

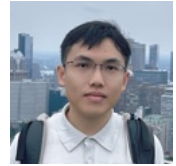
WeiQi Lu, Ph.D. Candidate

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🌐 williamlus.github.io

🔍 Google Scholar
📄 LeetCode

🐙 GitHub

🌐 LinkedIn



About Me

- 📖 I am WeiQi (William) Lu, a fourth-year Ph.D. candidate in CASTLE Lab at The Hong Kong University of Science and Technology (HKUST), supervised by Prof. S. C. Cheung (IEEE Fellow, Chair Professor) and Prof. Yongqiang Tian (Monash University), and supported by the Hong Kong PhD Fellowship Scheme (HKPFS). Prior to this, I earned my B.Sc. in Computer Science and Mathematics at HKUST.
- 📖 My research focuses on **software engineering**, particularly the **automated testing of graphics systems**. I am interested in combining mathematical modeling, theory and algorithms, and engineering practice to improve software quality and reliability. Additionally, I enjoy exploring mathematics and machine learning, with a specific interest in artificial intelligence for software engineering (**AI4SE**) and large language models for software engineering (**LLM4SE**).
- 📖 I am also interested in solving algorithmic problems on LeetCode using C++ and Python, with 1,470+ solved problems, 220+ hard problems, and a global rank under 8,400.

Education

- 2023.09 – Present 📖 **The Hong Kong University of Science and Technology**
Ph.D. in Computer Science and Engineering
GPA: 4.050/4.30
- 2019.09 – 2023.07 📖 **The Hong Kong University of Science and Technology**
B.Sc. in Computer Science and Mathematics
First Class Honors · GPA: 4.109/4.30 · 2023 Academic Achievement Medal · Top 2%
- 2022.01 – 2022.05 📖 **Georgia Institute of Technology**
Undergraduate Exchange Program
GPA: 4.00/4.00
- 2021.06 – 2021.08 📖 **University of California, Berkeley**
Berkeley Summer Sessions
GPA: 4.00/4.00

Research Publications

- 1 📖 **W. Lu** and Y. Tian, “Detecting rendering bugs in imperative data visualization libraries via equivalent mutations,” *arXiv preprint arXiv:2607.12363*, 2026, **First automated testing work for visualization libraries; successfully found 47 new bugs.**
- 2 📖 **W. Lu**, Y. Tian, X. Zhong, *et al.*, “An empirical study of bugs in data visualization libraries,” *Proceedings of the ACM on Software Engineering*, vol. 2, no. FSE, pp. 2075–2098, 2025, **First systematic study of bugs in visualization libraries; Published at CCF-A venue (FSE).**
- 3 📖 H. Tian, **W. Lu**, T. O. Li, *et al.*, “Is chatgpt the ultimate programming assistant—how far is it?” *arXiv preprint arXiv:2304.11938*, 2023, **Early benchmark study on LLM coding capability; 400+ citations.**

Projects

- **Automated Testing of Data Visualization Libraries** | arXiv.
Engineered **VIZDETOUR**, an automated testing framework for stateful systems driven by novel **endpoint-preserving mutations** and automated visual oracles. Evaluated the framework across major visualization libraries (**matplotlib**, **bokeh**, and **plotly**) to expose deep state-management vulnerabilities. Discovered 47 previously unknown bugs, of which 39 were confirmed and 18 were fixed.
- **JoJo Manga Style Transfer Model** | Report, Demo.
Engineered and trained a generative image-to-image translation model using CartoonGAN to stylize real-world video frames into the distinctive high-contrast art style of *JoJo's Bizarre Adventure*. Pre-processed and aligned 18,000+ CelebA human face photos with 4,000 face-cropped anime frames, applying Canny edge-detection and Gaussian smoothing for edge-promoting adversarial loss.
- **Multiplayer Dou Dizhu (Landlord) Game** | GitHub.
Architected a full-stack, multi-player Dou Dizhu game in C++ using Qt, featuring integrated GUI elements, automated AI players, and real-time multiplayer support via TCP sockets. Implemented rule-based AI heuristics for strategic hand evaluation, alongside an event-driven user interface complete with dynamic card distribution effects, hint generation, and audio feedback.

Technical Skills

Programming Languages	■ C++, Python, Java, SQL, R, JavaScript, HTML5, Bash
Libraries & Frameworks	■ NumPy, Pandas, PyTorch, Pytest, Soot, STL, Qt, JavaFX
Domains	■ Data Structures & Algorithms, Static/Dynamic Program Analysis, Test Automation, Machine Learning

Teaching and Service

2025 Spring, 2026 Spring	■ COMP5111 Fundamentals of Software Testing and Analysis.
2024 Spring	■ COMP2211 Exploring Artificial Intelligence.
2025 – 2026	■ Reviewer for top-tier (CCF-A / CORE A*) software engineering venues, including ICSE 2026 , FSE 2026 , ASE 2025–2026 , and ISSTA 2025–2026 .

Honors and Awards

2026	■ #10 at HKUST, Hong Kong Joint Collegiate Programming Contest (HKJCPC 2026).
2025	■ ACM SIGSOFT CAPS Award.
2023 – 2027	■ Hong Kong PhD Fellowship Award (Hong Kong's top PhD scholarship).
2023	■ HKUST RedBird PhD Award.
	■ HKUST Academic Achievement Medal (highest academic honor at graduation).
2022	■ The 17th Epsilon Fund Honorable Mention (outstanding mathematical scholarship).
	■ Tin Ka Ping Scholarship (Exchange).
	■ HKUST Alumni Endowment Fund High Flyers Program Scholarship.
2020 – 2023	■ Chiaphua Industries Limited Scholarship for Chinese Undergraduate Students.
	■ University's Scholarship Scheme for Continuing Undergraduate Students.
2019 – 2023	■ Dean's List for the School of Engineering.