Lin **Gao**

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Education

Fudan University (FDU) — *Shanghai, CN*

M.S. in Application Statistics — *Sep. 2023 - Present*

- Advised by Prof. Siming Chen. Member of the FDUVIS Lab.
- **Research Interests**: Visual Analytics, Human-AI Interactions, Intelligent Education

Chongqing University (CQU, Graduation with Honor) — *Chongqing, CN*

B.S. in Data Science and Big Data Technology — *Sep. 2019 - Jun. 2023*

- Advised by Prof. Haibo Hu. Member of the CQU-VIVALab.
- GPA: 3.85/4.00 (Top 3%), Outstanding Undergraduate Graduate.

Experience

Hong Kong University of Science and Technology (HKUST) — *Hong Kong, CN*

Visiting Student Researcher — *Jul. 2024 - Present*

- Advised by Prof. Huamin Qu at the HKUST VisLab.

Publications

[J2] Fine-Tuned Large Language Model for Visualization System: A Study on Self-Regulated Learning in Education

Lin Gao, Jing Lu, Zekai Shao, Ziyue Lin, Shengbin Yue, Chiokit Ieong, Yi Sun, Rory James Zauner, Zhongyu Wei and Siming Chen.

IEEE Transactions on Visualization and Computer Graphics (Proc. VIS'2024)

[J1] TransforLearn: Interactive Visual Tutorial for the Transformer Model

Lin Gao, Zekai Shao, Ziqing Luo, Haibo Hu, Cagatay Turkay and Siming Chen.

IEEE Transactions on Visualization and Computer Graphics (Proc. VIS'2023), vol. 30, no. 1, pp. 891-901, Jan. 2024, doi: 10.1109/TVCG.2023.3327353

[C1] Interactive Financial Data Decision-Making Visual Analysis Based on DuPont Analysis and Large Language Model

Xiaowen Zhang, Yi Wan, Fen Wang, Xuan Chen, Yuheng Zhao, **Lin Gao**, Siming Chen

China Visualization and Visual Analytics Conference (ChinaVis 2024)

Projects

Fine-Tuned Large Language Model for Visualization System: A Study on Self-Regulated Learning in Education (IEEE VIS 2024, Accepted)

Lin Gao, Jing Lu, Zekai Shao, Ziyue Lin, Shengbin Yue, Chiokit Ieong, Yi Sun, Rory James Zauner, Zhongyu Wei and Siming Chen.

- We propose a framework and outline a workflow to guide the application of fine-tuned LLMs to enhance visual interactions for domain-specific tasks to achieve three alignments: domain problems with LLMs, visualization with LLMs, and interaction with LLMs.
- We apply the framework to education and introduce Tailor-Mind, an interactive visualization system designed to facilitate self-regulated learning for artificial intelligence beginners.

TransforLearn: Interactive Visual Tutorial for the Transformer Model (IEEE VIS 2023, Published)

Lin Gao, Zekai Shao, Ziqing Luo, Haibo Hu, Cagatay Turkay and Siming Chen.

- We present TransforLearn, the first interactive visual tutorial designed for deep-learning beginners and non-experts to learn about Transformers comprehensively. TransforLearn supports interactions for architecture-driven exploration and task-driven exploration, providing insight into different levels of model details and their working processes.

Interactive Financial Data Decision Making Visual Analysis Based on DuPont Analysis and Large Language Model (ChinaVis 2024, Accepted)

Xiaowen Zhang, Yi Wan, Fen Wang, Xuan Chen, Yuheng Zhao, **Lin Gao** and Siming Chen.

- We develop FinDecipher, an intelligent visual analysis system combining DuPont analysis and LLMs to automatically interpret financial reports and generate interactive visualizations, aiding in the exploration of complex financial data.

SimSpark: Interactive Simulation of Social Media Behaviors (CSCW 2024, Under Review)

Ziyue Lin, Yi Shan, **Lin Gao**, Xinghua Jia and Siming Chen.

- This paper introduces SimSpark, an interactive system with simulation algorithms and interactive visual interfaces capable of creating small simulated social media platforms with customized characters and social environments.

Visual Analysis of Network Assets in the Criminal Industry (ChinaVis Challenge 2022, First Prize Winner)

(Key Member) Desheng Sun, **Lin Gao**, Ziao Liu, Xiaoqi Yue, Yixuan Zhou.

- This project employs graph theory and community detection algorithms to enable sub-graph mining and identify core assets and critical connections. A strategic visual analysis framework was developed to map criminal network assets, significantly enhancing governance efforts.

Visual Analysis of High-Dimensional Time-Series Air Pollution Data (National College Students Innovation and Entrepreneurship Training Program 2022, Outstanding Program)

(Team Leader) **Lin Gao**, Ziao Liu, Yuyang Hong.

- Addressing the issue of atmospheric pollution dispersion, this project proposes a topology-based backward trajectory tracing algorithm.
- To facilitate real-time feedback between the algorithm and users, a visual analysis system capable of handling high-dimensional time-series atmospheric pollution data with backward trajectory tracking capabilities was developed. This system provides technical support for meteorological experts' research.

Honors & Awards

2023 **Outstanding Freshman Scholarship**, FDU
2023 **Outstanding Graduate Thesis**, Chongqing Province
2023 **Outstanding Graduate Graduates**, CQU
2019-23 **Outstanding Student Scholarship**, CQU
2019-23 **Outstanding Student and Outstanding League Member**, CQU
2022 **Outstanding Program**, 15th National College Students Innovation and Entrepreneurship Training Program
2022 **National First Prize**, 9th China Visualization and Visual Analysis Conference (ChinaVis 2022) Challenge
2022 **National Third Prize**, 15th National Computer Design Competition

Service, Skills & Others

Conference Reviewer ChinaVis (2024)
Programming Skills Python, Pytorch, JavaScript, Vue.js, D3.js, Echarts.js, Latex
Design Skills Figma, Adobe Photoshop, Adobe Illustrator, Adobe Lightroom, Final Cut Pro
Presentation/Talks VIS (2023), ChinaVis (2022), China-R (2023)
Volunteer Activities ChinaVis (2024), Photojournalist of Propaganda Department of the CQU Party Committee, Special Service Team for Essay Correction Volunteer Activity, Blood Donation, and more.