

Zhi CHEN (陈智)

PH.D. STUDENT · INTELLIGENT SOFTWARE ENGINEERING RESEARCHER

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Summary

With a consistent B.Eng., M.Sc., and Ph.D. focus in Software Engineering, I have built strong foundations and gained two years of full-time industry experience as a software engineer. Currently a PhD student, I focus on research of practical Code AI systems, including Large Code Models and Software Engineering Code Agents, bridging academic insights with real-world applications.

Education

Singapore Management University

PH.D. IN COMPUTER SCIENCE

Singapore

Aug. 2023 – Present

- Centre for Research on Intelligent Software Engineering (RISE Centre)
- Advisor: Prof. Lingxiao Jiang ([Homepage](#))
- Research Area: AI-Driven Software Development, Software Engineering Agents, Large Code Models

Singapore Management University

M.SC. IN COMPUTING (TRACK: SOFTWARE & CYBER-PHYSICAL SYSTEMS)

Singapore

Aug. 2021 – Aug. 2022

- School of Computing and Information Systems
- GPA: 3.80/4

Hefei University of Technology

B.ENG. IN SOFTWARE ENGINEERING

China

Sep. 2016 – Jul. 2020

- School of Software
- Grade: 85.07/100

National Yunlin University of Science & Technology

EXCHANGE STUDENT

Taiwan

Feb. 2018 – Jun. 2018

- Department of Computer Science and Information Engineering
- GPA: 3.68/4

Work Experience

TikTok

RESEARCH & DEVELOPMENT INTERN – AI INNOVATION CENTER

Singapore

Dec 2025 – Present

- **Project:** Multi-Agent Systems for Code Optimization
- **Motivation:** Large-scale production systems serve hundreds of millions of users, where inefficient code increases CPU usage and operational cost. Improving code efficiency reduces CPU time and lowers service cost.
- **Outcome:** Built an end-to-end multi-agent system for code optimization, covering hotspot localization, optimization generation, and performance evaluation.
- **Contribution:** Co-designed the system pipeline; analyzed agent trajectories and refined agent behaviors; enhanced the CPU-gain evaluation platform to support reliable optimization assessment, SFT data curation, and RL reward computation.

Huawei

RESEARCH INTERN – NOAH'S ARK LAB

Singapore

Apr. 2025 – Aug. 2025

- **Project:** Deep-Research Agent – Knowledge Integration and Literature Review Assistant
- **Motivation:** LLMs are limited by their internal knowledge when answering questions; integrating external search engines allows access to up-to-date information, improving answer quality and reducing hallucinations.
- **Outcome:** A modular LangGraph-based agent capable of integrating web and ArXiv search for knowledge synthesis; a proof-of-concept literature review generator; co-authored a survey on Reinforcement Learning for Deep Research Agents.
- **Contribution:** Refactored original Python demo to LangGraph architecture for better maintainability; integrated web and ArXiv search engines; implemented multi-step retrieval and summarization pipelines; contributed to survey writing.

Sea Limited

SOFTWARE ENGINEER – SEA LABS

Singapore

Aug. 2022 – Jul. 2023

- **Project:** “Loop” – Survey Platform for Product Incubation
- **Motivation:** Support early-stage product development by collecting structured feedback from employees, enabling product managers to make informed decisions for product improvements.
- **Outcome:** Successfully launched a production-ready survey platform from 0 to 1, enabling PMs to collect and analyze structured feedback at scale; established CI/CD pipeline for continuous deployment.
- **Contribution:** Developed server-side modules (Authentication, Survey Config, Notification, Cron), implemented efficient data aggregation with goroutines and Redis caching, and visualized survey insights to guide PM decisions.

Shanghai Baosight Software Co., Ltd.

Shanghai, China

SOFTWARE ENGINEER – CLOUD APPLICATION DEPT.

Jul. 2020 – Jul. 2021

- **Project:** Blockchain-based Supply Chain Finance System
- **Motivation:** Enhance transparency and traceability in warehouse receipt financing using blockchain.
- **Outcome:** Delivered a secure system enabling tokenized warehouse receipts and traceable logistics operations; smart contracts successfully deployed in Ethereum-compatible blockchain.
- **Contribution:** Implemented asynchronous blockchain callbacks and certification generation module, ensuring secure and auditable financial transactions.

Lenovo Group, LCFC (Hefei) Electronics Technology Co., Ltd.

Hefei, China

SOFTWARE ENGINEER INTERN – R&D DEPARTMENT

Oct. 2019 – Feb. 2020

- **Project:** Model-Based Inspection System
- **Motivation:** Automate appearance quality control across ThinkPad product lines.
- **Outcome:** Delivered web APIs and frontend dashboards enabling systematic management of visual inspection datasets.
- **Contribution:** Migrated core inspection system from .NET to Java-based architecture, improving maintainability and scalability.

Publications

Beyond Final Code: A Process-Oriented Error Analysis of Software Development Agents in Real-World GitHub Scenarios [PDF]

ICSE 2026

FIRST-AUTHOR

- [Zhi Chen](#), Wei Ma, Lingxiao Jiang. 48th International Conference on Software Engineering (ICSE 2026), Research Track.

Evaluating Software Development Agents: Patch Patterns, Code Quality, and Issue Complexity in Real-World GitHub Scenarios [PDF]

SANER 2025

FIRST-AUTHOR

- [Zhi Chen](#), Lingxiao Jiang. 32nd International Conference on Software Analysis, Evolution, and Reengineering (SANER 2025), Research Track.

Promise and Peril of Collaborative Code Generation Models: Balancing Effectiveness and Memorization [PDF]

ASE 2024

FIRST-AUTHOR

- [Zhi Chen](#), Lingxiao Jiang. 39th International Conference on Automated Software Engineering (ASE 2024), Research Track.

Rethinking the Value of Agent-Generated Tests for LLM-Based Software Engineering Agents [PDF]

arXiv preprint

FIRST-AUTHOR

- [Zhi Chen](#), Zhensu Sun, Yuling Shi, Chao Peng, Xiaodong Gu, David Lo, Lingxiao Jiang.

Are Performance-Optimization Benchmarks Reliably Measuring Coding Agents? [PDF]

arXiv preprint

FIRST-AUTHOR

- [Zhi Chen](#), Zhensu Sun, Yuling Shi, David Lo, Lingxiao Jiang.

AgentGuard: An Active Threat Discovery System for Package Confusion Using Multi-Agent Collaboration [PDF]

ML4CS 2025

THIRD-AUTHOR

- Wei Ma, Yu Li, [Zhi Chen](#), Ye Liu, Lingxiao Jiang, Qiang Hu, Junyi Tao. Proceedings of the 7th International Conference on Machine Learning for Cyber Security (ML4CS 2025).

ConfuScope: A Multi-Agent Framework via Hybrid Search and Content-Aware Analysis for Robust Package Confusion Detection [arXiv]

TSE 2026

THIRD-AUTHOR

- Yu Li, Wei Ma, [Zhi Chen](#), Ye Liu, Lingxiao Jiang, Junyi Tao, Hao Liu, Yongqiang Lyu, Qiang Hu. Accepted for publication in IEEE Transactions on Software Engineering (TSE).

Executing as You Generate: Hiding Execution Latency in LLM Code Generation [PDF]

arXiv preprint

THIRD-AUTHOR

- Zhensu Sun, Zicheng Lin, [Zhi Chen](#), Chenguang Yang, Ming Zhou, Lijun Li, David Lo.

Reinforcement Learning Foundations for Deep Research Systems: A Survey [PDF]

arXiv preprint

SECOND-AUTHOR

- Wenjun Li, [Zhi Chen](#), Jingru Lin, Hannan Cao, Wei Han, Sheng Liang, Zhi Zhang, Kuicai Dong, Dexun Li, Chen Zhang, Yong Liu.

Speculative Forking: Turning Idle Wait into Parallel Exploration for Repository Environment Setup

Manuscript

FIFTH-AUTHOR

- Yuling Shi, Mingchu Zhong, Zhensu Sun, Weihang Peng, [Zhi Chen](#), Shilin He, Chengcheng Wan, Kai Cai, Hongyu Zhang, David Lo, Xiaodong Gu.

Honors & Awards

2026	Nominated for Global Young Scientists Summit (GYSS) 2027 , Singapore Management University	<i>Singapore</i>
2026	SMU Presidential Doctoral Fellowship , Singapore Management University	<i>Singapore</i>
2025	SMU Presidential Doctoral Fellowship , Singapore Management University	<i>Singapore</i>
2023	SMU Research Scholarship , Singapore Management University	<i>Singapore</i>
2021	Merit Award , Singapore Management University	<i>Singapore</i>
2018	Golden Prize in Fifth Internet Innovation Competition , Hefei University of Technology	<i>Anhui, China</i>
2017	Second-Class Merit-Based Scholarship , Hefei University of Technology	<i>Anhui, China</i>

Academic Service

Reviewer: ACM Transactions on Software Engineering and Methodology (TOSEM)