Ming Zhong

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Education

The Chinese University of Hong Kong, Hong Kong SAR — Aug.2025 – Now

Ph.D Student. in Computer Science and Engineering

- U.S. News 2024 Global Computer Science Rankings: 7
- Research Topic: Quantum Compilers and Software Engineering.

Institute of Computing Technology, Chinese Academy of Sciences, China — Sep.2021 – Jun.2024

M.S. in Computer System and Architecture

- U.S. News 2024 Global Computer Science Rankings: 13
- GPA: 91.34 / 100, Rank: 2 / 344 (Top 1%)
- Research Topic: LLMs for Compilers and Software Engineering.

Beijing University of Posts and Telecommunications, China — Sep.2017 – Jun.2021

B.S. in Computer Science and Technology

- U.S. News 2024 Global Computer Science Rankings: 46
- GPA: 91.29 / 100, Rank: 10 / 383 (Top 3%)
- Research Topic: Rule-Based Construction of Compiler Backends.

Projects

I have led some projects on leveraging LLMs for compiler backend construction, focusing on both fundamental infrastructures and domain-specific methodologies.

Domain-Specific LLM Infrastructures for Compiler Backend Development.

- An open-source, large-scale, and comprehensive compiler backend code dataset, ComBack(++) [1,4].
- Two open-source LLMs tailored for compiler backend development tasks, BePilot-1.5B and 7B [1].

Automated Compiler Backend Generation and Testing Methodologies.

- A compiler backend auto-generation method based on template synthesis and feature selection [2].
- A RAG method for compiler backend generation that incorporates graph representation learning.
- A prediction approach for compiler backend correctness without running regression tests [5].

Generalizability to Various System Software.

- A study on generalizing the proposed methodologies to different types of system software [3].

I have also participated in several compiler-related projects, such as LLMs for compiler optimization [6,7], recognition of compiler optimization options [9], and rule-based compiler constructions [10].

Full Publications

- **[1]** *M. Zhong*, X. Sun, F. Lv, L. Wang, H. Geng, L. Qiu, H. Cui, X. Feng.
  BePilot: An AI Programming Assistant for Compiler Backend Development.
  TOSEM 2025; CORE-A*.
- **[2]** *M. Zhong*, F. Lv, L. Wang, L. Qiu, Y. Wang, Y. Liu, H. Cui, X. Feng, J. Xue.
  VEGA: Automatically Generating Compiler Backends Using a Pre-Trained Transformer Model.
  CGO 2025; CORE-A.
- **[3]** *M. Zhong*, F. Lv, L. Wang, L. Qiu, H. Geng, H. Cui, X. Feng.
  Boosting Large Language Models for System Software Retargeting: A Preliminary Study.
  SANER 2025; CORE-A.
- **[4]** *M. Zhong*, F. Lv, L. Wang, H. Geng, L. Qiu, H. Cui, X. Feng.
  ComBack: A Versatile Dataset for Enhancing Compiler Backend Development Efficiency.
  NeurIPS 2024; CORE-A*.
- **[5]** *M. Zhong*, X. Sun. (Equal Contribution)
  Towards Function-Level Correctness Assessment of System Software with LLMs: A Case Study.
  APSEC 2025; CORE-C.
- **[6]** Z. Yang, L. Qiu, F. Lv, *M. Zhong*, Z. Chai, H. Zhou, H. Cui, X. Feng.
  IR-OptSet: An Optimization-Sensitive Dataset for Advancing LLM-Based IR Optimizer.
  NeurIPS 2025; CORE-A*.
- **[7]** L. Qiu, F. Lv, *M. Zhong*, L. Wang, X. Feng.
  RELOPT: A Retriever-Augmented Framework for Optimizing Code with Long-range Dependencies.
  ICONIP 2025; CORE-B.
- **[8]** X. Sun, *M. Zhong*, L. Wang, F. Lv, X. He.
  Automating Target Description Processing for Efficient Compiler Backend Development.
  ICOECAI 2025.
- **[9]** H. Geng, *M. Zhong*, P. Zhang, F. Lv, X. Feng.
  OPTango: Multi-central Representation Learning against Innumerable Compiler Optimization for Binary Diffing.
  ISSRE 2023; CORE-A.
- **[10]** H. Geng, F. Lv, *M. Zhong*, H. Cui, J. Xue, X. Feng.
  Automatic Target Description File Generation.
  JCST 2023; CORE-B.

Awards

- **[1] National Scholarship** *(Annual Rank 1st in the department of CS in BUPT)* Oct. 2020
- **[2]** First Class Academic Scholarship in Chinese Academy of Sciences Sep. 2022
- **[3]** Distinguished Bachelor Thesis in Beijing *(Top 1% in Beijing)* Dec. 2021

Working Experience

Institute of Computing Technology, Chinese Academy of Sciences, China Sep.2024 – May.2025
Research Assistant in AI for Compilers and Software Engineering.

Miscellaneous

- English: **IELTS 8.0 (Listening 9.0, Reading 8.5, Writing 7.5, Speaking 6.0)**