NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

Jian Wang
Ph.D. Candidate
50 Nanyang Ave, Block N 4
Singapore 639798
+65 85240603
Jian004@e.ntu.edu.sg
https://wj2ai.com

Faculty Search Committee
Department, University

Dear Faculty Search Committee,

I am writing to express my interest in the tenure-track Assistant Professor position within your department. I am a Ph.D. candidate in the College of Computing and Data Science at Nanyang Technological University, Singapore, under the guidance of Professor Li Yi. I expect to receive my Ph.D. in January 2026 and am currently on the job market.

My research interests lie at the intersection of Software Engineering, Large Language Models, and Trustworthy AI Systems. Using deep learning 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. I am particularly passionate about semantically-grounded program understanding, moving beyond pattern matching to genuine reasoning about code behavior and runtime execution.

I conducted the first comprehensive large-scale study of AI-generated code detection, evaluating modern detectors on millions of code and natural-language samples, revealing critical gaps to identify AIGC-code and proposing fine-tuning strategies that substantially improve detection reliability and compliance auditing (ASE 2024). I created Defects4C, the first large-scale, executable benchmark for C/C++ automated program repair, curated from 9M real-world commits, which provides hundreds of buggy and vulnerable functions with test harnesses and enables reproducible, bootst rigorous evaluation in software engineering's reliability and safety scenario (ASE 2025). I designed RATCHET, a dual deep learning framework that couples lightweight BiLSTM-based fault localization with retrieval-augmented transformer patch generation, and demonstrated significantly improved fault localization accuracy and strong repair-rates without requiring failing tests or bug reports (ISSRE 2024). I have also investigated semantic enhancement for code LLMs by injecting execution traces into training and inference to push models toward genuine behavioral reasoning rather than surface pattern matching, revealing surprising limitations in current methods and offering guidance for future post-training approaches (Findings of EMNLP 2025). Beyond repair and reliability, my work has also contributed to AI security, including adversarial methods for deepfake detection (IJCAI 2020, NeurIPS 2020) and techniques for repairing recurrent neural networks under adversarial perturbations (ICML 2021).

My expertise aligns well with the job posting. I am eager to collaborate with colleagues in the department and across the university, through broad research initiatives, and contribute to expand the department's influence in automated software engineering, trustworthy AI, and code intelligence.

My dedication to teaching and mentoring aligns seamlessly with the department's goals. With my industry experience at Xiaomi AI Lab and 58.com, combined with my research background, I am prepared to contribute to existing courses in software engineering, machine learning, and program analysis. I am excited to (co-)design new courses on LLM-based Software Engineering and Automated Program Repair with colleagues.

I am very excited about this opportunity, and I am confident that my academic training and interdisciplinary research experience align well with the requirements of this role, making me an ideal candidate for this position. I have enclosed all required materials in the application. Thank you for your consideration, and I look forward to hearing from you!

Yours sincerely,

Jian Wang