Yansen Zhang

City University of Hong Kong

Phone: (+86) 156-2629-3898
Email: yanszhang7-c@my.cityu.edu.hk
Website: forrest-stone.github.io
GitHub: github.com/forrest-stone

RESEARCH PROFILE

➤ Ph.D. candidate in Computer Science developing algorithmic methods for **LLM reasoning, planning, and self-evolving agents**. My research builds algorithmic control around LLMs to make them reliable and efficient at inference time. Core techniques include budget-aware search, semantics-grounded self-correction, and evaluator-in-the-loop agentic workflows, with applications to optimization modeling, decision reasoning, and scientific discovery. First-author publications at *ICLR*, *ICML*, *KDD*, and *ECML PKDD*.

EDUCATION

2022.09–Present; **Ph.D. Candidate in Computer Science**, City University of Hong Kong
Supervisor: Prof. Chen Ma
Research Areas: LLM reasoning, planning, and self-evolving agents; data-centric AI
2025.09–2025.12; **Visiting Student**, Machine Learning, Mohamed bin Zayed University of Artificial Intelligence
Supervisor: Prof. Xue (Steve) Liu
2019.09–2022.06; **M.S. in Software Engineering**, Sun Yat-sen University
Supervisor: Prof. Yubao Liu
2015.09–2019.06; **B.S. in Software Engineering**, Northeastern University
Advisor: Prof. Guibing Guo

PROFESSIONAL EXPERIENCE

2026.02–Present; **Research Intern, Self-Evolving Agents**, International Digital Economy Academy (IDEA)

➤ Contributed to the design of **Kairos**, an end-to-end autonomous optimization agent that couples automatic problem formalization from natural language with algorithmic self-evolution, iteratively refining solving strategies against evaluator feedback.
➤ Proposed **CostAda**, a cost-calibrated controller that makes token cost and remaining budget part of LLM discovery control, jointly guiding exploration, frontier allocation, and tactic intervention. It reaches the strongest baseline's full-budget quality with at most half the budget on 12 of 16 benchmark–backbone pairs. arXiv preprint; targeting *ICLR 2027*.

2024.06–2025.08; **Research Intern, LLM Decision Reasoning**, Huawei Noah's Ark Lab

➤ Proposed **EOR**, an LLM-based explainable decision framework centered on *decision information*: it quantifies how constraint and parameter changes affect decisions via what-if analysis over bipartite graphs; released the first industrial benchmark for explanation quality in operations research. Accepted at *ICLR 2025*.
➤ Designed **SAC-Opt**, a training-free, backward-guided correction framework that aligns semantic anchors reconstructed from generated solver code with the original problem and selectively corrects mismatched constraints and objectives, improving average modeling accuracy by 7.7% across seven datasets. Accepted at *ICML 2026*.
➤ Developed **retrieval-based constraint modeling** that formalizes retrieved external knowledge as constraints in LLM-driven time-series forecasting and optimization pipelines, with reflection-based acceleration for faster iterative refinement. Submitted to *NeurIPS 2026*.

2022.04–Present; **Data Valuation and Trustworthy Recommendation**, City University of Hong Kong

➤ Proposed a **Shapley-value-driven data pruning framework** that estimates the contribution of individual training interactions for principled data selection and improved robustness, a methodology that extends to broader training-data curation. Accepted at *KDD 2025*.
➤ Studied **diversity in recommendation and retrieval**, including counterfactual multi-player bandits for explainable diversification and a comprehensive survey of diversification metrics and methods. Accepted at *ECML PKDD 2025*; survey published in *TKDE 2024*.

CONFERENCE PUBLICATIONS

1. **Yansen Zhang**, Qingcan Kang, Yujie Chen, Yufei Wang, Xiongwei Han, Tao Zhong, Mingxuan Yuan, and Chen Ma (2026). *SAC-Opt: Semantic Anchors for Iterative Correction in Optimization Modeling*. In: *ICML*.
2. Ziqiang Cui, Yunpeng Weng, Xing Tang, Peiyang Liu, Shiwei Li, Bowei He, Jiamin Chen, **Yansen Zhang**, Xiuqiang He, and Chen Ma (2026). *Less Is More: Elevating RAG via Performance-Driven Context Compression*. In: *ICML*.
3. **Yansen Zhang**, Bowei He, Xiaokun Zhang, Haolun Wu, Zexu Sun, and Chen Ma (2025). *Counterfactual Multi-player Bandits for Explainable Recommendation Diversification*. In: *ECML PKDD*. *[code]*.
4. **Yansen Zhang**, Qingcan Kang, Wing Yin Yu, Hailei Gong, Xiaojin Fu, Xiongwei Han, Tao Zhong, and Chen Ma (2025). *Decision Information Meets Large Language Models: The Future of Explainable Operations Research*. In: *ICLR*. *[code]*.
5. **Yansen Zhang**, Xiaokun Zhang, Ziqiang Cui, and Chen Ma (2025). *Shapley Value-driven Data Pruning for Recommender Systems*. In: *KDD*. *[code]*.
6. Chenhao Hu, Shuhua Huang, **Yansen Zhang**, and Yubao Liu (2022). *Learning to Infer User Implicit Preference in Conversational Recommendation*. In: *SIGIR*.
7. **Yansen Zhang**, Chenhao Hu, Genan Dai, Weiyang Kong, and Yubao Liu (2021). *Self-Adaptive Graph Neural Networks for Personalized Sequential Recommendation*. In: *ICONIP*. *[code]*.

JOURNAL PUBLICATIONS

1. Shuliang Wang, Jiabao Zhu, Yi Wang, Chen Ma, Xin Zhao, **Yansen Zhang**, Ziqiang Yuan, and Sijie Ruan (2025). *Hierarchical Gating Network for Cross-Domain Sequential Recommendation*. *TOIS*.
2. Haolun Wu*, **Yansen Zhang***, Chen Ma, Fuyuan Lyu, Bowei He, Fernando Diaz, and Xue Liu (2024). *Result Diversification in Search and Recommendation: A Survey*. *TKDE*. *[code]*.

ONGOING PUBLICATIONS

1. Mingyang Liu*, **Yansen Zhang***, Qingcan Kang, Xiaomin Deng, Xiongwei Han, Xiaojin Fu, Lei Chen, Tao Zhong, Mingxuan Yuan, Chen Ma, and Linqi Song (2026). "*From External Information to Forecast: LLM-Based Time Series Forecasting with Constraint Modeling and Reflection Acceleration*".
2. **Yansen Zhang**, Yilu Liu, Tianyu Liu, Jiamin Chen, Xiaokun Zhang, Kai Xie, Xue Liu, Yiyan Qi, and Chen Ma (2026). "*Budget-Aware LLM Discovery via Cost-Calibrated Frontier Utility*". arXiv preprint. Targeting ICLR 2027.

PATENTS

1. Yubao Liu, **Yansen Zhang** (2021). "*A method for sequential recommendation model and sequential recommendation method.*" Chinese patent, 202111051076.3. Sun Yat-sen University.

SELECTED PROJECTS & FUNDING

HK$100,000; ***Developing an LLM-RAG Based Course Assistant to Enhance Learning Experience***, funded by the City University of Hong Kong LEAD scheme. Collaborated with a student team on retrieval-augmented generation and knowledge-graph grounding for personalized learning. Advisors: Prof. Linqi Song and Prof. Chen Ma.

TEACHING EXPERIENCE

Semester B 2025/26; **CS6487: Topics in Machine Learning**, City University of Hong Kong.
Semester B 2022/23, 2023/24, 2024/25; **GE2324: The Art and Science of Data**, City University of Hong Kong.
Semester A 2022/23, 2023/24, 2024/25; **CS2334: Data Structures for DS**, City University of Hong Kong.
2019.10–2020.06; **Mathematical Analysis**, Sun Yat-sen University.

HONOURS & AWARDS

2024–2025;	**Outstanding Academic Performance Award**,	City University of Hong Kong
2021–2022;	**Graduate Student Second-Class Academic Scholarship**,	Sun Yat-sen University
2019–2021;	**Graduate Student First-Class Academic Scholarship**,	Sun Yat-sen University
2018;	**Interdisciplinary Contest in Modeling** (international-level),	Honorable Mention
2017–2018;	**Model Outstanding League Member** (top 5%, departmental),	Northeastern University
2015–2018;	**Second Prize Scholarship**,	Northeastern University
2015–2018;	**National Encouragement Scholarship**,	Northeastern University