Tianyufei ZHOU

+86 13532216153 czkxiaokeai@gmail.com https://ztyf.github.io/

EDUCATION

MPhil in Data and Systems Engineering **Jan. 2026 – Present**
Faculty of Engineering, The University of Hong Kong (HKU) Hong Kong, China

B.Eng. in Computer Science (GPA: 3.8/4.0) **Sep. 2021 – Jun. 2025**
School of Computer Science and Engineering, Sun Yat-sen University Guangzhou, China

EXPERIENCE

Research Assistant **Aug. 2025 – Present**
NAISS Lab, The University of Hong Kong Hong Kong, China

Project: *Synthetic ML Job Trace Generation*

- Developing generative pipelines for synthetic ML job traces, and systematically evaluating their fidelity and downstream utility through task-driven assessments.

Research Intern **May. 2024 – Jun. 2025**
NetLab, Sun Yat-sen University Guangzhou, China

Project: *Application Support Environment and Development Framework for Heterogeneous Systems*

- Developed TaskFlare, a unified scheduling framework combining Parsl and Legion for DAG-based task scheduling and resource management in heterogeneous systems. Leveraging Parsl's user-friendly interfaces to support cross-domain applications and improve performance through fine-grained optimization.
- Proposed an algorithm in Legion that decouples logical and physical resources, enabling dynamic allocation, real-time system-adaptive optimization, and cross-language compatibility.
- Evaluated TaskFlare on parallel workloads like AI training, achieving improved scalability and performance over existing frameworks. Led software copyright application for the developed framework.

Course Project: *Compiler Pipeline Construction* **Feb. 2024 – Jun. 2024**
Designed and implemented a full compiler pipeline, including:

- **Lexical Analyzer:** Built a lexer using Bison and ANTLR to convert source code into token streams.
- **Syntax Parser:** Parsed token streams into abstract syntax trees (ASTs), applied semantic analysis to build abstract semantic graphs (ASGs), and serialized to JSON for debugging and evaluation.
- **Intermediate Code Generator:** Extended the pipeline to generate intermediate representation(IR).
- **Target Code Optimization:** Implemented custom optimization passes to analyze and transform IR, improving performance while ensuring correctness.

PUBLICATION

- **Zhou, T.**, Yang, Y., Yang, C., Xiao, L., Liu, X., & Hu, M. (2025, May). TaskFlare: A heterogeneity-aware unified scheduling framework for diverse domain-specific applications in supercomputing environments. In *International Conference on High Performance and Smart Computing*. IEEE. **(Best Paper Award)**
- Yang, Y., Xiao, L., **Zhou, T.**, Yang, C., Liu, X., & Hu, M. (2025, May). DRL-MOSHRS: A deep reinforcement learning approach for multi-objective scheduling in heterogeneous HPC systems. In *International Conference on High Performance and Smart Computing*. IEEE.
- Yang, Y., **Zhou, T.**, Xiao, L., Yang, C., Liu, X., Hu, M., & Wu, D. (2024, December). NAAM: Enhancing Automatic Task Mapping Efficiency on NUMA Machines. In *International Conference on Parallel and Distributed Computing: Applications and Technologies* (pp. 441-453). Springer.

AWARDS

- **Bronze Award**, Guangdong Provincial College Students Programming Contest (CCPC 2022) **2022**
- **Provincial Second Prize**, CSP 2019 Programming Contest (Advanced Group) **2019**

- **Third Prize of Excellence Scholarship**, Sun Yat-sen University **2023 – 2024**
- **Special Scholarship for Academic Competitions**, Sun Yat-sen University **2021 – 2022**

SKILLS

- **TOEFL:** 98
- **Languages:** C/C++, Python, SQL
- **Tools:** Git, CMake, Bash
- **Platforms:** Linux, Conda, SSH

RESEARCH INTERESTS

ML Systems, HPC, AI-driven Scheduling, System Optimization