Weilin RUAN (阮炜霖)

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Google Scholar

Education

The Chinese University of Hong Kong (CUHK) **2026–Present**
Ph.D. in Computer Science and Engineering
Supervised by Prof. James Cheng; jointly trained with Knowin AI.

Hong Kong University of Science and Technology (Guangzhou) **Sep 2024–Jun 2026**
M.Phil. in Data Science and Analytics, Information Hub *GPA: 3.33/4.0*
Supervised by Prof. Yuxuan Liang at CityMind Lab.

Jinan University (Project 211) **Sep 2020–Jun 2024**
B.Eng. in Network Engineering, Computer Science and Technology *GPA: 87/100*
Outstanding Graduate of the Information Science Technology / Cyberspace Security Department (**Top 1%**).

Internship Experience

Knowin AI, Shenzhen **Sep 2025–Present**
Algorithm Researcher** in **Foundation Models / Simulation

Built embodied data synthesis and validation pipelines spanning multi-agent VQA/CoT cleaning, 2D/3D scene-graph reasoning, and data flywheels; established an embodied perception evaluation framework across real-world tasks and simulation benchmarks; trained and distilled GSA models on **5M+** curated samples with LoRA and GKD; optimized concurrent VLM inference and generalizable CoT reasoning; evaluated SOTA embodied VLA models and explored improvement paths.

ByteDance, Shenzhen **Mar 2025–Sep 2025**
***Algorithm Engineer** in the **Data-AML** team*

Improved **Forge**, a large-scale model training platform, through log alerting, post-training synchronization, and service reliability upgrades; led **OnCallAgent**, a multi-agent DevOps system integrating multimodal LLMs, RAG-based layered memory, MCP tool invocation, model fine-tuning, OpenAI/Ollama/vLLM backends, Streamlit GUI, and Docker deployment; delivered troubleshooting and deployment support for key accounts including Xiaomi, Huawei, Honor, vivo, and OPPO.

Hong Kong University of Science and Technology (Guangzhou) **Sep 2023–Sep 2024**
***Research Intern** in the **CityMind** group led by Prof. Yuxuan Liang*

Conducted research on multimodal learning, spatio-temporal data mining, and time series forecasting; implemented and enhanced graph-based urban traffic prediction models; developed **ST-LoRA**, a parameter-efficient low-rank adaptation framework, and multimodal forecasting modules for spatio-temporal prediction.

Sun Yat-sen University **Apr 2023–Jul 2023**
***Research Intern** in the **GEAR** group led by Prof. Liang Chen*

Explored long-tail and out-of-distribution problems in graph learning; reproduced and improved GNN-based model structures and graph sampling methods; designed subgraph encoding and tree-graph transformation methods.

Sesame Coding Education Technology Co., Ltd., Guangzhou **Jul 2021–Oct 2021**
Algorithm Engineer

Analyzed informatics competition problems; produced algorithm competition training materials; participated in Online Judge platform development, maintenance, and test data generation.

Publications

Ph.D. student in Computer Science and Engineering at CUHK. My research focuses on multimodal learning, time-series foundation models, spatio-temporal data mining, agentic AI, and embodied intelligence. I currently have **7 CCF-A** and **3 CCF-B** papers, including **4 accepted first-author papers**, with **200+ citations**. Selected representative and recent work:

1. **ViST: Harnessing Vision Transformation and Reconstruction for Multi-modal Spatio-temporal Forecasting** 1st author
   [ACM MM26] (CCF-A) Harnesses vision transformation, multimodal reconstruction, and cross-modal fusion for spatio-temporal forecasting.
2. **RAST: A Retrieval Augmented Spatio-Temporal Framework for Traffic Prediction** 1st author
   [AAAI26] (CCF-A) Integrates retrieval-augmented mechanisms with spatio-temporal modeling for traffic prediction.
3. **Visual Reasoning over Time Series via Multi-Agent Systems** 1st author
   [Under Review] Builds a multi-agent system for general time-series analysis with visual-to-numerical reasoning.
4. **LDM4TS: Vision-enhanced Time Series Forecasting via Multi-view Latent Diffusion** 1st author
   [Under Review] Transforms time series into multi-view visual representations and reconstructs future patterns via frequency- and text-conditioned latent diffusion.
5. **STLoRA: Low-rank Adaptation for Spatio-Temporal Forecasting** 1st author

[ECML PKDD25] (CCF-B, Oral) Introduces efficient low-rank adaptation for spatio-temporal forecasting models.

6. **Cross Space and Time: A Spatio-Temporal Unitized Model for Traffic Flow** 1st author
   [TITS25] (CCF-B, JCR Q1, IF 7.9) Captures spatial-temporal interactions with a unified traffic-flow prediction framework.
7. **TS-Memory: Plug-and-Play Memory for Time Series Foundation Models** 4th author
   [KDD26] (CCF-A) Distills parametric memory for frozen time-series foundation models without online retrieval.
8. **GenRouter: Unified Workflow Routing for Agentic Image Generation** 4th author
   [Under Review] Routes image-generation prompts to Pareto-efficient agentic workflows, reducing cost by 95%+ and latency by 65%.
9. **OccamVTS: Distilling Vision Models to 1% Parameters for Time Series Forecasting** 3rd author
   [AAAI26] (CCF-A) Distills compact predictive information from large-scale vision models for time series forecasting.
10. **Time-VLM: Exploring Multimodal Vision-Language Models for Augmented Time Series Forecasting** 2nd author
    [ICML25] (CCF-A) Leverages vision-language models to improve time series forecasting with multimodal information.
11. **Fine-grained Urban Heat Island Effect Forecasting: A Context-aware Thermodynamic Modeling Framework** 2nd author
    [KDD25] (CCF-A) Builds a context-aware framework for high-resolution urban heat island prediction.
12. **A Game-Theoretic Spatio-Temporal Reinforcement Learning Framework for Collaborative Public Resource Allocation** 6th author
    [CIKM26] (CCF-B) Formulates public-resource allocation as a potential game and solves it with spatio-temporal RL.
13. **Towards Multi-Scenario Forecasting of Building Electricity Loads with Multimodal Data** 4th author
    [ACM MM25] (CCF-A) Uses scenario-conditioned diffusion and multimodal data for building electricity load forecasting.
14. [ICCV 2025 Workshop] VQualA 2025 Challenge on Face Image Quality Assessment: Methods and Results.
15. [ICLR 2026 Workshop] An Empirical Study of the Anchoring Effect in LLMs: Existence, Mechanism, and Potential Mitigations.

Competition Experience

2026: **Silver Award (Rank 3)**: DDL 2.0, IJCAI-ECAI 2026 AI Safety Workshop, Track 2: General AIGC Audio-Video Detection, Team VeriLens

2020-2022: **3 Bronze Medals**: The ICPC International Collegiate Programming Contest (**ACM-ICPC**) 45-47th

Spring 2022: **1 Silver Medal & 2 Bronze Medals**: China Collegiate Programming Contest (**ACM-CCPC**)

Spring 2023: **Honorable Mentions**: The Mathematical/Interdisciplinary Contest in Modeling (**MCM/ICM Top 25%**)

2021-2023: **2 National Second Prize & 2 Provincial First Prize**: Professional Software Engineering LanQiao Cup Final Contest

2021-2023: **1 Champion (Solo) & 2 Second Prize**: Jinan University ACM Programming Contest

2022: **1 Gold Medal & 1 Silver Medal**: National University Student Algorithm Design and Programming Challenge (**Top 5%**)

2024: **Top 64**: Huawei Software Elite Challenge

Academic Awards

Fall 2024: Outstanding Graduate (**Top 1%**)

Fall 2023: Golden Arowana Scholarship (**Top 1%**)

Fall 2023: Excellent Student Cadre of Jinan University (**Top 5%**)

Fall 2022: Excellent Student Cadre of Jinan University (**Top 5%**)

Fall 2022: Jinan University Outstanding Student **First-class** Scholarship (**Top 10%**)

Technical Skills

Languages & Systems: Python, C++, Java; PyTorch, vLLM, Docker, Streamlit, Linux; OpenAI/Ollama/vLLM backends and large-scale training-platform tooling.

Modeling Stack: Embodied data synthesis/evaluation, VLM concurrent inference, LoRA/GKD distillation, RAG, memory systems, MCP tool calling, and multi-agent orchestration.

Research Areas: Multimodal learning, spatio-temporal/time-series foundation models, embodied AI, VLA/VLN evaluation, and agentic image-generation workflows.

Other Highlights

Reviewing: Reviewer for **IEEE TPAMI**; conference/workshop reviewer for **ICLR (Top200), AAAI, NeurIPS, KDD, IJCAI, EMNLP, ICASSP, IJCNN, and WebST**.

Writing Blog: Maintain a CSDN technical blog with **3,600+ followers**, sharing research notes and programming tutorials.

Student Leadership: Class President & Alumni Association Council Member of the 20th Network Engineering Class; Minister of Propaganda Department, Jinan University Student Dormitory Building Association.

ACM Training: Member of Jinan University ACM Programming Team; Codeforces max rating **1961**; the first freshman to win a bronze medal in the department's history and solo AK champion in the university competition.

Creative Engineering: Member of Jinan University Computer Geek Association; developed Unity/RPG indie games; **"Orphan of the Petal"** received mostly positive reviews on Steam.