

# Zheyang Hou

+86 13340192332 • 12313551@mail.sustech.edu.cn • <https://k1koli.github.io/>

---

## EDUCATION

---

### Southern University of Science and Technology (SUSTech)

Shenzhen, China

Bachelor of Science in *Data Science and Big Data Technology*

08/2023 - 06/2027

- **Overall GPA:** 3.9/4.0
- **Honor:** First Class Scholarship of SUSTech, 2023-2024  
Second Class Scholarship of SUSTech, 2024-2025  
Excellent Student Award, 2023-2024, 2024-2025  
Excellent Student Cadres, 2024-2025

### Nanyang Technological University (NTU)

Singapore

School of Computer and Data Science

08/2026 - 12/2026

University-Level Exchange Programme – **Research and Coursework Track**

---

## SKILLS

---

- **IT Skills:** Python (PyTorch, Pandas, NumPy, Seaborn), Java, R, SQL
- **Software:** Git, Hadoop, Spark

---

## ACADEMIC PROJECT

---

### Scientific Simulation Data Synthesis for Agentic Memory

12/2025 - now

*Independent Project, Advisor: Prof. Guanhua Chen*

- Combined retrieval-augmented generation with multi-hop reasoning to synthesize executable trajectories from textbook workflows for power electronics simulation under data-scarce conditions.
- Built a FAISS-indexed multi-source knowledge base; generated 50K preference data via chain-of-thought, self-instruction, and difficulty grading; extracted core APIs from Python/C/MATLAB docs to synthesize multi-turn function-calling data covering error recovery and clarification patterns.
- Designed a multi-agent serial pipeline that decomposes user instructions into API call sequences, executed via MCP integration with power electronics simulation software—achieving full-pass review and 100% test-case approval.  
→ *Focus: Data Synthesis Pipeline, Agent Memory, Multi-Agent Systems.*

### LLM-Based Multi-Agent Educational Copilot System

11/2025 - 01/2026

*Independent Project, Advisor: Prof. Guanhua Chen*

- Engineered an end-to-end synthetic data pipeline generating 5k SFT and 5k preference samples via structured frameworks with seed instructions, template libraries, and student profiling.
- Designed multi-stage filtering mechanisms to curate high-quality training data, and fine-tuned Qwen-2.5-0.5B using LoRA-based SFT and DPO.
- Developed an AutoGen-based multi-agent teaching system with professor, TA, student, and evaluator agents for adaptive educational interactions.  
→ *Focus: SFT/DPO Data Synthesis, Multi-Agent System, LoRA Fine-tuning.*

### Statistical and Machine Learning Framework for Housing Market Analysis

11/2025 - 12/2026

*Advisor: Prof. Zeng Li*

- Developed a comprehensive house price prediction framework integrating classical statistics with machine learning, achieving superior performance through systematic preprocessing and feature engineering.

- Implemented domain-informed imputation for 34 predictors, log transformations for skewness reduction, rigorous statistical testing to validate feature significance, and advanced feature engineering to enhance model robustness.
- Developed a Lasso-XGBoost ensemble, achieving best performance with RMSE of 0.115 and  $R^2$  of 0.918.  
→ *Focus: Ensemble Learning, Feature Engineering, Statistical Validation.*

### **Magnetic Contour Extraction System with Adaptive Path Cooling**

04/2025 - 05/2025

*Advisor: Prof. Peng Yang*

- Developed an intelligent image segmentation tool implementing Dijkstra and A\* algorithms for contour extraction, achieving pixel-level accuracy comparable to Photoshop's magnetic lasso.
- Engineered a real-time cursor snapping mechanism using  $3 \times 3$  neighborhood gradient analysis and designed a two-stage path cooling mechanism that dynamically generates auxiliary seed points.
- Achieved real-time preview (<0.3s delay) and strong usability scores (4.2-4.6/5), with non-professional users completing tasks 62% faster.  
→ *Focus: Image Recognition, Contour Tracing, Gradient-Based Snapping.*

---

## **INTERNSHIP EXPERIENCE**

---

### **Prof. Ma Ziming's Linear Algebra Textbook Development, SUSTech**

Shenzhen, China

*Student Assistant*

01/2024 - 02/2024

- Authored and typeset textbook content using LaTeX, transforming personal lecture notes into pedagogical materials.
- Curated and integrated supplementary knowledge to enhance conceptual understanding.

---

## **ACTIVITY & LEADERSHIP**

---

### **Symphony orchestra, SUSTech**

09/2023 - 06/2025

*Violin Section Member*

### **Student Union, SUSTech**

10/2024 - 10/2025

*Head of the Student Union Office Department & Member of the Student Union Executive Committee*

### **Student Learning Center, SUSTech**

10/2025 - now

*Peer Academic Advisor*