Armand Kapaj

Spatial Cognition Researcher

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Experience

01.2024 – Present **Senior Scientist (Oberassistent).** Geographic Information Visualization and Analysis (GIVA) research group, Department of Geography, University of Zurich, Zurich, Switzerland.

08.2023 – 12.2023 **Postdoctoral Researcher.** GIVA research group, Department of Geography, University of Zurich, Zurich, Switzerland.

05.2023 – 07.2023 **Research Assistant.** GIVA research group, Department of Geography, University of Zurich, Zurich, Switzerland.

02.2019 – 04.2023 **Ph.D. Student Researcher.** GIVA research group, Department of Geography, University of Zurich, Zurich, Switzerland.

Education

02.2019 – 04.2023 **Ph.D. in Geography,** Department of Geography, University of Zurich, Zurich, Switzerland. *Thesis*: *Landmark Visualization on Mobile Maps – Effects on Visual Attention, Spatial Learning, and Cognitive Load during Map-Aided Real-World Navigation of Pedestrians.*

10.2016 – 09.2018 **M.Sc. in Cartography,** Technical University of Munich, Vienna University of Technology, Dresden University of Technology, and University of Twente. *Thesis*: *User-Oriented Campus Routing.*

10.2011 – 10.2013 **M.Sc. in Geography,** University of Tirana, Tirana, Albania.

10.2007 – 04.2011 **B.Sc. in Geography,** University of Tirana, Tirana, Albania.

Invited talks

08.2025 **Landmark visualization on navigation aids: Effects on spatial learning and long-term memory retention.** *Workshop on Spatial Representations and Thinking in Navigation: A Cognitive Perspective at the 32nd International Cartographic Conference (ICC 2025), Vancouver, Canada.*

06.2025 **Navigating VR with a handheld mobile map: Real-time VR–map positional synchronization during a navigation study.** *Presented at the workshop Geo xR — Addressing planetary and societal challenges by integrating geospatial data science with spatial media at the 18th AGILE Conference, Dresden, Germany.*

03.2025 **Landmark-based in-car navigation system for improved driving safety and spatial learning.** *DSI Mobility Community, Zurich, Switzerland.*

07.2023 **The interaction between landmark visualization style, spatial abilities, and visual attention on wayfinders' spatial learning during real-world map-aided navigation.** *Chair of Biological Psychology and Neuroergonomics, Technische Universität Berlin, Germany.*

06.2022 **The impact of landmark visualization style on wayfinders' spatial learning, visual attention, and cognitive load during navigation.** *Digital Society Initiative (DSI), DSI Mobility Community, Zurich, Switzerland.*

Professional activities

Workshops

08.2025 **Co-organizer** of the **workshop** *Spatial Representations and Thinking in Navigation: A Cognitive Perspective* at the *32nd International Cartographic Conference (ICC 2025)*, held in Vancouver, Canada.

09.2024 **Co-organizer** of the **thematic session (workshop)** *Conducting Empirical Research across Spatial Cognition and GIScience: Progress and Outlook* at the *16th International Conference on Spatial Information Theory (COSIT 2024)*, held in Quebec, Canada.

Research visits

06.2019 **Research visit** at the *Institute of Cognitive Psychology* at Leiden University, Netherlands.

Publications

Journal Articles

Bartling, M., **Kapaj**, **A.**, Cheng, B., Xu, Z., Griffin, A. L., & Fabrikant, S. I. (2025). Unlocking context-aware mobile map adaptation: A vr navigation user study. *Cartography and Geographic Information Science*, *0*(0), 1–19. https://doi.org/10.1080/15230406.2025.2512075

Hilton, C., **Kapaj**, **A.**, & Fabrikant, S. I. (2025). Fixation-related potentials during mobile map assisted navigation in the real world: The effect of landmark visualization style. *Attention, Perception, & Psychophysics*, *87*, 191–206. https://doi.org/10.3758/s13414-024-02864-z

Kapaj, **A.**, Hilton, C., Lanini-Maggi, S., & Fabrikant, S. I. (2024). The influence of landmark visualization style on task performance, visual attention, and spatial learning in a real-world navigation task. *Spatial Cognition & Computation*, *24*(4), 227–267. https://doi.org/10.1080/13875868.2024.2328099

Kapaj, **A.**, Lanini-Maggi, S., Hilton, C., Cheng, B., & Fabrikant, S. I. (2023). How does the design of landmarks on a mobile map influence wayfinding experts' spatial learning during a real-world navigation task? *Cartography and Geographic Information Science*, *50*(2), 197–213. https://doi.org/10.1080/15230406.2023.2183525

Hilton, C., **Kapaj**, **A.**, & Fabrikant, S. I. (2023). Landmark Sequence Learning from Real-World Route Navigation and the Impact of Navigation Aid Visualisation Style. *Journal of Cognition*, *6*(1), 41. https://doi.org/10.5334/joc.307

Preprint Articles

Kapaj, **A.**, Fabrikant, S. I., & Hilton, C. (2025). Lost or lasting? Long-term spatial memory retention 2 years after a single map-aided navigation episode. *PsyArXiv Preprints*. https://doi.org/10.31234/osf.io/j3qbx_v1

Kapaj, **A.**, Hilton, C., Lanini-Maggi, S., & Fabrikant, S. I. (2023). The influence of landmark visualization style on task performance, visual attention, and spatial learning in a real-world navigation task [Publisher: PsyArXiv Preprints]. https://doi.org/10.31234/osf.io/abfp7

Conference Proceedings

Ilchenko, A., **Kapaj**, **A.**, Reichenbacher, T., & Fabrikant, S. I. (2025). Virtual landmark cues improve spatial learning: evidence from an augmented reality indoor navigation study. *Abstracts of the ICA*. https://doi.org/10.5194/ica-abs-10-121-2025

Garate, M., Reichenbacher, T., & **Kapaj**, **A.** (2025). A Comparison of Hand-Held AR and VR for On-Site Assessment of Construction Projects. *Abstracts of the ICA*. https://doi.org/10.5194/ica-abs-10-82-2025

Ying, Q., Hilton, C., **Kapaj**, **A.**, & Fabrikant, S. I. (2025a). From maps in the head to maps in the hand: how does environmental familiarity influence pedestrian navigators' mobile map use behavior? *Abstracts of the ICA*. https://doi.org/10.5194/ica-abs-10-313-2025

Ying, Q., Hilton, C., **Kapaj**, **A.**, & Fabrikant, S. I. (2025b). The development of landmark, route, and survey knowledge through repeated mobile map-assisted navigation episodes. *AGILE: GIScience Series*, *6*, 50. https://doi.org/10.5194/agile-giss-6-50-2025

Kapaj, **A.**, Hilton, C., & Fabrikant, S. I. (2024a). Long-Term Landmark and Route Memory Retention Acquired in a Real-World Map-Aided Navigation Task (Short Paper). In B. Adams, A. L. Griffin, S. Scheider, & G. McKenzie (Eds.), *16th international conference on spatial information theory (COSIT 2024)* (13:1–13:9, Vol. 315). Schloss Dagstuhl – Leibniz-Zentrum für Informatik. https://doi.org/10.4230/LIPIcs.COSIT.2024.13

Hilton, C., **Kapaj**, **A.**, & Fabrikant, S. I. (2024). Realistic landmark symbols on a map provide implicit, but not explicit, benefits during spatial navigation. *In: Abstracts and authors of the 9th International Conference on Spatial Cognition: Segmentation and Binding in Spatial Cognition (ICSC 2024)*, *Cognitive Processing 25*(Suppl 1), 37–38. https://doi.org/10.1007/s10339-024-01218-9

Kapaj, **A.**, Hilton, C., & Fabrikant, S. I. (2024b). Long-term retention of landmark and route knowledge acquired during a real-world map-aided navigation task. *In: Abstracts and authors of the 9th International Conference on Spatial Cognition: Segmentation and Binding in Spatial Cognition (ICSC 2024)*, *Cognitive Processing 25*(Suppl 1), 37. https://doi.org/10.1007/s10339-024-01218-9

Kapaj, **A.**, Lin, E., & Lanini-Maggi, S. (2022). The Effect of Abstract vs. Realistic 3D Visualization on Landmark and Route Knowledge Acquisition (Short Paper). In T. Ishikawa, S. I. Fabrikant, & S. Winter (Eds.), *15th international conference on spatial information theory (COSIT 2022)* (15:1–15:8, Vol. 240). Schloss Dagstuhl – Leibniz-Zentrum für Informatik. https://doi.org/10.4230/LIPIcs.COSIT.2022.15

Kapaj, **A.**, Lanini-Maggi, S., & Fabrikant, S. I. (2021a). The impact of landmark visualization style on expert wayfinders' cognitive load during navigation. *Abstracts of the ICA*, *3*, 1–3. https://doi.org/10.5194/ica-abs-3-138-2021

Kapaj, **A.**, Lanini-Maggi, S., & Fabrikant, S. I. (2021b). The influence of landmark visualization style on expert wayfinders' visual attention during a real-world navigation task. *GIScience 2021 Short Paper Proceedings*. https://doi.org/10.25436/E2NP44

Wilkening, J., **Kapaj**, **A.**, & Cron, J. (2019). Creating a 3D Campus Routing Information System with ArcGIS Indoors. *Publications of the DGPF*, *28*.

Theses

Kapaj, **A.** (2023). *Landmark Visualization on Mobile Maps – Effects on Visual Attention, Spatial Learning, and Cognitive Load during Map-Aided Real-World Navigation of Pedestrians* [Dissertation]. University of Zurich. https://doi.org/10.5167/uzh-234860

Kapaj, **A.** (2018). *User-Oriented Campus Routing* [Master's thesis, Technical University of Munich]. https://mediatum.ub.tum.de/1619880

Awards

2025 — **Best Short Paper Award** at the *28th Association of Geographic Information Laboratories in Europe (AGILE 2025) Conference*, Dresden, Germany as co-author of the paper: *The development of landmark, route, and survey knowledge through repeated mobile map-assisted navigation episodes*.

2022 — **Best Short Paper Award** at the *15th International Conference on Spatial Information Theory (COSIT 2022)*, Kobe, Japan as lead author of the paper: *The Effect of Abstract vs. Realistic 3D Visualization on Landmark and Route Knowledge Acquisition (Short Paper)*.

2016 – 2018 — **Erasmus Mundus Joint Masters Scholarship** awarded by the *European Commission* to attend the *International Erasmus Mundus Master of Science in Cartography*, hosted by the Technical University of Munich, Vienna University of Technology, Dresden University of Technology, and the University of Twente.

2013 — **Gold Medal Award for Academic Excellence**, conferred by the University of Tirana, Albania, *in recognition of outstanding academic achievement (average grade 10/10)* in the Master of Science in Geography.

2012 — **Tuition Waiver Scholarship** for the second year of studies, awarded by the University of Tirana, Albania, *in recognition of achieving a perfect average grade (10/10)* during the first year of the Master of Science in Geography.

Skills

Coding — R, R Shiny, Matlab, SQL, XML/XSL, KML, HTML, CSS, JavaScript, Java.

GIS Software — ESRI Suite (ArcGIS Desktop, ArcGIS Pro, ArcGIS Indoors, CityEngine, ArcGIS Online, ArcGIS Survey123), QGIS, Mapbox, ILWIS, Grass GIS, PostGIS.

Languages — **Albanian** (native); **English** (advanced proficiency); **German** (intermediate).