

ChengAo Shen

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RESEARCH INTERESTS

My research interests include **Time Series Analysis** and **Agentic Systems**. I aim to improve how temporal data is modeled for forecasting, classification, and anomaly detection, with a focus on multi-modal approaches and on efficient, deployable models. I study how to strengthen the capabilities of agentic systems, such as causal reasoning, and how to keep them running stably and reliably over long horizons.

EDUCATION

Ph.D. in Computer Science at University of Houston Jan 2025 – Present

- Advisor: Jingchao Ni

B.Sc. in Information and Computing Science at Sichuan Agricultural University Sep 2020 – Jun 2024

- Advisors: Zhaoli Shen and Houhui Huang

WORK EXPERIENCE

Research Intern at NEC Laboratories America (DS3) May 2026 – Aug 2026

- Explored methods for detecting anomalies in complex LLM agent systems, targeting reliable identification and interpretable diagnosis of failures arising in multi-agent execution

Teaching Assistant at University of Houston Jan 2025 – Present

- Facilitated student learning and assessed assignments on programming, data visualization, and data mining techniques, ensuring code quality and conceptual understanding

SELECTED PUBLICATIONS

- [1] **ChengAo Shen**, Wenchao Yu, Fangyu Wu, Dongjin Song, Hanghang Tong, Dongsheng Luo, Wei Cheng, Haifeng Chen and Jingchao Ni, MetaCaster: Meta-Harness-Optimized Agent for End-to-End Few-Shot Learning of Lightweight Time Series Forecasters, *Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2026
- [2] **ChengAo Shen**, Hanghang Tong, Dongjin Song, Zhigang Deng, Qingsong Wen and Jingchao Ni, From Images to Signals: Are Image-Pretrained Vision Models Useful for Time Series Analysis?, *Transactions on Machine Learning Research (TMLR)*, 2026
- [3] **ChengAo Shen**, Ziming Zhao, Hanghang Tong, Dongjin Song, Dongsheng Luo, Qingsong Wen and Jingchao Ni, SVTime: Small Time Series Forecasting Models Informed by “Physics” of Large Vision Model Forecasters, *arXiv preprint arXiv:2510.09780*, 2025
- [4] **ChengAo Shen**, Wenchao Yu, Ziming Zhao, Dongjin Song, Wei Cheng, Haifeng Chen and Jingchao Ni, Multi-Modal View Enhanced Large Vision Models for Long-Term Time Series Forecasting, *Proceedings of the Annual Conference on Neural Information Processing Systems (NeurIPS)*, 2025
- [5] **ChengAo Shen**, Zhengzhang Chen, Dongsheng Luo, Dongkuan Xu, Haifeng Chen and Jingchao Ni, Exploring Multi-Modal Data with Tool-Augmented LLM Agents for Precise Causal Discovery, *Findings of the Association for Computational Linguistics (ACL)*, 2025
- [6] Jingchao Ni, Ziming Zhao, **ChengAo Shen**, Hanghang Tong, Dongjin Song, Wei Cheng, Dongsheng Luo and Haifeng Chen, Harnessing Vision Models for Time Series Analysis: A Survey, *Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI)*, 2025

RESEARCH EXPERIENCE

Agentic Few-Shot Learning of Lightweight Time Series Forecasters Dec 2025 – May 2026
Proposed MetaCaster, a meta-harness-optimized multi-agent framework in which agents act as intermediary engineers that generate data and train specialized lightweight forecasters from only a few examples. Demonstrated both data and computational efficiency across 18 datasets, 23 lightweight forecasters and 14 baselines.

Small Time Series Forecasting Models Informed by LVMs Jul 2025 – Oct 2025
Proposed SVTime, a lightweight framework encoding the “physics” of Large Vision Models into compact architectures via linear layers and annealing constraint functions. Achieved state-of-the-art performance on 8 benchmarks, rivaling foundation models with $10^3\times$ fewer parameters.

Multi-Modal View Enhanced Large Vision Models Jan 2025 – May 2025
Proposed DMMV, a multi-modal framework integrating numerical and visual views for long-term forecasting. Identified the inductive bias of Large Vision Models towards periodicity and developed a backcast-residual adaptive decomposition to mitigate it, outperforming 14 SOTA baselines across 8 benchmarks.

Multi-Modal Causal Discovery with Tool-Augmented LLM Agents Aug 2024 – Dec 2024
Proposed MATMCD, a tool-augmented LLM agent framework that incorporates semantic cues from multi-modal data into causal graph learning. Reduced causal inference error (NHD) by 66.7% and improved root cause analysis (MAP@10) by 83.3% over state-of-the-art baselines.

OPEN-SOURCE PROJECTS

Textus – Lead Maintainer, CatVinci Studio Jul 2026 – Present
The next-generation Markdown editor, with an AI writing assistant. Free, open source and cross-platform; more than 200 stars on GitHub.

INVITED TALKS

Georgia Tech Data Seminar May 2026
Multi-Modal View Enhanced Large Vision Models for Long-Term Time Series Forecasting

HONORS & AWARDS

Claude for Startups Program (CatVinci Studio, Lead Maintainer)	Anthropic, 2026
Golden Reviewer Award	ICML, 2026
NSM Travel Award	University of Houston, 2026
NeurIPS Scholar Award	NeurIPS, 2025
Graduate Tuition Fellowship	University of Houston, 2025, 2026
Outstanding Student Award	Sichuan Agricultural University, 2024

PROFESSIONAL SERVICE

- **Session Chair:** EMNLP 2026 (Virtual)
- **Conference Reviewer:** AAI (2026, 2027), ICLR (2026, 2027), ICML (2026), NeurIPS (2026)
- **Journal Reviewer:** IEEE TPAMI (2026)

SKILLS

Programming Languages	Proficient in Python; Experienced with TypeScript and Rust Chinese (native), English (fluent), Japanese (intermediate)
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