

Ziyang (Deric) Zhou

 <https://github.com/Azhou0> |  azhou0.github.io |  [ZiyangZhou](#)
 [Google Scholar](#) |  azhou131416@gmail.com |  Ziyang.Zhou22@student.xjtu.edu.cn

EDUCATION

2022 – 2026 **Xi'an Jiaotong–Liverpool University (XJTLU)**, Suzhou, China
B.Sc. Information and Computer Science (Cum. GPA: 3.7/4.0)
Selected Coursework: Linear Algebra, Calculus, Multivariable Calculus (4.0/4.0)

RESEARCH INTERESTS

- **Large Language Model Agents:** multi-agent system; agentic workflow planning and reasoning; agentic memory; self-evolving agents; agent reinforcement learning; retrieval-augmented generation
- **AI for Science & Health:** deep research; Human-centric AI; affective and cognitive computing; Truthworthy AI
- **Audio & Natural Language Processing:** acoustic scene classification; emotion and empathy modeling; multimodal audio-text reasoning

PUBLICATIONS

RAM-SD: Retrieval-Augmented Multi-agent framework for Sarcasm Detection

Z. Zhou*, Z. Liu*, Y. Wang, Y. Lin, Y. Chen.

ACL 2026 ARR Rolling (under review).

Following the TRACE: A Structured Path to Empathetic Response Generation with Multi-Agent Models

Z. Liu, Z. Zhou, Y. Li, H. Zhang, Y. Chen.

ICASSP 2026 (under review). [arXiv:2509.21849](https://arxiv.org/abs/2509.21849)

SEVADE: Self-Evolving Multi-Agent Analysis with Decoupled Evaluation for Hallucination-Resistant Irony Detection

Z. Liu*, Z. Zhou*, Y. Li, M. Hu, Y. Pan, Z. Xu, Y. Chen.

AAAI 2026. [arXiv:2508.06803](https://arxiv.org/abs/2508.06803)

Agent KB: Leveraging Cross-Domain Experience for Agentic Problem Solving

X. Tang*, T. Qin*, T. Peng*, Z. Zhou, D. Shao, T. Du, W. Zhou et al.

ICML 2025 Workshop on CFAgentic (Best Paper Runner-up Award). [arXiv:2507.06229](https://arxiv.org/abs/2507.06229)

CAF-I: A Collaborative Multi-Agent Framework for Enhanced Irony Detection

Z. Liu*, Z. Zhou*, M. Hu (*equal contribution).

ICML 2025 Workshop on CFAgentic (Oral Award). [arXiv:2506.08430](https://arxiv.org/abs/2506.08430)

AdapTF-SepNet: AudioSet-driven Adaptive Pre-training of TF-SepNet

Z. Zhou, Z. Yin, Y. Cai, S. Li, X. Shao.

DCASE 2025 Challenge Task 1, Technical Report.

EchoTwin-QA: A Dual-Tower BeatsBERT System for Audio Question Answering

Z. Yin, Z. Zhou, Y. Cai, S. Li, X. Shao.

DCASE 2025 Challenge Task 5, Technical Report.

WORK EXPERIENCE

Algorithm Engineer Intern

AxiomsTen Jun 2025 – Present, Shenzhen

- Implemented a lightweight cloud-based Voice Activity Detection (VAD) module for internal testing, integrating it into the speech pipeline alongside ASR and emotion recognition.
- Built FastAPI-based agent services that generate event-specific summaries and mindset extraction from user interactions, supporting adaptive and personalized responses.
- Collaborated with the algorithm team to design a Graph-RAG abstraction layer for representing and linking user events, enhancing the foundation for context reasoning and mindset modeling.
- Led the design and iteration of the **agent workflow and prompt system**, continuously refining multi-turn reasoning behavior to align with evolving product requirements.

LLM Agent Collaborator	OPPO Personal AI Mar 2025 – Jun 2025, Remote
<ul style="list-style-type: none"> • Helped design retrieval-augmented agent memory improving GAIA performance by 18.7%. • Curated and constructed the agent knowledge base by combining LLM-generated trajectories with human-guided reasoning analysis. • Conducted extensive experiments across multi-agent benchmarks (GAIA, SWE-bench, etc.) with different agent systems (smolagent, Openhands, etc.) to evaluate cross-domain efficiency and generalization. 	

Automation Intern	Paslin China Jan 2025 – Mar 2025, Shanghai
<ul style="list-style-type: none"> • Observed the operational structure of a large-scale manufacturing enterprise, gaining a clear understanding of cross-departmental collaboration between design, engineering, and production teams. • Learned to use EPLAN for creating electrical control diagrams and explored the logic of automated production lines in the automotive sector. • Developed an initial interest in how industrial workflow design and system integration could inspire later research on intelligent automation and agentic decision systems. 	

SELECTED RESEARCH PROJECTS

Multi-Agent for Irony Detection & Empathy Response Generation	Jun 2025 – Present	Suzhou XJTLU — Human-Centered Language Computing Group (Advisor: Dr. Yangbin Chen)
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- Designed and led three successive frameworks for irony detection — **CAF-I**, **SEVADE**, and **RAM-SD** — progressively improving multi-agent reasoning, evaluation reliability, and contextual understanding.
- In **CAF-I**, led the design of a collaborative multi-agent framework for irony detection, achieving a **+4.82%** Macro-F1 improvement, and found instability in the final decision process caused by weak confidence calibration.
- In **SEVADE**, studied how a self-evolving module updates agent teams through decoupled reasoning and evaluation, improving Macro-F1 by **6.29%** while revealing the need for adaptive retrieval in complex contexts.
- Developed **RAM-SD** (Retrieval-Augmented Multi-Agent Framework) with a “Learn-Before-Reason” strategy — pre-retrieving semantically similar training cases and applying contextual augmentation to guide reasoning, yielding a **+7.01%** Macro F1 improvement over gpt-4o+COC baselines.
- Contributed to **A Structured Path to Empathetic Response Generation with Multi-Agent Models**, a five-stage empathy model (Trigger–Response–Appraisal–Cause–Emotion), and built an LLM-based evaluation framework for measuring emotional coherence and human-like empathy generation.

Deep Research Agent & Self-Evolving Agents May 2025 – Present
Yale University — Gerstein Lab (Advisor: Dr. Mark Gerstein)

Remote

- Helped to develop a comprehensive **Agent Knowledge Base (AKB)** for cross-framework reasoning, consolidating thousands of agent trajectories with both human-curated and LLM-generated analyses.
- Led large-scale reproduction experiments validating AKB's effectiveness across smolagent, SWE-Agent, OpenHands, and OWL under the GAIA, SWE-bench, and GPQA benchmarks.
- Confirmed AKB's consistent performance gains (up to **+18.7pp** in pass@3 on GAIA) and identified critical steps for deep research task decomposition and cross-domain knowledge transfer.
- Constructed a **self-evolving coding agent framework** with a dedicated Proposer Agent that autonomously generates and evaluates code modifications, enabling continual refinement and faster evolution cycles.
- Designed a data-centric, self-evolving agent framework that generates task-specific data (MCP tasks) and fine-tunes open-source LLMs via reinforcement learning (GRPO).

Acoustic Scene Classification & Accent Recognition Sep 2024 – Jun 2025
XJTLU — Audio Intelligence Lab (Advisor: Dr. Shengchen Li)

Suzhou, China

- Designed and implemented the AdapTF-SepNet framework for multi-device acoustic scene classification.
- Developed an AudioSet-driven adaptive pre-training strategy with a transfer module aligning spectral and temporal filters to device-specific distributions.
- Engineered an end-to-end PyTorch Lightning pipeline integrating MixStyle, MixUp, and knowledge distillation to enhance generalization under unseen device domains.
- Conducted extensive ablation experiments showing **+7.61%** robustness and accuracy gains across real-world device splits.
- Contributed to accent recognition research using HubERT embeddings and contrastive learning, achieving a **15%** accuracy boost via feature augmentation and domain adaptation.

ACHIEVEMENTS & ACTIVITIES

Lanqiao — National Java Programming Competition

Jun 2024

National Prize — Nanjing, China

Solved algorithmic programming problems using Java under timed conditions, ranking top 3% nationally.

Mathematical Contest in Modeling (MCM/ICM)

Jan 2024

S Prize — International

Built predictive models using regression analysis and Monte Carlo simulation to assess the financial impact of extreme weather events on insurance premiums.

MOVIE Club

2022-2024

Head of MUSE Department — Organized film sharing and file festival events for thousands of people.

Club Program Office

2022-2023

Council Support Center — Managed the establishment, activities, and review of student organizations.

SKILLS

Programming	Python, Java, C/C++
ML/DL	PyTorch, TensorFlow, HuggingFace Transformers, Audio Processing
Technologies	Git/GitHub, Linux, MySQL, Docker, Operating Systems
Research Areas	Audio & Speech Processing, Large Language Models (LLM), LLM Agents, NLP
Coursework	Machine Learning, Deep Learning, Audio Signal Processing, Algorithms, Data Structures, Graphics, Software Engineering, Bio-Computing