

Rui SHENG

VisLab, advised by Prof. Huamin QU
The Department of Computer Science and Engineering
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EDUCATION

- Ph.D. Computer Science and Engineering, the Hong Kong University of Science and Technology (HKUST), China, 2021-current
- B.S. Computer Science and Technology (Rank: 2/334), Wuhan University (WHU), China, 2017-2021

RESEARCH AREAS

Data Visualization, Human-AI Collaboration, Biomedical Scientific Discovery, Clinical Applications

INTERNSHIP

- CMU Data Interaction Group (Prof. Adam Perer), Human-Computer Interaction Institute, School of Computer Science, Carnegie Mellon University (CMU), the United States, Onsite, 2025
- NU Center for Science of Science & Innovation (Prof. Dashun Wang), Kellogg School of Management, Northwestern University (NU), the United States, Remote, 2024
- Cornell Wang Lab (Prof. Fei Wang), Weill Cornell Medicine Graduate School of Medical Sciences, Cornell University, the United States, Remote, 2023
- UC Davis VIA Lab (Prof. Dongyu Liu), Department of Computer Science, College of Engineering, the University of California at Davis (UC Davis), the United States, Remote, 2023

AWARDS

- 2025 Redbird Scholarship in HKUST
- 2021 Hong Kong Ph.D. Fellowship Scheme (4%, HK\$331,200 annually)
- 2020 National Scholarship in Wuhan University (6/334, the highest scholarship in WHU)
- 2019 National Scholarship in Wuhan University (6/342, the highest scholarship in WHU)
- 2019 National College Mathematics Modeling Competition Competition Award M
- 2019 The Second Prize of the National College Internet of Things Competition
- 2018 The First Prize of the 10th National College Mathematics Competition(Non-math Major)

PUBLICATIONS

First-author

- 2026 **Rui Sheng**, Furui Cheng, Chuhan Shi, Sobhan Lotfi, Shiyi Liu, Adam Perer, and Huamin Qu. "Design Patterns of Human-AI Interfaces in Healthcare." *IJHCS*.

- 2025 **Rui Sheng**, Zelin Zang, Jiachen Wang, Yan Luo, Zixin Chen, Yan Zhou, Shaolun Ruan, and Huamin Qu. "CellScout: Visual Analytics for Mining Biomarkers in Cell State Discovery" *IEEE TVCG*.
- 2025 **Rui Sheng**, Dongyu Liu, Yifang Wang, Xingbo Wang, Shun Dai, Qingyu Guo, Tai-Quan Peng, and Huamin Qu. "EMINDS: Understanding User Behavior Progression for Mental Health Exploration on Social Media." *IEEE TVCG*.
- 2025 **Rui Sheng**, Xingbo Wang, Jiachen Wang, Xiaofu Jin, Zhonghua Sheng, Zhenxing Xu, Suraj Rajendran, Huamin Qu, and Fei Wang. "TrialCompass: Visual Analytics for Enhancing the Eligibility Criteria Design of Clinical Trials." *IEEE VIS*.
- 2023 **Rui Sheng**, Leni Yang, Haotian Li, Yan Luo, Ziyang Xu, Zhilan Zhou, David Gotz, and Huamin Qu. "Knowledge Compass: A Question Answering System Guiding Students with Follow-Up Question Recommendations." *ACM UIST Demo*.
- **Rui Sheng**, Yukun Yang, Chuhan Shi, Yanna Lin, Zixin Chen, Huamin Qu, and Furui Cheng. "DiLLS: Interactive Diagnosis of LLM-based Multi-agent Systems via Layered Summary of Agent Behaviors." *Second round of review for CHI*.

Corresponding-author

- 2025 Leixian Shen, Yan Luo, **Rui Sheng***, Yujia He, Haotian Li, Leni Yang, and Huamin Qu. "StoryLensEdu: Personalized Learning Report Generation through Narrative-Driven Multi-Agent Systems." *IEEE PacificVis*.
- Chuhan Shi, Xiaoquan Ren, Yifang Wang, Junze Li, Yushi Sun, Yawen Luo, and **Rui Sheng***. "A Survey of Human-AI Collaboration for Scientific Discovery." *Under review for ACL*.
- Yanna Lin, Shaojie Xu, Wenshuo Zhang, Yushi Sun, Zixin Chen, Yanjie Zhang, and **Rui Sheng***. "A Survey of LLM-based Multi-agent Systems in Medicine." *Under review*.

Co-author

- 2025 Shaolun Ruan, **Rui Sheng**, Xiaolin Wen, Jiachen Wang, Tianyi Zhang, Yong Wang, Tim Dwyer, and Jianne Li. "Qualitative Study for LLM-assisted Design Study Process: Strategies, Challenges, and Roles." *IEEE VIS (Best Paper Honorable Mention)*.
- 2025 Qipeng Wang, Shaolun Ruan, **Rui Sheng**, Yong Wang, Min Zhu, and Huamin Qu. "TrajLens: Visual Analytics for Constructing Cell Development Trajectories in Cross-Sample Analysis." *IEEE VIS*.
- 2025 Zixin Chen, Sicheng Song, Kashun Shum, Yanna Lin, **Rui Sheng**, and Huamin Qu. "Unmasking Deceptive Visuals: Benchmarking Multimodal Large Language Models on Misleading Chart Question Answering." *ACM EMNLP (Oral)*.
- 2025 Xingbo Wang, Samantha L. Huey, **Rui Sheng**, Saurabh Mehta, and Fei Wang. "SciDaSynth: Interactive Structured Knowledge Extraction and Synthesis from Scientific Literature with Large Language Model." *Campbell Systematic Reviews*.
- 2025 Jiachen Wang, Zikun Deng, Dazhen Deng, Xingbo Wang, **Rui Sheng**, Yi Cai, and Huamin Qu. "Empowering Multimodal Analysis with Visualization: A Survey." *Computer Science Review*.
- 2025 Qipeng Wang, **Rui Sheng**, Shaolun Ruan, Xiaofu Jin, Chuhan Shi, and Min Zhu. "SynthLens: Visual Analytics for Facilitating Multi-step Synthetic Route Design." *IEEE TVCG*.
- 2023 Junxiu Tang, **Rui Sheng**, Yifang Wang, Xinhuan Shu, Xiaojiao Chen, Tan Tang, and Yingcai Wu. "Posts with no Response: The Island of Loneliness." *IEEE VIS Arts Program (accepted in two tracks - Pictorial and Artwork)*.
- 2021 Min Hu, Ruimin Hu, Xiaocheng Wang, and **Rui Sheng**. "Unsupervised Temporal Attention Summarization Model for User Created Videos." *IEEE MMM*.

- Qipeng Wang, **Rui Sheng**, Yafei Li, Huamin Qu, Min Zhu, and Yushi Sun. "MedKGI: Iterative Differential Diagnosis with Medical Knowledge Graphs and Information-Guided Inquiring." *Under review for ACL*.
- Jianben He, **Rui Sheng**, Xingbo Wang, Kam Kwai Wong, Xinhuan Shu, and Huamin Qu. "Engager: A Visual Analytics System for Multi-person and Multimodal Engagement Analysis in Online Teaching Videos." *Under review for IEEE TVCG*.
- Yifang Wang, Erzhuo Shao, Haotian Li, **Rui Sheng**, Yifan Qian, Nan Cao, and Dashun Wang. "SciSciCanvas: An Interactive Data Exploration Canvas for the Science of Science." *In submission*.
- Shaolun Ruan, Zhikang Wang, Furui Cheng, **Rui Sheng**, Kai Qian, Jiangning Song, and Yong Wang. "ImaGene: A Multimodal Visualization Tool for Gene-powered Cancer Prognosis." *Under review for EuroVis*.

PROJECTS

- 2025-26 Project member. AI-assisted Virtual Reality English Speaking Program for Secondary Students.
HK\$30M by the Quality Education Fund, Hong Kong
- 2025-26 Project member. From Classroom to Career: LLM-Driven Curriculum Design and Talent Development in the Age of AI and Emerging Technologies.
HK\$600K by the Education University of Hong Kong & the Hong Kong University of Science and Technology Joint Centre for Artificial Intelligence Application
- 2024-27 Project leader. Visual Analytics of Student-AI Interaction Data for Generative AI-Assisted Learning.
HK\$1M by the General Research Fund, the Research Grants Council of Hong Kong
- 2023-25 Project leader. AI-Powered, Personalized Analysis and Feedback Platform for K-12 Education in Computational Thinking Skills.
HK\$450K by the ITF project & CUHK project
- 2021-23 Project member. AI-powered Audience Engagement Analysis for Virtual Communication.
HK\$2M by the ITF project & industry project

SERVICE

Academic Peer Review

- Journal of Medical Internet Research (JMIR)
- The Meeting of the Association for Computational Linguistics (ACL)
- Eurographics Conference on Visualization (EuroVis)
- The Conference on Human Factors in Computing Systems (CHI & CHI-LBW)
- Visual Informatics (VI)
- The Conference on Computer-Supported Cooperative Work and Social Computing (CSCW).
- The Pacific Visualization (PacificVis - TVCG track & Conference track).
- The China Visualization and Visual Analytics Conference (ChinaVis).
- The Conference on Information and Knowledge Management (CIKM).

Teaching Assistant

- 2024 HKUST COMP 22II - Exploring Artificial Intelligence

- 2024 HKUST COMP 1021 - Introduction to Computer Science
2023 HKUST COMP 4321 - Search Engines for Web and Enterprise Data

Lab Service

- 2025-26 In charge of the management of the VisLab
2024-25 In charge of the BBS of the VisLab
2022-24 In charge of the publicity of our group (including WeChat, Zhihu, RedBook, and Twitter)
2021-22 In charge of maintaining the VisLab homepage