Yuhan Jiang (1999-)

Chair of Cartography and Visual Analytics, Technical University of Munich (TUM)
Arcisstrasse 21, 80333 Munich, Germany
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EDUCATION

PhD Cand., Technical University of Munich **Sept. 2024 - pres.**

- Chair of Cartography and Visual Analytics, School of Engineering and Design
- Supervisor: Prof. Dr.-Ing. Liqiu Meng, TUM
- Mentor: Dr.-Ing. Peng Luo, MIT

PhD Cand., European Institute of Innovation and Technology Urban Mobility **Jul. 2025 - pres.**

- EIT Doctoral Training Network (DTN)
- DTN@TUM: International Graduate School of Science and Engineering
- Components: Innovation & Entrepreneurship Modules, Intercultural Skills & Leadership, International Placement, DTN Annual Forum

M.Eng., Wuhan University **Sept. 2021 - Jun. 2024**

- State Key Laboratory of Engineering in Surveying, Mapping and Remote Sensing
- Major: Cartography and Geographic Information Engineering
- Average score: 87.94/100

B.Eng., Wuhan University **Sept. 2017 - Jun. 2021**

- School of Remote Sensing and Information Engineering
- Major: Remote Sensing Science and Technology
- GPA: 3.84/4.0 (Top 7%)

Summer School, Hong Kong Polytechnic University **Jun. 2019 - Jul. 2019**

- Department of Land Surveying and Geo-Informatics
- Main Courses: Mobile GIS and Location-based Services, Spatial Big Data Analytics

RESEARCH INTERESTS

- Geospatial Artificial Intelligence (GeoAI)
- Spatiotemporal Data Visual Analytics

RESEARCH EXPERIENCE

Spatiotemporal Memory and Intelligence in LLMs *Supervisor: Prof. Liqiu Meng, Dr. Peng Luo*

2025 - pres. **Lost in Aggregation:** Systematically validate LLMs' spatial reasoning across multimodal location inputs (image, coordinate, text, map) and propose a framework to improve their spatial reasoning. Released as a public benchmark with code; arXiv:2606.22219.

2025 - pres. **LLM-MapRepair**: This study developed a framework for LLM agents to incrementally build and repair navigation graphs, ensuring coherent spatial memory through version-controlled edits and impact-based corrections.

Hiking Behavior Patterns *Supervisor: Prof. Liqiu Meng, Dr. Peng Luo*

2024 - pres. Develop a dataset from user-generated GPS, imagery, and textual data to model hiking patterns and assess ecological footprints for sustainability research.

Map Retrieval Intention Recognition *Supervisor: Prof. Jianya Gong, Prof. Zhipeng Gui*

2021 - 2024 Drawing on relevant user feedback data and geographic semantics guidance, this research aims to enhance the retrieval accuracy and assist the discovery and utilization of online geographic resources in an intention-driven way. Hypergraph segmentation is employed to

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optimize this research.

2021 - 2023 OGC WMS Discovery Portal: We built a Web-based retrieval system for online geographic resources, to support the multimodal search and query of the Web Map Service.

Spatial Analysis of COVID-19 *Supervisor: Prof. Gang Xu*

2019 - 2021 This study focused on quantifying the spatial distribution patterns of COVID-19 cases in Wuhan by utilizing social media data (Weibo). Furthermore, a correlation analysis was conducted to investigate the potential associations between the distribution of COVID-19 cases and environmental factors.

TEACHING EXPERIENCE

Courses

2026 SoSe **Spatial Visual Analytics:** Block 2 Advanced Web-Based Mapping and Visualization Packages.

2025 SoSe **Spatial Visual Analytics:** Block 4 Web-Based Mapping and Visualization Packages.

2025 SoSe **Mapping for a Sustainable World – Seminar:** Connecting cities to nature: Temporal accessibility analysis of hiking trails via public transport.

Thesis Supervision

2026 - pres. **Burcu Yildirim** (M.Sc. Geodesy and Geoinformation): Large Language Models as Navigation Narrators: Evaluating Temporal Adaptation and Cognitive Landmark Usage. In progress, due November 2026. Co-supervised with Chuan Chen; examiner Prof. Liqiu Meng.

2026 - pres. **Yikun Hao** (M.Sc. Robotics, Cognition, Intelligence): Design and Implementation of an AI-agent-based Self-diagnostic Ethical GeoAI Framework. In progress, due September 2026. Co-supervised with Chuan Chen; examiner Prof. Liqiu Meng.

2025 - 2026 **Yuanhan Shu** (M.Sc. Robotics, Cognition, Intelligence): An open source Python package for geospatial visual explainable AI with causal discovery and recursive decomposition. Completed, submitted June 2026. Co-supervised with Chuan Chen; examiner Prof. Liqiu Meng.

ACADEMIC ACHIEVEMENTS

5 journal articles, 1 conference paper, 1 preprint, 2 book chapters, 5 conference presentations, 2 patents, including:

Journal Articles

2026 Chen, C., **Jiang, Y.**, Feng, Y., Liu, Y., Meng, L. Explaining the urban mechanisms behind OpenStreetMap updates: Evidence from 88 German cities. *Computers, Environment and Urban Systems*, 128, 102456. DOI: 10.1016/j.compenvurbsys.2026.102456

2024 **Jiang, Y.**, Gui, Z., Liu, X., Zhao, A., Ling, Z., Gong, J., Wu, H. Map Retrieval Intention Recognition Based on Hypergraph Segmentation. *(Not yet published)*

2024 Gui, Z., Liu, X., Zhao, A., **Jiang, Y.**, Ling, Z., Hu, X., Li, F., Yang, Z., Wu, H., Zhao, S. Map retrieval intention recognition based on relevance feedback and geographic semantic guidance: For better understanding user retrieval demands. *Information Processing and Management*, 61(4), 103767. DOI: 10.1016/j.ipm.2024.103767

2023 Gui, Z., Hu, X., Liu, X. Ling, Z., **Jiang, Y.**, Wu, H. Map Retrieval Intention Formalization and

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Recognition by Considering Geographic Semantics. *Journal of Geo-information Science*, 25 (6), 1186-1201. DOI: 10.12082/dqxxkx.2023.230019.

2022 Xu, G., **Jiang, Y.**, Wang, S., Qin, K., Ding, J., Liu, Y., Lu, B. Spatial disparities of self-reported COVID-19 cases and influencing factors in Wuhan, China. *Sustainable Cities and Society*, 76, 103485. DOI: 10.1016/j.scs.2021.103485.

Conference Papers

2026 Zhang, P., Chen, X., Feng, Y., **Jiang, Y.**, Meng, L. Constructing coherent spatial memory in LLM agents through graph rectification. *Proceedings of the 64th Annual Meeting of the Association for Computational Linguistics (ACL 2026)*, San Diego, California, USA. arxiv.org/abs/2510.04195

Preprints

2026 **Jiang, Y.**, Luo, P., Meng, L. Lost in Aggregation: A Multi-Scale Diagnostic Benchmark for LLM Spatial Navigation. *arXiv preprint* arXiv:2606.22219. arxiv.org/abs/2606.22219

Book Chapters

2022 Xia, J., Huang, Q., Gui, Z., & Tu, W. (2024). Open GIS. Chapter 10: Desktop-based Mapping and Visualization Tools. Chapter 11: Web-based Mapping and Visualization Packages. *Springer International Publishing*. DOI: https://doi.org/10.1007/978-3-031-41748-1.

Conference Presentations

2026 Lost in Aggregation: A Multi-Scale Diagnostic Benchmark for LLM Spatial Navigation, *DTN Annual Forum*, Tartu, Estonia, 11-13 June, 2026. Poster.

2026 Where Do LLMs Get Lost? A Multi-Scale Diagnostic Benchmark for Spatial Navigation, *IGSSE Forum 2026*, Raitenhaslach, Germany, 11-13 May, 2026. Poster.

2025 *DTN Annual Forum*, Lisbon, Portugal, 10-12 September, 2025. Attended.

2025 Beyond Spatial Proximity: A Temporal Accessibility Index for Equitable Nature Access in Bavaria's Hiking Trails, *The 32nd International Cartographic Conference*, Vancouver, Canada, 17-22 August, 2025. Oral Presentation. Abstract published in *Abstracts of the ICA*, 10, 130. DOI: 10.5194/ica-abs-10-130-2025.

2023 Map Retrieval Intention Recognition Based on Hypergraph Segmentation, *The 18th Annual Conference on Theories and Methods of Geographic Information Science in China*, Guilin, China, 19-21 May, 2023. Oral Presentation.

Patents

2023 Gui, Z., **Jiang, Y.**, Gong, J., Wu, H., Ling, Z., Liu, X., Zhao, A., A Method for Detecting Geographic Information Resource Retrieval Intentions and its Computer-Readable Medium. Invention patent, No.: ZL202310900690.5.

2022 Gui, Z., Hu, X., Lin, Z., **Jiang, Y.**, Wu, H., A Method for Semantic-Aware Geographic Information Resource Retrieval Intention Recognition. Invention patent, No.: ZL202210280298.0.

HONORS & AWARDS

2024 - 2025	International Cartographic Association (ICA) Scholarship	
2021 - 2024 (Master)	Outstanding Master's Degree Graduates	Outstanding Postgraduate Student
	The First Prize Academic Scholarship	Advanced Individual of Social Work
2017 - 2021 (Bachelor)	Outstanding Bachelor's Degree Graduates	Merit Student
	National Encouragement Scholarship	The First Prize Scholarship