

Jian Wang

Last update Oct-2025

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EDUCATION

Ph.D. candidate in Computer Science (Expected Jan 2026)

Nanyang Technological University (NTU), Singapore

Advisor: Prof. Li Yi

These: From Detection to Repair: A Framework for Reliable AI-Assisted Programming

Bachelor of Engineering in Software Engineering (2011)

Tianjin University, China

RESEARCH INTERESTS

My research interests lie at the intersection of **Software Engineering, Large Language Models, and Trustworthy AI Systems**. 1, Using LLM and retrieval-augmented methods as the core driving engine, I develop automated techniques for program repair and AI-generated code detection, applying them toward enhancing software reliability—from identifying untrusted AI-generated code to automatically fixing bugs in safety-critical systems. 2, I am particularly passionate about semantically grounded program understanding, moving beyond pattern matching to genuine reasoning about code behavior and runtime execution.

SELECTED PUBLICATIONS

2025

- **Jian Wang**, Xiaofei Xie, Qiang Hu, Shangqing Liu, Jiongchi Yu, Jiaolong Kong, and Yi Li. "Defects4C: Benchmarking Large Language Model Repair Capability with C/C++ Bugs." In Proceedings of the 40th IEEE/ACM International Conference on Automated Software Engineering (ASE), 2025.
- **Jian Wang**, Xiaofei Xie, Qiang Hu, Shangqing Liu, and Yi Li. "Do Code Semantics Help? A Comprehensive Study on Execution Trace-Based Information for Code Large Language Models." In Findings of the Association for Computational Linguistics: EMNLP, 2025.

2024

- **Jian Wang**, Shangqing Liu, Xiaofei Xie, and Yi Li. "An Empirical Study to Evaluate AIGC Detectors on Code Content." In Proceedings of the 39th IEEE/ACM International Conference on Automated Software Engineering (ASE), 2024, pp. 844-856.
- **Jian Wang**, Shangqing Liu, Xiaofei Xie, Jing Kai Siow, Kui Liu, and Yi Li. "RATCHET: Retrieval Augmented Transformer for Program Repair." In Proceedings of the 35th International Symposium on Software Reliability Engineering (ISSRE), 2024, pp. 427-438.
- Shangqing Liu, Wei Ma, **Jian Wang**, Xiaofei Xie, Ruitao Feng, and Yang Liu. "Enhancing Code Vulnerability Detection via Vulnerability-Preserving Data Augmentation." In Proceedings of the ACM SIGPLAN/SIGBED International Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES), 2024, pp. 166-177.

2023

- Tianlin Li, Xiaofei Xie, **Jian Wang**, Qing Guo, Aishan Liu, Lei Ma, and Yang Liu. "Faire: Repairing Fairness of Neural Networks via Neuron Condition Synthesis." ACM Transactions on Software Engineering and Methodology (TOSEM), vol. 33, no. 1, pp. 1-24, 2023.

2022

- Xiaofei Xie, Tianlin Li, **Jian Wang**, Lei Ma, Qing Guo, Felix Juefei-Xu, and Yang Liu. "NPC: Neuron Path Coverage via Characterizing Decision Logic of Deep Neural Networks." ACM Transactions on Software Engineering and Methodology (TOSEM), vol. 31, no. 3, article 47, 2022.

2021

- Xiaofei Xie, Wenbo Guo, Lei Ma, Wei Le, **Jian Wang**, Linjun Zhou, Yang Liu, and Xinyu Xing. "Automatic RNN Repair via Model-based Analysis." In Proceedings of the 38th International Conference on Machine Learning (ICML), 2021.

2020

- Qing Guo, Felix Juefei-Xu, Xiaofei Xie, Lei Ma, **Jian Wang**, Bing Yu, Wei Feng, and Yang Liu. "Watch Out! Motion is Blurring the Vision of Your Deep Neural Networks." In Advances in Neural Information Processing Systems (NeurIPS), 2020.
- Run Wang, Felix Juefei-Xu, Lei Ma, Xiaofei Xie, Yihao Huang, **Jian Wang**, and Yang Liu. "FakeSpotter: A Simple yet Robust Baseline for Spotting AI-Synthesized Fake Faces." In Proceedings of the 29th International Joint Conference on Artificial Intelligence (IJCAI), 2020.

PROFESSIONAL EXPERIENCE

- Research Assistant | **Singapore Management University (SMU)** August 2023 – Present
Focus: Code Intelligence and Code LLM security in Ph.D. life
- Research Assistant | **Nanyang Technological University (NTU)** December 2019 – August 2023
Focus: Deep Learning and LLM security in Ph.D. life
- Researcher | **Xiaomi AI Lab**, Beijing, China 2017 – December 2019
Trained portrait mode background segmentation by deep learning GCN/GAN
- Backend Engineer | **58 Inc.**, Beijing, China 2011 – 2017
Leader of mobile web-page in user from mobile-browser (15m MAU), 7-people team, one of core revenue; Core developer of middleware supporting API calling from mobile apps (35m MAU); Core maintainer of customized Nginx by adapting Lua module.

HONORS & AWARDS

3rd Prize Winner - AI Singapore Trusted Media Challenge (2022) Team

A worldwide competition with 470 teams across Asia Pacific, North America, Europe, Africa, and Oceania. Our team developed a hybrid AI model to detect manipulated audiovisual media—including deepfake faces, synthetic audio, and lip-sync inconsistencies—using pan-Asian datasets.

ACADEMIC SERVICE

Registration Chair for four CCF-C conferences: ICECCS 2025, ATVA 2023, APSEC 2020, and Internetwork 2020.