Kuangshi (Leo) Ai

kai@nd.edu kuangshiai.github.io Google Scholar 247 Fitzpatrick Hall, Notre Dame, IN 46556, USA

Education

2024-now **University of Notre Dame** — Notre Dame, IN
Ph.D. Student in Computer Science and Engineering. Advised by Prof. Chaoli Wang
Research Areas: Agentic AI, LLM Agents, Scientific Visualization, Human-Computer Interaction
GPA: 4.0/4.0

2020-2024 **Fudan University** — Shanghai, China
B.E. in Artificial Intelligence, School of Data Science
GPA: 3.71/4.0

2023 spring **The University of Sydney** — Sydney, Australia
Exchange Student, School of Computer Science
GPA: 4.0/4.0

Publications

[1] **Kuangshi Ai**, Kaiyuan Tang, Chaoli Wang. 2025. NLI4VolVis: Natural Language Interaction for Volume Visualization via Multi-LLM Agents and Editable 3D Gaussian Splatting. In *Proceedings of IEEE Transactions on Visualization and Computer Graphics* (IEEE VIS '25). **Best Paper Award (Top 1%).** 10.1109/TVCG.2025.3633888

[2] **Kuangshi Ai**, Haichao Miao, Kaiyuan Tang, Nathaniel Gorski, Jianxin Sun, Guoxi Liu, Helgi I. Ingolfsson, David Lenz, Hanqi Guo, Hongfeng Yu, Teja Leburu, Michael Molash, Bei Wang, Tom Peterka, Chaoli Wang, Shusen Liu. 2026. SciVisAgentBench: A Benchmark for Evaluating Scientific Data Analysis and Visualization Agents. In *Proceedings of IEEE Transactions on Visualization and Computer Graphics* (IEEE VIS '26). 10.48550/arXiv.2603.29139

[3] **Kuangshi Ai**, Patrick Phuoc Do, Chaoli Wang. 2026. HiLSVA: Design and Evaluation of a Human-in-the-Loop Agentic System for Scientific Visualization. In *Proceedings of IEEE Transactions on Visualization and Computer Graphics* (IEEE VIS '26). 10.48550/arXiv.2606.26614

[4] Kaiyuan Tang, **Kuangshi Ai**, Jun Han, Chaoli Wang. 2025. TexGS-VolVis: Expressive Scene Editing for Volume Visualization via Textured Gaussian Splatting. In *Proceedings of IEEE Transactions on Visualization and Computer Graphics* (IEEE VIS '25). 10.1109/TVCG.2025.3634643

[5] **Kuangshi Ai**, Haichao Miao, Zhimin Li, Chaoli Wang, Shusen Liu. 2025. An Evaluation-Centric Paradigm for Scientific Visualization Agents. In *Proceedings of the 1st Workshop on GenAI, Agents, and the Future of VIS* (IEEE VIS '25 Workshop). 10.48550/arXiv.2509.15160

[6] Jackson Vonderhorst, **Kuangshi Ai**, Haichao Miao, Shusen Liu, Chaoli Wang. 2026. Exploring LLM Agent Designs and Interaction Modalities for Scientific Visualization. In *Proceedings of IEEE Visualization and Visual Analytics* (IEEE VIS '26 Short Paper). 10.48550/arXiv.2604.27996

[7] Haichao Miao, Zhimin Li, **Kuangshi Ai**, Kaiyuan Tang, Chaoli Wang, Peer-Timo Bremer, Shusen Liu. 2026. Toward AI VIS Co-Scientists: A General and End-to-End Agent Harness for Solving Complex Data Visualization Tasks. In *Proceedings of the 2nd Workshop on GenAI, Agents, and the Future of VIS* (IEEE VIS '26 Workshop). 10.48550/arXiv.2605.21825

[8] Simret Araya Gebreegziabher, **Kuangshi Ai**, Zheng Zhang, Elena Glassman, Toby Jia-Jun Li. 2025. Leveraging Variation Theory in Counterfactual Data Augmentation for Optimized Active Learning. In *Proceedings of Findings of the Association for Computational Linguistics* (ACL '25). 10.18653/v1/2025.findings-acl.50

[9] Patrick Phuoc Do, Kaiyuan Tang, **Kuangshi Ai**, Chaoli Wang. 2026. SVLAT: Scientific Visualization Literacy Assessment Test. 10.48550/arXiv.2603.19000

[10] **Kuangshi Ai**, Haichao Miao, Kaiyuan Tang, Shusen Liu, Chaoli Wang. 2026. SciVisAgentSkills: Design and Evaluation of Agent Skills for Scientific Data Analysis and Visualization. 10.48550/arXiv.2606.05525

[11] Yingbo Ma*, **Kuangshi Ai***, Gordon Dai*, Chenglong Yu, Chaoli Wang, Hua Shen. 2026. VETR: Execution-Grounded Self-Improving Agent for Symbolic Graphics Reasoning. 10.48550/arXiv.2610.13098

[12] Siyuan Yao, Siavash Ghorbany, **Kuangshi Ai**, Arnav Cherukuthota, Meghan Forstchen, Alexis Korotasz, Matthew Sisk, Ming Hu, Chaoli Wang. 2026. Leveraging Multimodal LLMs for Built Environment and Housing Attribute Assessment from Street-View Imagery. In *Proceedings of Advances in Visual Computing* (ISVC '26). 10.48550/arXiv.2604.21102

[13] **Kuangshi Ai***, Jonathan A. Karr Jr*, Meng Jiang, Nitesh V. Chawla, Chaoli Wang. 2025. KEO: Knowledge Extraction on OMIn via Knowledge Graphs and RAG for Safety-Critical Aviation Maintenance. (*co-first authors) 10.48550/arXiv.2510.05524

Professional Experience

Jul-Oct 2026 **TikTok,** ML Research Scientist Intern — San Jose, CA

- Developed a self-evolving agentic framework that jointly evolves LLM policies and their harnesses for long-horizon AIGC video creation and editing.
- Mined online high-performing short videos to automatically propose workflow and tool improvements and distill reusable agent skills as prior knowledge.
- Diagnosed failed trajectories and generated alternative execution branches through counterfactual replay; used multimodal video-quality judges to evaluate branch outcomes and Tree-GRPO-style credit assignment to identify effective actions, then used refined trajectories for SFT and agentic RL post-training.

Jan-May 2024 **Lingjun Investment,** Quantitative Research Intern — Beijing, China

- Developed and evaluated quantitative trading models within the firm's live trading framework.
- Designed a graph Transformer-based daily portfolio construction model using proprietary factor libraries, outperforming existing production models in backtesting.

Oct-Dec 2023 **Ziyan Intelligent Technology,** Embodied AI Research Intern — Shanghai, China

- Developed perception modules for humanoid robots, including stereo depth estimation and visual navigation.
- Fine-tuned VLMs for robotic navigation and evaluated them in simulation.

Jul-Aug 2022 **YCIH Logistics,** Data Management Intern — Yunnan, China

- Developed PostgreSQL-backed tools for real-time monitoring and visualization of supply-chain operations.

Awards and Honors

2026 **Notebaert Professional Development Award,** University of Notre Dame.

2026 **Graduate Student Government Conference Presentation Grant,** University of Notre Dame.

2025 **Best Paper Award** (Top 1%), IEEE VIS Conference.

2024 **Outstanding Graduate,** Fudan University.

2021-2024 **Outstanding Student Scholarship,** Fudan University.

2022 **Second Prize in CUMCM,** China Society for Industrial and Applied Mathematics.

2020-2022 **Outstanding Student Leaders,** Fudan University.

2020 **First-class Scholarship for Freshman,** Fudan University.

Service

2025-now **Reviewer**
IEEE VIS '26, ACM CHI '26, SIGGRAPH '26, EuroVis '26, PacificVis '26, ICLR '27, ChinaVis '26, ACM CAIS '26, Computers & Graphics, Visual Informatics, IJHCI, ISPRS

2026 **Student Volunteer**
IEEE VIS '26