obfuscation. Software Engineer, Deloitte.
- Yan Wang (M.S., 2017). Thesis: Obfuscation with Turing Machine. Software Engineer, Bloomberg.
- Yufei Jiang (Ph.D., 2017). Thesis: Program Analysis Based Bloatware Mitigation and Software Customization. Software Engineer, Microsoft.
- Lawrence Wu (B.S. and M.S., 2018) Thesis: Blockchain Smart Contracts in Megacity Logistics. Communications Analyst, Federal Reserve Board.
- Pei Wang (Ph.D., 2018) Thesis: Advanced Software Obfuscation Techniques and Applications. Senior Security Researcher, Baidu XLab.
- Dongpeng Xu (Ph.D., 2018) Thesis: Opaque Predicate: Attack and Defense in Obfuscated Binary Code. Assistant Professor, University of New Hampshire.
- Shuai Wang (Ph.D., 2018) Thesis: Advanced Reverse Engineering Techniques for Binary Code Security Retrofitting and Analysis. Assistant Professor, Hong Kong University of Science and Technology (HKUST). (Postdoc at ETH, 2018–19)
- Xiao Liu (Ph.D., 2019) Thesis: Neural Program Synthesis for Compiler Fuzzing. Research Scientist, Facebook.
- Yu Fu (M.S., 2020).
- Qinkun Bao (Ph.D., 2021) Thesis: Precise and Scalable Side-Channel Analysis. Senior Security Researcher, Baidu XLab.
- Xiaoting Li (Ph.D., 2022) Thesis: The Good, the Bad and the Ugly: Exploring the Robustness and Applicability of Adversarial Machine Learning. Staff Research Scientist, Visa Research.

Former Postdoctoral Researchers

- Francisco Rocha, 2018.
- Huasong Shan, 2018.
- Yuyan Bao, 2018–19.

- Xiangkun Jia, 2018–19.

Former Visitors

- Yabo Liu, Jilin University, 2011–12.
- Meng Ma, Peking University, 2013–14
- Songtao Liu, summer intern, Fudan University, 2019
- Zhenzhou Tian, Lecturer, Xi'an University of Posts and Telecommunications, 2019-20.

New Courses and Programs Developed

- IST 543: Foundations of Software Security, residence course, 2019.
- IST 543: Foundations of Software Security, course proposal developed, 2017.
- Cybersecurity Analytics and Operations Program. Member of the committee and task force that developed the Cybersecurity Analytics and Operations new program. 2016.
- CYBER 366: Malware Analytics, course proposal co-developed, 2016.
- Data Sciences Program. Member of the committee and task force that developed the data sciences new program. 2015.
- DS 120: Scripting for Data Sciences, course proposal co-developed, 2015.
- IST 597B: Security and Privacy in Emerging Platforms, course developed, 2015.
- IST 597A: Software Security and Analysis, course developed, 2015.
- IST 402: Programming Languages, course developed, 2014.
- IST 451: Network Security, online and resident course developed, 2011.

Impacts in Society of Research Scholarship and Creative Accomplishment

- Research prototype JRed being transferred by Office of Naval Research (ONR), 2019.
- Open source release of 16 research software prototypes, 2012–2020.
- “Technology adopted in the DARPA Cyber Grand Challenge.” (2016). My Uroboros work has been adopted by 2 teams among the 7 finalists in the DARPA Cyber Grand Challenge (CGC) competition!
- Press release, (2016). An Office of Naval Research (ONR) press release covered my work JRed on fighting software bloat. The press was then circulated in many online media.

Technology Transferred or Adopted in the Field

(open source research software prototypes at <https://github.com/s3team/>)

- “TortoiseFuzz: Fuzzing by Coverage Accounting for Input Prioritization,” (Yanhao Wang, Xiangkun Jia, Yuwei Liu, Tiffany Bao, Dinghao Wu, and Purui Su). Open Source Release. URL: <https://github.com/TortoiseFuzz/TortoiseFuzz>. (2020).
- “AutoGrader: Automatic Grading of Programming Assignments: An Approach Based on Formal Semantics,” (Xiao Liu and Dinghao Wu). Open source release of research software prototype. URL: <https://github.com/s3team/>. Sponsored by National Science Foundation (NSF) under the Grant No. CNS-1652790. (2019).
- “DeepFuzz: Automatic Generation of Syntax Valid C Programs for Fuzz Testing,” (Xiao Liu and Dinghao Wu). Open Source Release. URL: <https://github.com/s3team/>. Sponsored by National Science Foundation (NSF) under the Grant No. CNS-1652790. (2019).
- “Regex-Verifier: A Lightweight Framework for Regex Verification,” (Xiao Liu, Yufei Jiang, and Dinghao Wu). Open source release of research software prototype, URL: <https://github.com/s3team/>. (2018).
- “VMHunt: A Verifiable Approach to Partially-Virtualized Binary Code Simplification,” (Dongpeng Xu, Jiang Ming, Yu Fu, and Dinghao Wu). URL: <https://github.com/s3team/VMHunt>. Open Source Release. (2018).
- “Amoeba: Binary Code Diversification through Composite Software Diversification,” (Shuai Wang, Pei Wang, and Dinghao Wu). Open Source Release. URL: <https://github.com/s3team/>. Sponsored by Office of Naval Research (ONR) under the Grants No. N00014-13-1-0175 and N00014-16-1-2265. (2017).
- “CryptoHunt: Cryptographic Function Detection in Obfuscated Binaries via Bit-precise Symbolic Loop Mapping,” (Dongpeng Xu, Jiang Ming, and Dinghao Wu). Open Source Release. (2017). URL: <https://github.com/s3team/CryptoHunt>. Sponsored by Office of Naval Research (ONR) under the Grants No. N00014-13-1-0175 and N00014-16-1-2265.
- “Software Bloat Reduction,” (Dinghao Wu and Yufei Jiang). ONR awarded two SBIR projects to two companies to transfer my work on software bloat reduction to practice. (2017).
- “A Generalized Dynamic Opaque Predicate Obfuscator,” (Dongpeng Xu, Jiang Ming, and Dinghao Wu). Open Source Release. Sponsored by National Science Foundation (NSF) under the Grant No. CCF-1320605. Open Source Release. (2016).
- “Efficient Multi-threaded Binary Code Control Flow Profiling Pintool,” (Jiang Ming and Dinghao Wu). Open Source Release. Sponsored by the National Science Foundation (NSF) under the Grant No. CNS-1223710. (2016).
- “IFC Importer for OpenStudio,” (Chong Zhou, Yu Fu, Pengwei Lan, Yufei Jiang, Nan Yu, Dinghao Wu, John Yen, John Messner, and Robert Leicht). Open Source Release, adopted by DOE Building Energy Simulation Platform OpenStudio. (2016).
- “LOOP: Logic-Oriented Opaque Predicate Detection in Obfuscated Binary Code,” (Jiang Ming, Dongpeng Xu, and Dinghao Wu). Open Source Release. URL: <https://github.com/s3team/loop>. (2015).

- “Uroboros: Reassembleable Disassembling,” (Shuai Wang, Pei Wang, and Dinghao Wu). Open Source Software Release. (2015). Uroboros, a foundational tool for reverse engineering and binary retrofitting, is released at URL: <https://github.com/s3team/uroboros>. The work has been adopted by several labs and research groups, and generated quite a few buzzes (see http://plato.ist.psu.edu/?page_id=472) on Twitter, GitHub, and Weibo after open source release. In particular, the method has been adopted by 2 teams among the 7 finalists in the 2016 DARPA Cyber Grand Challenge (CGC) competition! The Shellphish team from the University of California Santa Barbara Shellphish team that won the 3rd place in the 2016 DARPA Cyber Grand Challenge (CGC) competition adopted and enhanced Uroboros in their tool Ramblr.
- “Cruiser: Concurrent Buffer Overflow Monitoring Using Lock-free Data Structures,” (Qiang Zeng, Dinghao Wu, and Peng Liu). Open source software release of Cruiser, a concurrent heap buffer overflow detector using lock-free data structure for synchronization. URL: <https://code.google.com/p/cruiser-psu/>. (2014).
- “Tailored Application-specific System Call Tables,” (Qiang Zeng, Zhi Xin, Dinghao Wu, Peng Liu, and Bing Mao). Open source software release: System call customization patch for Linux 2.6.32.59 and binary-based system call analysis code as IDA Pro plugins. (2014).
- “ViewDroid: Towards Obfuscation-Resilient Mobile Application Repackaging Detection,” (Fangfang Zhang, Heqing Huang, Sencun Zhu, Dinghao Wu, and Peng Liu). Open Source Release, sponsored by the National Science Foundation (NSF) under the Grant No. CCF-1320605. (2014).
- “An Automated Computer Query Generation Method and System for Building Information Modeling (BIM),” (Yufei Jiang, Nan Yu, Jiang Ming, Lannan Luo, Sanghoon Lee, Abdou Jallow, Dinghao Wu, John Yen, John Messner, and Robert Leicht). Open Source Release, adopted by DOE EEB HUB. (2013).

Publications

* Student or postdoc I supervise or supervised.

† Student supervised at the time the research was done.

1. “ μ FUZZ: Redesign of Parallel Fuzzing using Microservice Architecture,” (Yongheng Chen, Rui Zhong*, Yupeng Yang, Hong Hu, Dinghao Wu, and Wenke Lee). In *Proceedings of the 32nd USENIX Security Symposium (USENIX Security '23)*, 2023. (accepted)
2. “LibSteal: Model Extraction Attack towards Deep Learning Compilers by Reversing DNN Binary Library,” (Jinquan Zhang*, Pei Wang, and Dinghao Wu). In *Proceedings of the 18th International Conference on Evaluation of Novel Approaches to Software Engineering (ENASE)*, 2023.
3. “Hierarchical Graph Neural Network for Patient Treatment Preference Prediction with External Knowledge,” (Quan Li*, Lingwei Chen, Yong Cai, and Dinghao Wu). In *Proceedings of the 27th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, 2023.

4. “Knowledge Distillation on Cross-Modal Adversarial Reprogramming for Data-Limited Attribute Inference, (short paper),” (Quan Li*, Lingwei Chen, Shixiong Jing*, and Dinghao Wu). In *WWW ’23 Companion: Companion Proceedings of the ACM Web Conference*, 2023.
5. “Detecting and Interpreting Changes in Scanning Behavior in Large Network Telescopes,” (Michael Kallitsis, Rupesh Prajapati*, Vasant Honavar, Dinghao Wu, and John Yen). *IEEE Transactions on Information Forensics & Security*, vol. 17, pp. 3611–3625, October 2022.
6. “Local Augmentation for Graph Neural Networks,” (Songtao Liu*, Rex Ying, Hanze Dong, Lanqing Li, Tingyang Xu, Yu Rong, Peilin Zhao, Junzhou Huang, and Dinghao Wu). In *International Conference on Machine Learning 2022 (ICML)*, Baltimore, Maryland, USA, July 2022.
7. “How Powerful is Implicit Denoising in Graph Neural Networks,” (Songtao Liu*, Rex Ying, Hanze Dong, Lu Lin, Jinghui Chen, and Dinghao Wu). In *NeurIPS 2022 Workshop: New Frontiers in Graph Learning (GLFrontiers)*, 2022.
8. “Enhancing Multi-hop Connectivity for Graph Convolutional Networks,” (Songtao Liu*, Shixiong Jing*, Tong Zhao, Zengfeng Huang, and Dinghao Wu). In *ICML 2022 Workshop on Pre-training: Perspectives, Pitfalls, and Paths Forward*, Baltimore, Maryland, USA, July 2022.
9. “FuzzBoost: Reinforcement Compiler Fuzzing,” (Xiaoting Li*, Xiao Liu*, Lingwei Chen*, Rupesh Prajapati*, and Dinghao Wu). In *The 24th International Conference on Information and Communications Security (ICICS 2022)*, Canterbury, UK, September, 2022.
10. “Semi-synchronized Non-blocking Concurrent Kernel Cruising,” (Donghai Tian, Qiang Zeng, Dinghao Wu, Peng Liu, and Changzhen Hu). *IEEE Transactions on Cloud Computing*, 10(2):1428–1444, 2022.
11. “Distilling Knowledge on Text Graph for Social Media Attribute Inference,” (Quan Li*, Xiaoting Li*, Lingwei Chen*, and Dinghao Wu.) In *International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR’22)*, Madrid, Spain, July 2022. (short paper)
12. “PackerGrind: An Adaptive Unpacking System for Android Apps,” (Lei Xue, Hao Zhou, Xiapu Luo, Le Yu, Dinghao Wu, Yajin Zhou, and Xiabo Ma). *IEEE Transactions on Software Engineering (TSE)*, 48(2):551–570, 2022.
13. “Adversarially Reprogramming Pretrained Neural Networks for Data-limited and Cost-efficient Malware Detection,” (Lingwei Chen*, Xiaoting Li*, and Dinghao Wu). In *Proceedings of the SIAM International Conference on Data Mining (SDM’22)*, 2022.
14. “AlphaProg: Reinforcement Generation of Valid Programs for Compiler Fuzzing,” (Xiaoting Li*, Xiao Liu*, Lingwei Chen*, Rupesh Prajapati*, and Dinghao Wu). In *Proceedings of the Thirty-Fourth Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-22)*, 2022.

15. “Shedding Light Into the Darknet: Scanning Characterization and Detection of Temporal Changes (poster paper)”, (Rupesh Prajapati*, Vasant Honavar, Dinghao Wu, John Yen, and Michalis Kallitsis). In *Proceedings of the 17th International Conference on emerging Networking EXperiments and Technologies (CoNEXT)*. December 7-10, 2021. (poster)
16. “Characterizing AI Model Inference Applications Running in SGX Environment,” (Shixiong Jing, Qinkun Bao, Pei Wang, Xulong Tang, and Dinghao Wu). In *Proceedings of the 15th IEEE International Conference on Networking, Architecture, and Storage (NAS)*, 2021. (Short paper)
17. “Parema: An Unpacking Framework for Demystifying VM-based Android Packers,” (Lei Xue, Yuxiao Yan, Luyi Yan, Muhui Jiang, Xiapu Luo, Dinghao Wu, and Yajin Zhou). In *Proceedings of the ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2021)*.
18. “Abacus: Precise Side-Channel Analysis,” (Qinkun Bao*, Zihao Wang*, Xiaoting Li*, James Larus, and Dinghao Wu). In *Proceedings of the 43rd International Conference on Software Engineering (ICSE 2021)*, 2021.
19. “Abacus: A Tool for Precise Side-Channel Analysis,” (Qinkun Bao*, Zihao Wang*, James R. Larus, Dinghao Wu). In *IEEE/ACM 43rd International Conference on Software Engineering: Companion Proceedings (ICSE-Companion)*, 2021: 238-239.
20. “One Engine to Fuzz ’em All: Generic Language Processor Testing with Semantic Validation,” (Yongheng Chen, Rui Zhong*, Hong Hu, Hangfan Zhang*, Yupeng Yang, Dinghao Wu, and Wenke Lee). In *Proceedings of the 42nd IEEE Symposium on Security and Privacy (IEEE S&P 2021)*, 2021.
21. “Watermarking-based Defense Against Adversarial Attacks on Deep Neural Networks,” (Xiaoting Li*, Lingwei Chen*, Jingquan Zhang*, James Larus, and Dinghao Wu). In *Proceedings of International Joint Conference on Neural Networks (IJCNN 2021)*, Shenzhen, China, 2021.
22. “Turning Attacks into Protection: Social Media Privacy Protection Using Adversarial Attacks,” (Xiaoting Li*, Lingwei Chen*, and Dinghao Wu). In *Proceedings of the SIAM International Conference on Data Mining (SDM 2021)*. April 29 - May 1, 2021.
23. “Deep Learning for COVID-19,” (B. S. Prashanth, M. V. Manoj Kumar, Likewin Thomas, M. A. Ajay Kumar*, Dinghao Wu, B. Annappa, Anirudh Hebbar, and Y. V. Srinivasa Murthy). Book chapter in *Understanding COVID-19: The Role of Computational Intelligence*, Springer, 2021.
24. “Fine-Grained Compiler Identification with Sequence-oriented Neural Modeling,” (Zhenzhou Tian, Yaqian Huang, Borun Xie, Yanping Chen, Lingwei Chen*, and Dinghao Wu). *IEEE Access*, 2021.
25. “Zooming Into the Darknet: Characterizing Internet Background Radiation and its Structural Changes,” (Michalis Kallitsis, Vasant G. Honavar, Rupesh Prajapati*, Dinghao Wu, John Yen). CoRR abs/2108.00079, 2021.

26. “Enhancing Robustness of Graph Convolutional Networks via Dropping Graph Connections,” (Lingwei Chen*, Xiaoting Li*, and Dinghao Wu). In *Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD 2020)*, Ghent, Belgium, September 14-18, 2020.
27. “Squirrel: Testing Database Management Systems with Language Validity and Coverage Feedback,” (Rui Zhong*, Yongheng Chen, Hong Hu, Hangfan Zhang*, Wenke Lee, and Dinghao Wu). In *Proceedings of the 27th ACM Conference on Computer and Communications Security (CCS 2020)*, Orlando, USA, November 9-13, 2020.
28. “Quantitative Assessment on the Limitations of Code Randomization for Legacy Binaries,” (Pei Wang*, Jinquan Zhang*, Shuai Wang*, and Dinghao Wu). In *Proceedings of the 5th IEEE European Symposium on Security and Privacy (IEEE EuroS&P 2020)*, Genova, Italy, June 16-18, 2020. (Acceptance rate: 15%)
29. “Unexpected Data Dependency Creation and Chaining: A New Attack to SDN,” (Feng Xiao, Jinquan Zhang*, Jianwei Huang, Guofei Gu, Dinghao Wu, and Peng Liu). In *Proceedings of the 41st IEEE Symposium on Security and Privacy (IEEE S&P 2020)*, San Francisco, CA, May 18-20, 2020.
30. “Not All Coverage Measurements Are Equal: Fuzzing by Coverage Accounting for Input Prioritization,” (Yanhao Wang, Xiangkun Jia*, Yuwei Liu, Kyle Zeng, Tiffany Bao, Dinghao Wu, and Purui Su). In *Proceedings of the Network and Distributed System Security Symposium (NDSS 2020)*, San Diego, California, February 23-26, 2020. (Acceptance rate: 17.4%)
31. “Plagiarism Detection of Multi-threaded Programs via Siamese Neural Networks,” (Zhenzhou Tian, Qing Wang, Cong Gao, Lingwei Chen, and Dinghao Wu). *IEEE Access*, 2020.
32. “Plagiarism Detection of Multi-threaded Programs using Frequent Behavioral Pattern Mining,” (Zhenzhou Tian, Qing Wang, Cong Gao, Lingwei Chen, and Dinghao Wu). *International Journal of Software Engineering and Knowledge Engineering (IJSEKE)*, 2020.
33. “Model Checking—Case Study of a Temporary Structures Monitoring System,” (Dongpeng Xu*, Xiao Yuan, Dinghao Wu, and Chimay J. Anumba). Book chapter in Chinemelu J. Anumba and Nazila Roofigari-Esfahan (Ed.), *Cyber Physical Systems in the Built Environment*, 2020.
34. “Higher-order Weighted Graph Convolutional Networks,” (Songtao Liu*, Lingwei Chen*, Hanze Dong, Zihao Wang*, Dinghao Wu, and Zengfeng Huang). arXiv preprint arXiv:1911.04129, 2019.
35. “MetaHunt: Towards Taming Malware Mutation via Studying the Evolution of Metamorphic Virus,” (Li Wang*, Dongpeng Xu*, Jiang Ming*, Yu Fu*, and Dinghao Wu). In *Proceedings of the 3rd International Workshop on Software PROtection (SPRO2019), Co-located with the 26th ACM Conference on Computer and Communications Security*, London, UK November 11-15, 2019.
36. “Identifying Cache-Based Side Channels through Secret-Augmented Abstract Interpretation,” (Shuai Wang*, Yuyan Bao*, Xiao Liu*, Pei Wang*, Danfeng Zhang, and Dinghao Wu). In

Proceedings of the 28th USENIX Security Symposium (USENIX Security '19), Santa Clara, CA, August 14-16, 2019.

37. “Xmark: Dynamic Software Watermarking Using Collatz Conjecture,” (Haoyu Ma, Chunfu Jia, Shijia Li, Wantong Zheng, and Dinghao Wu). *IEEE Transactions on Information Forensics and Security*, **14**(11):2859–2874, 2019.
38. “Automatic Grading of Programming Assignments: An Approach Based on Formal Semantics,” (Xiao Liu*, Shuai Wang*, Pei Wang*, and Dinghao Wu). In *Proceedings of the 41st ACM/IEEE International Conference on Software Engineering (ICSE 2019), the Software Engineering Education and Training (SEET) track*, Montreal, QC, Canada, 25 May - 31 May 2019.
39. “DeepFuzz: Automatic Generation of Syntax Valid C Programs for Fuzz Testing,” (Xiao Liu*, Xiaoting Li*, Rupesh Prajapati*, and Dinghao Wu). In *Proceedings of the Thirty-Third AAAI Conference on Artificial Intelligence (AAAI-19)*, Honolulu, Hawaii, USA, January 27 - February 1, 2019.
40. “A Lightweight Framework for Regular Expression Verification,” (Xiao Liu*, Yufei Jiang*, and Dinghao Wu). In *Proceedings of the 19th IEEE international Symposium on High Assurance Systems Engineering (HASE 2019)*, Hangzhou, China, January 3-5, 2019. *Best Paper Award*.
41. “Bridging the Gap Between Security Tools and SDN Controllers,” (Li Wang* and Dinghao Wu). *EAI Endorsed Transactions on Security and Safety*, **5**(17), December 2018.
42. “Field Experience with Obfuscating Million-User iOS Apps in Large Enterprise Mobile Development,” (Pei Wang*, Dinghao Wu, Zhaofeng Chen, and Tao Wei). *Software: Practice and Experience*, **49**(2), 2018.
43. “Large-scale Third-party Library Detection in Android Markets,” (Menghao Li, Pei Wang*, Wei Wang, Shuai Wang*, Dinghao Wu, Jian Liu, Rui Xue, Wei Huo, and Wei Zou.) *IEEE Transactions on Software Engineering (TSE)*, 2018.
44. “VMHunt: A Verifiable Approach to Partially-Virtualized Binary Code Simplification,” (Dongpeng Xu*, Jiang Ming*, Yu Fu*, and Dinghao Wu.) In *Proceedings of the 25th ACM Conference on Computer and Communications Security (CCS 2018)*, Toronto, Canada from October 15–19, 2018.
45. “RedDroid: Android Application Redundancy Customization Based on Static Analysis,” (Yufei Jiang*, Qinkun Bao*, Shuai Wang*, Xiao Liu*, and Dinghao Wu.) In *Proceedings of the 29th IEEE International Symposium on Software Reliability Engineering (ISSRE 2018)*, Memphis, TN, October 15-18, 2018.
46. “Software Protection on the Go: A Large-Scale Empirical Study on Mobile App Obfuscation,” (Pei Wang*, Qinkun Bao*, Li Wang*, Shuai Wang*, Zhaofeng Chen, Tao Wei, and Dinghao Wu). In *Proceedings of the 40th International Conference on Software Engineering (ICSE 2018)*, Gothenburg, Sweden, May 27–June 3, 2018. (Acceptance rate: $105/502 = 20.9\%$)

47. “Protecting Million-User iOS Apps with Obfuscation: Motivations, Pitfalls, and Experience,” (Pei Wang*, Dinghao Wu, Zhaofeng Chen, and Tao Wei). In *Proceedings of the 40th International Conference on Software Engineering (ICSE 2018), Software Engineering in Practice (SEIP) Track*, Gothenburg, Sweden, May 27–June 3, 2018.
48. “From Natural Language to Programming Language,” (Xiao Liu* and Dinghao Wu). Book chapter in Steve Goschnick (Ed.), *Innovative Methods, User-Friendly Tools, Coding, and Design Approaches in People-Oriented Programming*. 2018.
49. “In-Memory Fuzzing for Binary Code Similarity Analysis,” (Shuai Wang* and Dinghao Wu). In *Proceedings of the 32nd IEEE/ACM International Conference on Automated Software Engineering (ASE 2017)*, Urbana Champaign, Illinois, USA, October 30–November 3, 2017. Accepted. (Acceptance rate $65/314=20.7\%$)
50. “Binary Code Retrofitting and Hardening Using SGX,” (Shuai Wang*, Wenhao Wang, Qinkun Bao*, Pei Wang*, XiaoFeng Wang, and Dinghao Wu). In *Proceedings of the Second Workshop on Forming an Ecosystem Around Software Transformation (FEAST 2017)*, co-located with CCS 2017, Dallas, USA, November 3, 2017. Accepted.
51. “Automated Synthesis of Access Control Lists,” (Xiao Liu*, Brett Holden*, and Dinghao Wu). In *Proceedings of the 3rd International Conference on Software Security and Assurance (ICSSA 2017)*, Altoona, Pennsylvania, USA, July 24-25, 2017. *Best Paper Award*.
52. “Lambda Obfuscation,” (Pengwei Lan*, Pei Wang*, Shuai Wang*, and Dinghao Wu). In *Proceedings of the 13th EAI International Conference on Security and Privacy in Communication Networks (SecureComm 2017)*, Niagara Falls, Canada, October 22-25, 2017. Accepted.
53. “Turing Obfuscation,” (Yan Wang*, Shuai Wang*, Pei Wang*, and Dinghao Wu). In *Proceedings of the 13th EAI International Conference on Security and Privacy in Communication Networks (SecureComm 2017)*, Niagara Falls, Canada, October 22-25, 2017. Accepted.
54. “SecControl: Bridging the Gap Between Security Tools and SDN Controllers,” (Li Wang* and Dinghao Wu). In *Workshop on Applications and Techniques in Cyber Security (ATCS)*, co-located with the 13th EAI International Conference on Security and Privacy in Communication Networks (SecureComm 2017), Niagara Falls, Canada, October 22-25, 2017. Accepted.
55. “Semantics-Aware Machine Learning for Function Recognition in Binary Code,” (Shuai Wang*, Pei Wang*, and Dinghao Wu). In *Proceedings of the 33rd IEEE International Conference on Software Maintenance and Evolution (ICSME 2017)*, Shanghai, China, September 17-24, 2017. Accepted.
56. “Composite Software Diversification,” (Shuai Wang*, Pei Wang*, and Dinghao Wu). In *Proceedings of the 33rd IEEE International Conference on Software Maintenance and Evolution (ICSME 2017)*, Shanghai, China. September 17-24, 2017. Accepted.
57. “BinSim: Trace-based Semantic Binary Diffing via System Call Sliced Segment Equivalence Checking,” (Jiang Ming*, Dongpeng Xu*, Yufei Jiang*, and Dinghao Wu). In *Proceedings of the 26th USENIX Security Symposium*, Vancouver, BC, Canada, August 16-18, 2017. (Acceptance rate $85/522=16.3\%$)

58. “CacheD: Identifying Cache-Based Timing Channels in Production Software,” (Shuai Wang*, Pei Wang*, Xiao Liu*, Danfeng Zhang, and Dinghao Wu). In *Proceedings of the 26th USENIX Security Symposium*, Vancouver, BC, Canada, August 16-18, 2017. (Acceptance rate $85/522=16.3\%$)
59. “A Lightweight Framework for Regex Verification,” Xiao Liu and Dinghao Wu (advisor). *Bronze Medal, the ACM Graduate Student Research Competition at PLDI’17*, Barcelona, Spain. June 2017.
60. “Cryptographic Function Detection in Obfuscated Binaries via Bit-precise Symbolic Loop Mapping,” (Dongpeng Xu*, Jiang Ming*, and Dinghao Wu). In *Proceedings of the 38th IEEE Symposium on Security and Privacy (IEEE S&P 2017)*, San Jose, CA, May 22-24, 2017. (Acceptance rate: $60/450=13.3\%$)
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