

Hao Wang

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EDUCATION

Peking University

Degree Anticipated Jun 2024

Bachelor of Science in Computer Science (Turing Class)

Beijing, China

- **Core Courses:** Mathematical Analysis (93), Advanced Algebra (92), Introduction to Computation (100), Mathematical Foundations for the Information Age (99), Introduction to Cryptography (98)
- **GPA:** Overall: **3.8 / 4.0** Ranking: **Top 20%** in the department

RESEARCH EXPERIENCE

Automated Android UI Test Generation using LLM

Apr. 2023 – Present

Advisor: Professor [Tao Xie](#) at Peking University

- Proposed using LLM to generate a test case from a test intent
- Designed tool that exploits LLM's ability to imagine to generate test cases
- Achieved best generation accuracy comparing to previous tools

Fuzzing for Configuration Testing

Jul. 2022 – Present

Advisor: Professor [Darko Marinov](#) and [Tianyin Xu](#) at UIUC

Remote

- Designed new tools for fuzzing tests to detect misconfigurations
- Proposed new intuitions and techniques in designing fuzzing tools
- Successfully found 100+ bugs on several popular projects like Hadoop, Hive, HBase, etc.
- Achieved the highest coverage and #bugs found on large complex Java projects

Quantum Algorithms for Optimization

Mar. 2021 – Present

Advisor: Professor [Tongyang Li](#) at Peking University

- Proved a lower bound on convex functions regarding quantum optimization algorithms using ball oracles
- Proposed using quantum SDEs to derived optimization algorithms similar to classical ones

Automated Android UI Testing with MAB

Mar. 2022 – Jan. 2023

Advisor: Professor [Tao Xie](#) at Peking University

- Proposed reinforcement-learning-based new ideas for automated UI testing
- Designed tools that dynamically adjust the abstraction of UI states on different apps
- Achieved better coverage results on large complex commercial apps

Random Test Prioritization

Sep. 2021 – Apr. 2022

Advisor: Professor [Darko Marinov](#) and [Wing Lam](#) at UIUC

Remote

- Proposed new algorithms to calculate the probability mass function for random orders of tests in a test suite
- Derived formulas and bounds regarding expectation of various metrics
- Proved properties of the probability mass function for various metrics
- Revealed **8 potential bugs** in boxplots used in previous papers

Regression Test Prioritization

Aug. 2021 – Present

Advisor: Professor [Darko Marinov](#) and [Wing Lam](#) at UIUC

Remote

- Identified impractical assumptions made in prior research
- Designed new techniques for Regression Test Prioritization
- Proposed new metrics in the evaluation of Test Prioritization techniques

Combating Flaky Tests

Aug. 2021 – Mar. 2022

Advisor: Professor Darko Marinov and Wing Lam at UIUC

Remote

- Updated the IDoFT dataset of flaky tests by identifying several moved or fixed flaky tests
- Submitted **seven PRs** to multiple open-source projects
- Fixed **over ten flaky tests**

PUBLICATION

- *ConfFuzz: Parameter-Aware Configuration Fuzzing* *Under review*
author list omitted
- *LLM for Dreaming but Not Doing: Automated Feature-based UI Testing with LLM* *Under review*
author list omitted
- *Hierarchy-Aware Regression Test Prioritization* *In Preparation for Resubmission*
author list omitted
- Near-Optimal Quantum Algorithm for Minimizing the Maximal Loss *Accepted for poster at ICLR 2024*
Hao Wang, Chenyi Zhang, Tongyang Li
- Quantum Langevin Dynamics for Optimization *Preprint Available on Arxiv*
Zherui Chen, Yuchen Lu, **Hao Wang**, Yizhou Liu, Tongyang Li
- BADGE: Prioritizing UI Events with Hierarchical Multi-Armed Bandits for Automated UI Testing *Published at ICSE 2023*
Dezhi Ran, **Hao Wang**, Wenyu Wang, Tao Xie
- A Theoretical Analysis of Random Regression Test Prioritization *Published at TACAS 2022*
Pu Yi, **Hao Wang**, Tao Xie, Darko Marinov, Wing Lam

AWARDS

- Shenzhen Stock Exchange Scholarship** Oct. 2023
Peking University
- Award for Excellent Research** Oct. 2023
Peking University
- Huatai Securities Scholarship** Oct. 2022
Peking University
- Merit Student** Oct. 2022
Peking University
- Turing Class John Hopcroft Scholarship** Oct. 2021
Peking University
- Freshmen Scholarship** Oct. 2020
Peking University
Third Prize
- Chinese Physics Olympiad (Province)** Sep. 2019
Chinese Physics Society
First Prize
- National Olympiad of Informatics (Province)** Oct. 2018
China Computer Federation
First Prize

SKILLS

Programming Languages : Python, Java, C, C++

Proficiency in English Fluency in professional communication and writing.

Standard test scores:

- GRE: 337 (Vocabulary: 167, Reasoning: 170, Writing: 4.0)
- TOEFL: 115 (Reading: 30, Listening: 30, Speaking: 27, Writing: 28)
- IELTS: 8.0 (Reading: 9.0, Listening: 9.0, Speaking: 7.0, Writing: 7.0)