

Jingbo Wang

Curriculum Vitae

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Research Interests

My research is at the intersection of **software engineering** and **formal methods**, with an emphasis on developing rigorous *verification*, *analysis* and *program synthesis* techniques to improve the security, robustness, and fairness of critical software systems.

Education

Expected 2023 **University of Southern California** Los Angeles, CA.
Ph.D. in Computer Science
Advisor: Chao Wang

2013–2017 **Huazhong University of Science and Technology** Wuhan, China.
Bachelor of Science in Computer Science

Research & Industry Experience

2017–Now **Graduate Research Assistant.**
University of Southern California
Advisor: Prof. Chao Wang

2022 **Applied Scientist Intern.**
Amazon, CodeGuru Team
Scale taint analysis to the entire codebase.
Mentors: Dr. Michael Emmi and Dr. Liana Hadarean

2018 **Eighth Summer School on Formal Techniques.**
SRI Computer Science Laboratory
Organizer: Dr. Natarajan Shankar

2017 **Undergrad Research Intern.**
Cornell University
Mentor: Prof. John Hopcroft

Honors & Awards

2023 **Distinguished Paper Award of PLDI 2023**

2021 **MIT EECS Rising Star**
Awarded to ~50 women graduate students in electrical engineering and computer science

2021 **WiSE Merit Award**
2 recipients in Viterbi School of Engineering of USC

2019 **Selected Young Reseacher of the 7th Heidelberg Laureate Forum**

- 2019 **Selected Attendee of CRA-W Grad Cohort for Women Workshop**
- 2019 **VMW Scholarship** *CAV'19*
- 2019 **PLMW Scholarship** *PLDI'19*
- 2016 **Finalist at Student Clustering Competition (SC'16)**
- 2016 **Highest LINPACK award at ISC-HPCAC Student Cluster Competition**
- 2016 **Champion at Asia Student Super Computer Challenge (ASC'16)**

Publications

- 2023 **C11: Systematic Testing of the Data-Poisoning Robustness of KNN**
Yannan Li, Jingbo Wang and Chao Wang
32nd ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA'23)
- 2023 **C10: Synthesizing MILP Constraints for Efficient and Robust Optimization**
Jingbo Wang, Aarti Gupta and Chao Wang
44th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'23) 🏆 **Distinguished Paper Award**
- 2023 **C9: Certifying the Fairness of KNN in the Presence of Dataset Bias**
Yannan Li, Jingbo Wang and Chao Wang
35th International Conference on Computer Aided Verification (CAV'23)
- 2022 **C8: Synthesizing Fair Decision Trees via Iterative Constraint Solving**
Jingbo Wang, Yannan Li and Chao Wang
34th International Conference on Computer Aided Verification (CAV'22)
- 2022 **C7: Learning to Synthesize Relational Invariants**
Jingbo Wang and Chao Wang
37th IEEE/ACM International Conference on Automated Software Engineering (ASE'22)
- 2022 **C6: Proving Robustness of KNNs Against Adversarial Data Poisoning**
Yannan Li, Jingbo Wang and Chao Wang
22th International Conference on Formal Methods in Computer-Aided Design (FMCAD'22)
- 2021 **C5: Data-Driven Synthesis of Provably Sound Side Channel Analyses.**
Jingbo Wang, Chunggha Sung, Mukund Raghothaman and Chao Wang
43rd International Conference on Software Engineering (ICSE'21)
- 2020 **C4: NeuroDiff: Scalable Differential Verification of Neural Networks using Fine-Grained Approximation**
Brandon Paulsen, Jingbo Wang, Jiawei Wang and Chao Wang
35th IEEE/ACM International Conference on Automated Software Engineering (ASE'20)
- 2020 **C3: ReluDiff: Differential Verification of Deep Neural Networks**
Brandon Paulsen, Jingbo Wang and Chao Wang
42nd International Conference on Software Engineering (ICSE'20)

- 2019 **C2: Mitigating Power Side Channels during Compilation**
Jingbo Wang, Chungha Sung and Chao Wang
27th ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering (FSE'19)
- 2019 **C1: Shield Synthesis for Real: Enforcing Safety in Cyber-physical Systems**
Meng Wu, Jingbo Wang and Chao Wang
19th International Conference on Formal Methods in Computer-Aided Design (FMCAD'19)

Under Review

- 2023 **U1: Ace: Alias Analysis with Compositional Effects**
Michael Emmi, Liana Hadarean, Ranjit Jhala, Peixuan Li, Linghui Luo, Lee Pike, Nico Rosner, Martin Schaefer, Willem Visser, and Jingbo Wang (*alphabetical order*)
In Submission

Teaching Experience

- 2022 **University of Southern California 2022 Fall**
Teaching Assistant, CSCI 310 Software Engineering
- 2020 **University of Southern California 2020 Spring**
Teaching Assistant, CSCI 360 Introduction to Artificial Intelligence
- 2018 **University of Southern California 2018 Fall**
Teaching Assistant, CSCI 310 Software Engineering

Mentoring Experience

- 2022 **YOUNG RESEARCHERS PROGRAM** *Virtual, 2022*
Mentored a high school student *Estephany Dayana Arevalo* on science projects
- 2021-2022 **Mentoring Ph.D. students at USC**
Mentored Ph.D. students: *Yannan Li, Brian Kim, Michael Yuen*
Research Output: 1 FMCAD paper (*accepted*), 1 CAV paper (*accepted*), 1 ISSTA paper (*in submission*)
- 2021 **PLMW@PLDI** *Virtual, 2021*
Mentored junior Ph.D. students
- 2021 **Viterbi Graduate Mentorship Program** *Virtual, 2021*
Mentored MS students at USC.

Research Talks

- 2023 **Trustworthy Software Enabled by Program Analysis and Synthesis**
Purdue University, Elmore Family School of Electrical and Computer Engineering
Purdue University, Department of Computer Science
North Carolina State University, Department of Computer Science
University of Virginia, Department of Computer Science
University of Waterloo, Cheriton School of Computer Science
UMass Amherst, Manning College of Information and Computer Sciences
Simon Fraser University, School of Computing Science
National University of Singapore, Department of Computer Science
Dartmouth College, Department of Computer Science
ETH Zürich, Department of Computer Science
- 2022 **Learning to Synthesize Relational Invariants**
ASE, Oakland Center, Michigan, United States
- 2022 **Synthesizing Fair Decision Trees via Iterative Constraint Solving**
CAV, The Technion, Haifa, Israel
- 2022 **Taint Analysis for Entire Version Sets**
Amazon, automated reasoning group
- 2021 **Data-Driven Synthesis of Provably Sound Side Channel Analyses**
National University of Singapore, PLSE Seminars
UC Berkely, 2021 (Simons Institute, talk given by my advisor Prof. Chao Wang)
ICSE, 2021, Virtual
- 2019 **Mitigating Power Side Channels during Compilation**
FSE, Estonia, 2019
USC, Guest Lecture at CSCI 310 *Software Engineering*

Services

- Program
Committee
- [VMCAI 2023 Artifact Evaluation Chair](#)
 - [TACAS 2023 Artifact Evaluation](#)
 - [ESEC/FSE 2023 Artifact Evaluation](#)
 - [Fuzzing 2022 Artifact Evaluation](#)
 - [SPLASH 2022 Student Research Competition](#)
 - [PLDI 2022 Artifact Evaluation](#)
 - [OSDI 2022 Artifact Evaluation](#)
 - [ISSTA 2021 Artifact Evaluation](#)
- Journal
Reviewer
- [ACM Transactions on Software Engineering and Methodology \(TOSEM\) 2023](#)
 - [IEEE Transactions on Software Engineering \(TSE\) 2022](#)
 - [ACM Transactions on Software Engineering and Methodology \(TOSEM\) 2022](#)
 - [IEEE Design & Test 2019](#)

External

- Reviewer
- 2020: ASE, DAC, FMCAD, ICSE
 - 2019: ESEC/FSE, CAV, FMCAD, RV, ATVA, ICSE

Others

- USC PhD Women and gender minorities in Computing Club
- USC Women in Science and Engineering
- USC Software Research Seminar (Organizer)
- USC Academic Integrity Panel Reviewer

References

Chao Wang

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University of Southern California
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Nenad Medvidovic

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University of Southern California
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Mukund Raghothaman

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Aarti Gupta

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Michael Emmi

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