Houru Jiang

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Research Profile

I work across **recommendation, graph learning, large language models, time series, and interpretable AI**. My research uses mathematical and model-agnostic methods – including compression, entropy, causal intervention, and uncertainty estimation – to improve learning efficiency and diagnose model behaviour. I am particularly interested in efficient LLM training and architectures, including principled pre-training and post-training methods and alternatives such as linear attention.

Core Interests:
Recommendation and graph learning; large language models and efficient training; time-series learning; interpretable and trustworthy AI; mathematical methods for data selection, pre-training, and post-training; linear attention and other efficient LLM architectures.

Selected Manuscripts and Submissions

- **An Information-Theoretic Evaluation Framework for Benchmark and Model Diagnosis in Knowledge Tracing**
  Houru Jiang*, Zixi Wang*, Tengteng Cheng, Xueyi Li, Mingliang Hou, Jiaqi Zheng, Renqiang Luo, Teng Guo, Zitao Liu
  *Accepted as a poster at **NeurIPS 2026** Main Track*. Co-First Author.
- **CDIS: Training-Free Data Selection for Instruction Tuning with Compression Ratio and Token Entropy**
  Houru Jiang*, Zixi Wang, Mingliang Hou, Xueyi Li, Teng Guo, Jiaqi Zheng, Renqiang Luo
  Submitted to ACL ARR 2026 October. First Author.
- **Residualizing DKT with Symbolic Sequence Priors for Knowledge Tracing**
  Zixi Wang*, Houru Jiang*, Tengteng Cheng, Xueyi Li, Mingliang Hou, Zitao Liu
  Submitted to AISTATS 2027. Co-First Author.
- **When Target Accuracy Hides Semantic Interface Drift in Vision–Language Adaptation**
  Houru Jiang*, Zixi Wang*, Mingliang Hou, Xueyi Li, Teng Guo, Qianru Liang, Zitao Liu
  Under review at ICLR 2027. Co-First Author.

* Equal contribution / co-first authors.

Research Experience

Research Assistant Nov 2024 – Sep 2025
Professor Hao Chen, Macau University of Science and Technology (Remote)

- Conducted research on knowledge graphs, graph representation learning, recommendation systems, and knowledge-enhanced retrieval.
- Analyzed how structured knowledge and retrieval signals can support recommendation and information-access systems, contributing to data organization, method implementation, and experimental validation.

Research Assistant May 2025 – Present
Associate Professor Mingliang Hou
Jinan University

- Designed CDIS, a CPU-only instruction-data selector that couples compression ratio and token entropy for low-cost, interpretable LLM data selection.
- Developed an information-theoretic framework for localized benchmark and model diagnosis in knowledge tracing.
- Built causal and probabilistic auditing methods to test whether graph-based models genuinely utilize their input graph structures.
- Contributed to a robotic-manipulation project through system evaluation, experimental analysis, and reproducible comparison studies.

Education

Jinan University Guangzhou, China
Bachelor of Management (Information Management and Information Systems), Department of Mathematics
Expected Graduation: Jun 2027
GPA: 3.34/5.00; Average: 83.4/100

Relevant Coursework
Mathematics: Mathematical Analysis I–III, Advanced Algebra I–II, Probability and Statistics, Discrete Mathematics, Operations Research
Computer Science: Data Structures, Object-Oriented Programming, Database Systems, Computer Networks
Artificial Intelligence: Computational Intelligence, Advanced Artificial Intelligence

Technical Skills

Programming and Scientific Computing: Python, MATLAB, SQL, Java, C, Pandas, NumPy, Matplotlib, Seaborn

Machine Learning and LLM Systems: PyTorch, Scikit-Learn, Transformers, Hugging Face, Qwen, DeepSeek, OpenAI API, Ollama, Stable-Baselines3

Tools: Linux, Git, Jupyter, LaTeX

Honors and Awards

- Jinan University Third-Class Outstanding Student Scholarship
- Mathematical Contest in Modeling (MCM/ICM), Successful Participant (2024)
- Mathematical Contest in Modeling (MCM/ICM), Honorable Mention (2025)

Language Proficiency

IELTS: Overall 7.0

Listening 7.5 | Reading 7.5 | Speaking 6.0 | Writing 6.0