Ruida Liu

B.S. Candidate, Computational Mathematics & Cybernetics

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Research Interests

Natural Language Processing · AI Agents · Controllable & Trustworthy AI · AI for Medical Image & Signal Analysis · Multimodal Learning

Education

The Hong Kong University of Science and Technology (Guangzhou), Guangzhou, China 2027 – 2029
MPhil · Full Scholarship *HKUST: QS World University Rankings 2027* **#33**

Shenzhen MSU-BIT University (SMBU), Shenzhen, China Sep. 2023 – Jul. 2027 (expected)
B.Sc. in Computational Mathematics and Cybernetics *Shanghai #106* | *GPA* **3.4 / 4.0**

- Coursework: Mathematical Analysis, Linear Algebra, Probability & Statistics, Discrete Mathematics, Algorithms & Data Structures, Machine Learning, Computer Networks, Operating Systems.

Lomonosov Moscow State University, Moscow, Russia Sep. 2023 – Jul. 2027 (expected)
Joint-Cultivation Program in Computational Mathematics and Cybernetics *QS #94*

Entrepreneurship

Luyi Tech (Shandong Luyi Information Technology Development Co., Ltd.)
Co-founder & Technical Director · Co-founded with Tianjian Gao

Company: Develops rule-driven design AI. Its signed Tencent Cloud collaboration covers multimodal-corpus rule embedding and privacy-preserving processing; its general-purpose design model's on-device solution passed Huawei Kunpeng compatibility testing.

2024 Hurun China U25
Tianjian Gao recognized

HKZM First Prize

My role: Lead rule-engine integration, model deployment, and partner-facing technical delivery, translating these collaborations into design-industry products; jointly won the Entrepreneurship Track Gold Award in the Guangdong provincial round of the 2026 "Zhongchuang Cup."

Publications

[1] Learning Class-Conditional Temperature with Entropy Alignment for Medical Image Classification
ICASSP 2026 · IEEE International Conference on Acoustics, Speech and Signal Processing · CCF-B
W. Pan*, **R. Liu***, et al. *Co-first author*

Proposes CCT-EAL, a loss function integrating class-conditional temperature scaling with entropy alignment to jointly address domain gap and class imbalance in medical image classification; validated on 5 public benchmarks across multiple backbones.

[2] AIRhealth: An AIoT AR-Glasses Framework for Multimodal Dietary Recognition and Personalized Nutrition Management
IEEE CloudCom 2025 · Core-C · Oral Presentation
R. Liu, et al. *First author*

Builds the first end-to-end AR glasses system for dietary health, unifying YOLO detection, Qwen2.5-VL (LoRA fine-tuned), and IoT edge–cloud collaboration; achieves 70.17% dish recognition and 90.42% gesture detection accuracy.

[3] A Cloud-Edge Collaborative Framework for Autonomous UAV-based Medical Logistics
IEEE CloudCom 2025 · Oral Presentation
M. Zhao, **R. Liu**, J. Zhao, H. Gao, R. Zeng *Second author*

[4] SM-CBNet: A Speech-Based Parkinson's Disease Diagnosis Model
ICIC 2025 · CCF-C · Oral Presentation
X. Wang, W. Pan, **R. Liu**, K. Jin, Z. Tian *Third author*

For additional publications, please see my Google Scholar profile.

Honors & Awards

IEEE Signal Processing Society – ICASSP 2026 Travel Grant (USD $1,000) Apr. 2026
*One of only **two recipients nationwide in China**. Recommended by Prof. Jianjun Lei (NSFC Distinguished Young Scholar), IEEE SPS Beijing Chapter.*

National First Prize – National University Student IoT Design Competition Sep. 2025
Team Leader. Acceptance rate < 5%; Ministry-of-Education-recognized.

All competitions below are Ministry-of-Education-recognized national university competitions; acceptance rates are generally below 5%.

- **National Third Prize**, Blue Bridge Cup Art Design Competition (Static Poster Track) May 2025
  Team Leader. Competed in the static poster (themed) track; selected from over 80,000 national entries across all tracks.
- **National Third Prize**, Global Campus AI Algorithm Elite Competition Jan. 2025
  Organizer & Mentor. Coordinated the deep learning track submission and guided model design, training, and evaluation on a real-world dataset.
- **National Third Prize** ×2, National Student Digital Media Technology & Creative Competition Oct. 2025
  Organizer & Mentor. Coordinated two entries across different creative tracks; both reached the national podium in the same competition cycle.
- **National Third Prize**, Chinese Collegiate Computing Competition (4C) Aug. 2026
  Organizer & Mentor. Coordinated and guided the project from the provincial stage (top ≈8%) to the national finals; awarded National Third Prize in Aug. 2026.
- **Top 30% Nationwide**, CCF CAT National Algorithm Elite Competition – Team Leader May 2025

Other Honors

- **Provincial Second Prize** (Guangdong), Blue Bridge Cup Software Programming Competition, Python Group B Apr. 2025
- **Invention Patent**, First Inventor (Under Review) – video-based nutrition recognition Nov. 2025
- **Top-10 Outstanding Innovation Project**, Shenzhen MSU-BIT University – Project Leader 2024 – 2025
- **Academic Scholarship** (×2), Shenzhen MSU-BIT University 2023 – 2024

Research Experience

AI Institute, Shenzhen MSU-BIT University May 2025 – Jun. 2026
Research Assistant – Center for Affective Intelligence & Ubiquitous Computing *Advisor: Prof. Runhao Zeng*

- Lead and co-author research on **medical image classification**, multimodal AI agents, and ECG-based medical LLM evaluation.
- Independently completed the full research pipeline (idea → literature → experiment → writing → rebuttal) for the ICASSP 2026 paper on class-conditional temperature scaling.
- Maintained shared computing infrastructure (multi-GPU servers, conda environments, dataset pipelines) for the medical & affective intelligence sub-group.

AI Institute, Shenzhen MSU-BIT University Jun. 2026 – Present
Research Assistant – LLM Safety *Advisors: Prof. Alex C. Kot (IEEE Life Fellow, based at SMBU) & Prof. Changsheng Chen*

- Working on **LLM safety**, focusing on robustness, alignment, and trustworthiness of large language models.

Selected Projects

MaiLi – AI+AR Smart Glasses for Personal Nutrition May 2025 – Sep. 2025
Team Leader · IoT Design Competition (National 1st Prize) *Featured by Shenzhen TV*

- Designed and built a Raspberry-Pi-based wearable that recognizes meals via camera, computes nutritional content, and surfaces chronic-disease warnings on an AR optical-waveguide HUD.
- Stack: Qwen-VL multimodal LLM (cloud), YOLO segmentation, gesture recognition, bone-conduction audio I/O; cloud-edge synchronization with custom backend & database.
- Filed an invention patent (first inventor, under review) for the video-based dietary recognition pipeline.
- Invited to present at **Shenzhen Entrepreneurs Day** as a featured youth-innovation pitch; attracted strong interest from entrepreneurs and investors, with concrete investment-collaboration intent currently being advanced toward commercialization.

SMBU Student-Union Visual Identity 2023
Original Designer (official release) *Adopted as the permanent emblem*

- Designed the Student-Union emblem currently in continuous use; published in the official WeChat channel and adopted across school events.

Service & Activities

- **Invited Reviewer**, IEEE Transactions on Information Forensics and Security (TIFS; Impact Factor 8.0; CCF-A), ICASSP 2027, and IWACCE 2026.
- **Head of Design Department**, SMBU New Media Center – directed visual identity and event posters.
- **Core Member**, SMBU Computer Association & Mathematical Modeling Association – organized internal training and led teams to national competitions.
- **Admissions Assistant**, SMBU Office of Admissions (Sep. 2023 – Feb. 2024) – led campus presentations and managed applicant data.
- **Smart-Sports Promotion Intern**, Linyi Municipal Sports Bureau (Jun. – Aug. 2024) – back-end maintenance & data analysis for the city sports mini-program.