# Zhouruixing Zhu (朱周睿星)

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## Research Interests

My research focuses on LLM-driven software engineering, with a specific interest in reliability management for microservice systems.

## Education

**Ph.D. in Computer Science** — Sep 2024 – Present
The Chinese University of Hong Kong, Shenzhen; Supervisor: Prof. Pinjia He — Shenzhen, China

**M.Phil. in Computer and Information Engineering** — Aug 2022 – Jul 2024
The Chinese University of Hong Kong, Shenzhen; Supervisor: Prof. Pinjia He — Shenzhen, China

Highlighted Courses: Stochastic Process, Data Analytics, Cloud Computing.

**B.Sc. in Computer Science and Technology** — Aug 2016 – Jun 2020
Nanjing University of Aeronautics and Astronautics — Nanjing, China

Highlighted Courses: Formal Language and Automata Theory, Operating System, Database Principle, Principle and Application of Software Engineering, Computer Network.

## Publications

[1] **Z. Zhu**, Z. Jiang, T. Yang, and P. He, "UniSage: A Unified and Diagnosis-Driven Sampling Framework for Microservice Systems," *IEEE/ACM International Conference on Software Engineering (ICSE)*, 2027. Direct accept (119/2375, 5.01%). [CCF-A]

[2] **Z. Zhu**, C. Lee, X. Tang, and P. He, "HeMiRCA: Fine-Grained Root Cause Analysis for Microservices with Heterogeneous Data Sources," *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 2024. [CCF-A]

[3] **Z. Zhu**, Y. Yang, A. Fang, Y. Wang, and P. He, "Metis: Efficient and Interpretable Troubleshooting for Microservice Systems using Multi-modal Data," *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 2026. Under major revision. [CCF-A]

[4] J. Xu*, **Z. Zhu***, F. Yu, Y. Wu, B. Wang, and P. He, "InsLog: An All-in-One Logging Approach with Instruction Fine-tuning," *IEEE Transactions on Software Engineering (TSE)*, 2026. Under review.

[5] J. Xu, Q. Fu, **Z. Zhu**, Y. Cheng, Z. Li, Y. Ma, and P. He, "Hue: A User-Adaptive Parser for Hybrid Logs," *ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*, 2023, pp. 413–424. [CCF-A]

[6] Y. Wang, **Z. Zhu**, Q. Fu, Y. Ma, and P. He, "MRCA: Metric-level Root Cause Analysis for Microservices via Multi-Modal Data," *International Conference on Automated Software Engineering (ASE)*, 2024. [CCF-A]

[7] C. Lee, **Z. Zhu**, T. Yang, Y. Su, P. He, and M. R. Lyu, "SPES: Towards Optimizing Performance-Resource Trade-Off for Serverless Functions," *IEEE 40th International Conference on Data Engineering (ICDE)*, 2024. [CCF-A]

[8] C. Lee, C. S. Xia, L. Yang, J. Huang, **Z. Zhu**, L. Zhang, and M. R. Lyu, "UniDebugger: Hierarchical Multi-Agent Framework for Unified Software Debugging," *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2025. [CCF-B]

[9] B. Tan, J. Xu, **Z. Zhu**, and P. He, "AL-Bench: A Benchmark for Automatic Logging," *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 2026. [CCF-A]

[10] S. Zhang, **Z. Zhu**, W. Yang, and P. He, "LogRover: Scaling CI Failure Diagnosis in AI Infrastructure via Topology-Aware and Adaptive Reasoning," under review for *IEEE/ACM International Conference on Software Engineering (ICSE)*, 2027.

* Equal contribution.

## Professional Experience

**ByteDance** Shenzhen, China
LLM Application Algorithm Intern May 2026 – Present

- **Agentic Root Cause Attribution:** Designed and developed an LLM-agent-based attribution system for production deployment anomalies, jointly reasoning over alerts, code changes, traces, and runtime logs to construct evidence chains and identify code-level root causes.
- **Agent & Tool Orchestration:** Built specialized analysis agents and tool-use workflows for heterogeneous anomaly signals, enabling structured evidence collection, cross-modal correlation, causal reasoning, and automated attribution.

**Huawei Technologies Co., Ltd.** Shenzhen, China
Research Intern Jul 2025 – May 2026

- **LLM-based Diagnosis Framework (Industry–Academia Collaboration):** Led a project applying LLMs to improve the reliability of large-scale AI infrastructure.
- **Fault Diagnosis & RCA:** Developed an intelligent diagnosis and root cause analysis framework for massive CI/test logs and failure cases across enterprise software and AI training frameworks.

**Huawei Technologies Co., Ltd.** Shenzhen, China
Research Intern Jul 2023 – May 2024

- **Log Statement Generation:** Proposed an automated logging approach that adapts to diverse user needs and scenarios through instruction fine-tuning.
- **Microservice Root Cause Analysis:** Proposed a fine-grained RCA approach that localizes root causes at the metric level to help SREs resolve anomalies in large-scale microservice systems.

**ZTE Corporation** Nanjing, China
Software Testing Engineer & DevOps Engineer (Full-time) Jul 2020 – Jul 2022

- **Testing & Automation:** Led end-to-end testing from requirements analysis to defect tracking, and designed an automated testing framework to improve testing efficiency.
- **Infrastructure & CI:** Maintained test environments and deployment infrastructure and managed continuous integration processes to improve system reliability.

## Academic Service

**Program Committee:** ICSE 2026 (Shadow PC, Research Track); ASE 2024 (Industry Track).

**Journal Reviewer:** ACM Transactions on Software Engineering and Methodology (TOSEM); IEEE Transactions on Software Engineering (TSE).

**Sub-Reviewer:** ICSE 2024–2026; FSE 2023–2025, 2027; OOPSLA 2025; ASE 2024–2025; ISSTA 2024–2025; ISSRE 2023; APSEC 2024.

**Teaching Assistant:** AIR5064/CSC4130/CSC5056 Human-Machine Interaction (Fall 2026); DDA2001 Introduction to Data Science (Spring 2025); CSC1001 Introduction to Computer Science: Programming Methodology (Fall 2025).

## Technical Skills

**Programming:** Python, Go, C/C++.

**AI:** PyTorch, Transformers, LLM Agents, RAG, SFT.

**Cloud & Systems:** Kubernetes, Docker, OpenTelemetry, CI/CD.

## Awards & Honors

- Postgraduate Studentship – The Chinese University of Hong Kong, Shenzhen (2024 – Present).
- Outstanding Student Scholarship – Nanjing University of Aeronautics and Astronautics (2019).
- Undergraduate Academic Scholarship – Nanjing University of Aeronautics and Astronautics (2017 – 2019).
- Top Ten Sports Star – Nanjing University of Aeronautics and Astronautics (2019).