Xintong Zhou

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Education

University of Waterloo, Canada *Jan 2024 – Now*

Ph.D. in Computer Science (Jan 2025 – Now)
MMath in Computer Science (Jan 2024 – Dec 2024, transferred to Ph.D. program without conferral)

- **Advisor:** Prof. Chengnian Sun
- **Research Interests:** Software Engineering, Automated Software Testing and Debugging

Beihang University, China *Sept 2018 – June 2023*

B.Eng. in Software Engineering

- **GPA:** 89/100
- **Thesis:** Optimizations for SMT-based Finite Model Finding

Publications & Preprints

[1] Xintong Zhou, Zhenyang Xu, Mengxiao Zhang, Yongqiang Tian, Chengnian Sun. **WDD: Weighted Delta Debugging.** In *Proceedings of the 47th International Conference on Software Engineering (ICSE), 2025.*

[2] Xintong Zhou, Zhenyang Xu, Chengnian Sun. **Validating Mixed-Integer Programming Solvers.** In *Proceedings of the 48th International Conference on Software Engineering (ICSE), 2026.*

[3] Zhenyang Xu, Hongxu Xu, Yongqiang Tian, Xintong Zhou, Chengnian Sun. **LPO: Discovering Missed Peephole Optimizations with Large Language Models**. In Proceedings of the *31st International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), 2026.*

[4] Yuanmin Xie, Zhenyang Xu, Yongqiang Tian, Min Zhou, Xintong Zhou, Chengnian Sun. **Kitten: A Simple Yet Effective Baseline for Evaluating LLM-Based Compiler Testing Techniques.** In *Proceedings of ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA Tool), 2025.*

[5] Xintong Zhou, Zhenyang Xu, Chengnian Sun. **On the Feasibility of Deduplicating Compiler Bugs with Bisection.***(arXiv preprint, 2025).*

Experience

Research Assistant *Waterloo, Canada*
University of Waterloo, Supervisor: Prof. Chengnian Sun *Jan 2024 - Now*

▷ **Weighted Delta Debugging (WDD)** Tool

- Proposed the novel concept of *WDD*, then designed and implemented two algorithms, *Wddmin* and *WProbDD*.
- Integrated the algorithms into HDD and Perses, achieving up to 50% speedup and 13% smaller reduction results compared to the state-of-the-art techniques.

▷ **Testing Mixed-Integer Programming (MIP) Solvers**

- Designed and developed the first fuzzing framework specialized for MIP solvers.
- Detected and reported 60+ confirmed bugs in five major MIP solvers, with 50+ fixed.

▷ **Bisection-based Compiler Bug Deduplication**

- Conducted an systematic study on the feasibility of deduplicating compiler bugs using bisection on 1000+ bug-triggering programs form GCC and LLVM.
- Proposed a hybrid deduplication approach combining bisection results with bug-triggering optimization options, significantly outperforming prior analysis-based methods while showing greater simplicity and generalizability.

Research Assistant *Waterloo, Canada*
University of Waterloo, Supervisor: Prof. Nancy Day *Jul 2022 - Nov 2022*

▷ **Optimization for SMT-based Finite Model Finding**

- Extended the tool to support setting non-exact bounds for sorts in multi-sorted first-order logic formulas.

- Developed algorithms to improve the efficiency of finite model finding based on sort monotonicity.

Miscellaneous Experience

Academic Services:

- **Sub-Reviewer:** ASE'25, FSE'25, ISSTA'25, ICSE'26, OOPSLA'26
- **Journal Reviewer:** TOSEM
- **Student Volunteer:** ICSE'25

Teaching Assistant:

- **CS 241**(Foundations of Sequential Programs)
- **CS 115** (Introduction to Computer Science 1)
- **CS 116** (Introduction to Computer Science 2)

Awards

- ACM SIGSOFT CAPS for attending ICSE'25, 2025
- UWaterloo International Doctoral Student Award, 2025
- UWaterloo Graduate Research Scholarship, 2024
- Mitacs Globalink Graduate Fellowship, 2023
- Mitacs Globalink Research Internship Award, 2022

Skills

- **Programming Languages:** Python, C/C++, Java, Kotlin, Bash
- **Frameworks:** Vue, Django, ANTLR, Bazel
- **Machine Learning:** PyTorch, SGLang
- **Development Tools:** Git, Docker, Linux