You Li

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Current Position

NORTHWESTERN UNIVERSITY *Evanston, IL*
9/23 - present. Postdoctoral Scholar.
Advisor: Prof. Hai Zhou.

Education

NORTHWESTERN UNIVERSITY *Evanston, IL*
Ph.D. in Computer Engineering, August, 2023.
Dissertation Title: "Enhancing Safety and Robustness for Mission-critical Systems with Formal Methods".
Advisor: Prof. Hai Zhou.
Co-supervised by Prof. Yan Chen.

NORTHWESTERN UNIVERSITY *Evanston, IL*
M.S. in Computer Engineering, August, 2018.

SHANGHAI JIAO TONG UNIVERSITY *Shanghai, China*
B.E. in Electrical and Computer Engineering, August, 2016.
Advisor: Prof. Weikang Qian.

Research Interests

- Theoretical foundations of symbolic model checking.
- Formal verification in VLSI design automation.
- Hardware security and trust.
- Security analysis for AI and network systems.

Experience

META INC. *Menlo Park, CA*
06/20-09/20. Software Engineer Intern, Ads Ranking, AutoML infrastructure.

SYNOPSYS INC. *Mountain View, CA*
06/17-09/17. R&D Intern, Verification Group.
Director: Dr. William Hung.

NORTHWESTERN UNIVERSITY *Evanston, IL*
09/17-08/23. Research Assistant & Teaching Assistant, Department of Electrical and Computer Engineering, Department of Computer Science.

Honors and Rewards

- Pati Damoder and Soumitri Reddy Graduate Fellowship, 2021.
- 9th Place, ACM-ICPC Mid-Central USA Regional, 2017.
- Walter Murphy and Royal Cabell Graduate Fellowship, 2016.

Teaching

NORTHWESTERN UNIVERSITY *Evanston, IL*

Teaching Assistant.

- CE 357: Introduction to VLSI CAD, Winter 2023.
- CE 329: The Art of Multicore Concurrent Programming, Spring 2021.
- CE 203: Intro to Computer Engineering, Winter 2021, Spring 2020, Winter 2017.
- CS 496: Mathematical Foundations of Machine Learning, Winter 2020.
- CE 303: Advanced Digital Design, Fall 2020.
- EE/CE 334: Fundamentals of Blockchains and Decentralization, Fall 2018.
- GE 205: Engineering Analysis 1, Fall 2017.

Grader.

- GE 205: Engineering Analysis 1, Fall 2020.
- CE 356: Introduction to Formal Specification & Verification, Winter 2017.

Professional Activities

Member of Technical Program Committee, *Student Research Competition (SRC), IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, 2024.
Reviewer, *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, 2024.
Reviewer, *ACM Transactions on Design Automation of Electronic Systems (TODAES)*, 2024.
Reviewer, *IEEE Transactions on Information Forensics and Security (TIFS)*, 2021.

Peer-reviewed Conference Papers

[C13] Y. Li, G. Zhao, Y. He, H. Zhou. DE2: SAT-based Sequential Logic Decryption with a Functional Description. In *Design, Automation & Test in Europe Conference & Exhibition (DATE, CCF-B)*, 2025.

[C12] Y. He, J. Liu, L. Cai, Y. Li, T. Cui, H. Zhou. Multimodal Bayesian Networks for Automatic Skin Disease Diagnosis. In *IEEE International Conference on Bioinformatics and Biomedicine (BIBM, CCF-B)*, 2024.

[C11] Y. Li, G. Zhao, Y. He, H. Zhou. Evaluating the Security of Logic Locking on Deep Neural Networks. In *ACM/IEEE Design Automation Conference (DAC, CCF-A)*, 2024.

[C10] Y. Li, K. Hou, Y. He, Y. Chen, H. Zhou. Property Guided Secure Configuration Space Search. In *Information Security Conference (ISC, CCF-C)*, 2024.

[C9] Y. Li, G. Zhao, Y. He, H. Zhou. SE3: Sequential Equivalence Checking for Non-Cycle-Accurate Design Transformations. In *ACM/IEEE Design Automation Conference (DAC, CCF-A)*, 2023.

[C8] Y. Li, G. Zhao, Y. He, H. Zhou. ObfusLock: An Efficient Obfuscated Locking Framework for Circuit IP Protection. In *Design, Automation & Test in Europe Conference & Exhibition (DATE, CCF-B)*, 2023.

[C7] Y. He, L. Cai, T. Cui, Y. Li, H. Zhou. A Combination of DNN and BN for Automatic Skin Disease Diagnosis. In *International Symposium on Biomedical Imaging (ISBI)*, 2023.

[C6] K. Hou, Y. Li, Y. Yu, Y. Chen, H. Zhou. Discovering Emergency Call Pitfalls for Cellular Networks with Formal Methods. In *International Conference on Mobile Systems, Applications, and Services (MobiSys, CCF-B)*, 2021. (co-first author)

[C5] Y. Li, K. Hou, H. Zhou, Y. Chen. Network Protocol Safe Configuration Search in One Shot. In *Proceedings of the ACM SIGCOMM Conference Posters and Demos, CCF-A*, 2020.

[C4] Y. Yu, Y. Li, K. Hou, Y. Chen, H. Zhou, J. Yang. CellScope: Automatically Specifying and Verifying Cellular Network Protocols. In *Proceedings of the ACM SIGCOMM Conference Posters and Demos, CCF-A*, 2019.

[C3] Y. Shen, Y. Li, S. Kong, A. Rezaei, H. Zhou. SigAttack: New High-level SAT-based Attack on Logic Encryptions. In *Design, Automation & Test in Europe Conference & Exhibition (DATE, CCF-B)*, 2019.

[C2] A. Rezaei, Y. Li, Y. Shen, S. Kong, H. Zhou. CycSAT-Unresolvable Cyclic Logic Encryption Using Unreachable States. In *Asia and South Pacific Design Automation Conference (ASP-DAC, CCF-C)*, 2019.

[C1] Y. Shen, Y. Li, A. Rezaei, S. Kong, D. Dlott, H. Zhou. BeSAT: Behavioral SAT-based Attack on Cyclic Logic Encryption. In *Asia and South Pacific Design Automation Conference (ASP-DAC, CCF-C)*, 2019.

Peer-reviewed Journal Papers

[J2] X. Leng, K. Hou, Y. Chen, K. Bu, L. Song, Y. Li. A Lightweight Policy Enforcement System for Resource Protection and Management in the SDN-based Cloud. In *Computer Networks (CCF-B)*, 161, pp. 68-81, October 2019.

[J1] Y. Wu, Y. Li, X. Ge, Y. Gao, W. Qian. An Efficient Method for Calculating the Error Statistics of Block-based Approximate Adders. In *IEEE Transactions on Computers (TC, CCF-A)*, 68(1), pp. 21-38, January 2019. (co-first author)

Invited Talks

[T4] *6/24.* "Formal Verification for LLM-generated Designs", at *Fudan University.* Host: Prof. Fan Yang & Prof. Li Shang.

[T3] *6/21.* "Parameter Synthesis with Symbolic Model Checking", at *Shanghai University of Finance and Economics.* Host: Prof. Pinyan Lu.

[T2] *4/21.* "Security Aspects of Artificial Intelligence", at *California State University Long Beach.* Host: Prof. Amin Rezaei.

[T1] *12/20.* "Formal Verification for Deep Neural Networks", at *California State University Long Beach.* Host: Prof. Amin Rezaei.