Yiqi Zhao

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2211 South Budlong Avenue, Los Angeles, CA, 90007, USA

EDUCATION

University of Southern California — Los Angeles, USA
PhD Student in Computer Science — *2023/08 - Present*
- GPA: 4.0/4.0
- Supervisors: *Prof. Jyotirmoy V. Deshmukh*; *Prof. Lars Lindemann*
- Viterbi School of Engineering Fellowship

Vanderbilt University — Nashville, USA
Bachelor of Science, Magna Cum Laude — *2020/08 - 2023/05*
- GPA: 3.935/4.0
- Majors: Honors in Computer Science; Mathematics
- Minors: Electrical Engineering; Data Science
- Dean's List; Good Standing

RESEARCH INTERESTS

Formal Methods, Cyber Physical System, Systems and Control Theory, Robotics

JOURNAL PAPERS

[j1] Ziyan An, **Yiqi Zhao**, Xuqing Gao, Ayan Mukhopadhyay, Meiyi Ma. "Formal Logic-Guided Harnessing Heterogeneous Fairness Rules in Smart Cities". **ACM Transactions on Cyber-physical Systems.**

CONFERENCE PAPERS

[c3] Anand Balakrishnan, Rohit Bernard, Shreeram Narayanan, Vidisha Kudalkar, **Yiqi Zhao**, Parinitha Nagaraja, Georgi Markov, Christof Budnik, Helmut Degen, Lars Lindemann, Jyotirmoy V. Deshmukh. "Safety Assurance for Autonomous Systems with Multiple Sensor Modalities". **The 22nd ACM-IEEE International Symposium on Formal Methods and Models for System Design (MEMOCODE)**, Raleigh, USA. 2024. [paper]

[c2] **Yiqi Zhao**, Bardh Hoxha, Georgios Fainekos, Jyotirmoy V. Deshmukh, and Lars Lindemann. "Robust Conformal Prediction for STL Runtime Verification under Distribution Shift". ***The 15th ACM/IEEE International Conference on Cyber-Physical Systems***, Hong Kong, China. 2024. **Best Paper Award Finalist.** [paper] [codes]

[c1] **Yiqi Zhao**, Ziyan An, Xuqing Gao, Ayan Mukhopadhyay, Meiyi Ma. "Fairguard: Harness Logic-based Fairness Rules in Smart Cities". ***The 8th ACM/IEEE Conference on Internet of Things Design and Implementation***, San Antonio, USA. 2023. [paper]

IN SUBMISSION (* INDICATES EQUAL CONTRIBUTION.)

[s4] Xinyi Yu*, **Yiqi Zhao***, Bardh Hoxha, Georgios Fainekos, Jyotirmoy V. Deshmukh, and Lars Lindemann. "STL-GO: Spatio-Temporal Logic with Graph Operators for Distributed Systems with Multiple Network Topologies". *Currently under review.*

[s3] Xinyi Yu, **Yiqi Zhao**, Xiang Yin, and Lars Lindemann. "Signal Temporal Logic Control Synthesis among Uncontrollable Dynamic Agents with Conformal Prediction". *Arxiv, 2024. Currently under review in Automatica.* [paper] [codes]

[s2] Lars Lindemann, **Yiqi Zhao**, Xinyi Yu, George J. Pappas, Jyotirmoy V. Deshmukh. "Formal Verification and Control with Conformal Prediction". *Arxiv, 2024. Currently under review in IEEE Control Systems Magazine.* [paper]

[s1] **Yiqi Zhao**, Emily Zhu, Bardh Hoxha, Georgios Fainekos, Jyotirmoy V. Deshmukh, Lars Lindemann. "Distributionally Robust Predictive Runtime Verification under Spatio-Temporal Logic Specifications". *Currently under review in ACM Transactions on Cyber-physical Systems.* [paper] [codes]

PREPRINTS (* INDICATES EQUAL CONTRIBUTION.)

[p2] **Yiqi Zhao***, Xinyi Yu*, Jyotirmoy V. Deshmukh, and Lars Lindemann. "Conformal Predictive Programming for Chance Constrained Optimization". *Arxiv, 2024.* [paper] [codes]

[p1] **Yiqi Zhao**, Ziyan An, Meiyi Ma, and Taylor Johnson. "EduSAT: A Pedagogical Tool for Theory and Applications of Boolean Satisfiability". *Arxiv, 2023.* [paper] [tool]

RESEARCH EXPERIENCE

VIDA Lab, SAIDS Lab, University of Southern California — Los Angeles, USA
PhD Student, Advisors: Jyotirmoy. V. Deshmukh, Prof. Lars Lindemann — *2023/08 - Present*

- Stochastic Optimization
  - Conducting research in chance constrained optimization
- Runtime and Multiagent Verification
  - Conducting Research in runtime and multiagent verification with STL and STREL and worked on proposing multiagent logic specifications.

Meiyi Ma's Group, Vanderbilt University — Nashville, USA
Research Assistant, Advisor: Meiyi Ma — *2021/11 - 2023/08*

- Smart City
  - Introduced Fairguard, a micro-level temporal logic-based approach for fair smart city design in complex temporal-spatial domains.

BAGL Lab, Vanderbilt Institute for Surgery and Engineering — Nashville, USA
Summer Fellow, Advisor: Jack Noble — *2021/06 - 2021/08*

- Ultrasound Image Processing with Machine Learning Techniques
  - Studied and practiced Image Segmentation Techniques with an existing U-Net Architecture.
  - Focused on data preprocessing, cross validation, and outcome evaluations, etc.

WORK/TEACHING EXPERIENCE

Research Assistant, University of Southern California — Los Angeles, USA
Affiliation: University of Southern California — *2024/08 - Current*

- PhD Research and assistantship in advisors' research.

Grader of CS 4260 (Artificial Intelligence), Vanderbilt University — Nashville, USA
Advisors: Meiyi Ma, Daniel Moyer — *2022/08 - 2023/05*

- Graded students' homework and exams and held TA office hours regularly.

Application Development Intern, ADP — Roseland, USA
Affiliation: Global Product & Tech group — *2022/06 - 2022/08*

- Developed a Notification Replay API for the Autopay Group.

SELECTED HONORS

ICCPS Best Paper Award Finalist — *May. 2024*
Awarded at the 15th ACM/IEEE International Conference on Cyber-Physical Systems for the paper "Robust Conformal Prediction for STL Runtime Verification under Distribution Shift".

Viterbi School of Engineering Fellowship — *Aug. 2023*
Awarded for selected incoming PhD students at Viterbi School of Engineering, USC.

VISE Award (Vanderbilt Institute for Surgery and Engineering Summer Fellowship) — *2021*
Awarded for the paid fellowship at the Vanderbilt Institute for Surgery and Engineering Summer Fellows Program.

ACADEMIC SERVICES

Journal Reviews for Computing, NAHS

Conference Reviews for ACC 2024, VMCAI 2024, CDC 2024, ICLR 2025, AISTATS 2025, HSCC 2025, L4DC 2025, ICCPS 2025, NEUS 2025, MECC 2025.

Conference PC Member and Reviews for HSCC 2024 (Repeatability Evaluation), HSCC 2025 (Repeatability Evaluation), ICCPS 2025 (Posters and Demos).

Organizer: I organized a reading group on Formal Methods for Control and Autonomous Systems at USC.

SELECTED TALKS

The 15th ACM/IEEE International Conference on Cyber-Physical Systems *05/16/2024*
The 43rd Southern California Control Workshop (with Xinyi Yu) *04/19/2024*
The 8th ACM/IEEE Conference on Internet of Things Design and Implementation *May 2023*

SKILLS

Programming	Python, Javascript, C++, C, MATLAB, Java, SQL.
Languages	Mandarin Chinese (native), English