

Academic curriculum vitae

Shirin Hajahmadi

Position: Postdoctoral Researcher, Department of Computer Science and Engineering,
University of Bologna

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Google Scholar: Google Scholar Profile

ORCID link: ORCID Profile

Web: Personal Website | University Profile



Profile Summary

Postdoctoral researcher in the Department of Computer Science and Engineering, University of Bologna. Research focuses on cognitive augmentation at the intersection of Extended Reality (XR), Human-Computer Interaction (HCI), and intelligent systems, with emphasis on privacy and security in immersive environments. Publications at IEEE VR, ISMAR, VRST, and ACM SUI; journals include Frontiers in Virtual Reality and Sensors. Teaching and supervision at MSc/BSc level, with active service in peer review, workshop organisation, and co-chair roles.

Research Interests

- Human-Computer Interaction and Human-AI Interaction for cognitive augmentation with XR, AI, and sensors.
- Privacy and security of immersive systems, with emphasis on digital identity protection.
- Inclusive and accessibility-focused design of interactive systems.

Education

University of Bologna, Department of Computer Science and Engineering / VARLab

Bologna, Italy

Ph.D. in Computer Science

Nov. 2021 – Apr. 2025

- **Supervisors:** Prof. Gustavo Marfia (primary), Prof. Luciano Bononi (co-supervisor)
- **Thesis title:** Cognitive Augmentation Systems through Extended Reality, Artificial Intelligence, and Sensors: A Human-Computer Interaction Perspective

Institute for Cognitive Science Studies / Shahid Beheshti University

Tehran, Iran

M.Sc. in Cognitive Science (Cognitive Psychology)

Oct. 2016 – Jan. 2019

- **Supervisor:** Prof. Farzane Safavimanesh
- **Thesis title:** Map-based alignment effects on virtual spatial navigation in complex curved layouts

Shahid Bahonar University

Kerman, Iran

B.Sc. in Computer Science

Feb. 2006 – Apr. 2010

- **Thesis title:** Toward the design and development of lexical and syntactic compilers

Publications

Metrics — Google Scholar (Sep 2025): citations 64 • h-index 5 • i10-index 2

★ *Four selected top-venue/journal outputs (last 5 years).*

Journal Papers

- Armandi, V., Stacchio, L., Cascarano, P., **Hajahmadi, S.**, Donatiello, L., & Marfia, G. (2025). An augmented outdoor workout system for jogging and calisthenics support. *Frontiers in Virtual Reality*, in press.
- ★ Hartfill, J., **Hajahmadi, S.**, Schmidt, S., Marfia, G., & Steinicke, F. (2025). Embracing differences in virtual reality: Inclusive user-centered design of bimanual interaction techniques. *Frontiers in Virtual Reality*, 6, 1586875. <https://doi.org/10.3389/frvir.2025.1586875>
- **Hajahmadi, S.**, Calvi, I., Stacchiotti, E., Cascarano, P., & Marfia, G. (2024). Heritage elements and artificial intelligence as storytelling tools for virtual retail environments. *Digital Applications in Archaeology and Cultural Heritage*, e00368. <https://doi.org/10.1016/j.daach.2024.e00368>
- **Hajahmadi, S.**, Ghasempouri, S., & Marfia, G. (2023). Exploring symbolic narratives in virtual spaces: Leveraging curiosity-driven design and the attention-value model for educational VR museum experiences. *Mimesis Journal*, 13(2), DRHA Proceedings. <https://doi.org/10.13135/2389-6086/9949>
- ★ **Hajahmadi, S.**, & Marfia, G. (2023). Effects of the uncertainty of interpersonal communications on behavioral responses in an immersive virtual reality experience: A usability study. *Sensors*, 23(4), 2148. <https://doi.org/10.3390/s23042148>

Conference Papers

- Cascarano, P., Loretto, A., Zanuttini, L., Giunchi, D., Bovo, R., **Hajahmadi, S.**, Vallasciani, G., Martinoni, M., & Marfia, G. (2025). See it and hear it: Multimodal guidance in MR-based neurosurgical simulation for skill retention. In *Proceedings of the ACM Symposium on Virtual Reality Software and Technology (VRST)*. In press.
- ★ **Hajahmadi, S.**, Cascarano, P., Mostajeran, F., Heuer, K., Lux, A., Mends-Cole, G. O., Steinicke, F., & Marfia, G. (2025, March). Investigating the impact of voice-only and embodied conversational virtual agents on mixed reality puzzle solving. In *Proceedings of the IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2025)*. IEEE. <https://doi.org/10.1109/VR59515.2025.00083>
- ★ **Hajahmadi, S.**, Stacchio, L., Giacché, A., Cascarano, P., & Marfia, G. (2024, October). Investigating extended reality-powered digital twins for sequential instruction learning: The case of the Rubik's Cube. In *Proceedings of the IEEE International Symposium on Mixed and Augmented Reality (ISMAR 2024)* (pp. 259–268). IEEE. <https://doi.org/10.1109/ISMAR62088.2024.00040>
- Stacchio, L., Armandi, V., **Hajahmadi, S.**, Donatiello, L., & Marfia, G. (2024). M-AGEW: Empowering outdoor workouts with data-driven augmented reality assistance. In *Proceedings of the IEEE International Conference on Artificial Intelligence and eXtended and Virtual Reality (AIxVR 2024)* (pp. 301–305). IEEE. <https://doi.org/10.1109/AIxVR59861.2024.00050>
- Sanchez-Acedo, A., Carbonell-Alcocer, A., Cascarano, P., **Hajahmadi, S.**, Vallasciani, G., Gertrudix, M., & Marfia, G. (2024). The influence of audiovisual elements on the realism of generative AI videos: The case of Sora. In *Proceedings of the International Workshop on Artificial Intelligence and Creativity (CREAI)*, co-located with ECAI 2024 (pp. 1–12).
- **Hajahmadi, S.**, & Marfia, G. (2023, July). Toward a shared experience of uncertainty in interpersonal communication through an immersive virtual reality serious game. In *Proceedings of the International Conference on Human-Computer Interaction (HCI 2023)* (pp. 566–580). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-35897-5_40

Workshop Papers

- Bosser, A. G., Cascarano, P., Lacoche, J., **Hajahmadi, S.**, Stănescu, A., & Sörös, G. (2025, March). Preface to the First Workshop on GenAI-XR: Generative artificial intelligence meets extended reality. In *IEEE VR 2025 Abstracts and Workshops (VRW)*. IEEE. <https://doi.org/10.1109/VRW66409.2025.00033>
- **Hajahmadi, S.**, Nabouche, R., Cascarano, P., & Marfia, G. (2025, January). Redefining fashion: A VR journey from 360° runway show to contextual avatar customization. In *XRiM Workshop at IEEE AIXVR 2025*. IEEE. <https://doi.org/10.1109/AIXVR63409.2025.00060>
- Cascarano, P., Loretto, A., Di Pasquale, A., **Hajahmadi, S.**, Vallasciani, G., Zanuttini, L., Martinoni, M., & Marfia, G. (2025, January). Diegetic user interfaces in extended reality for 3D medical visualization. In *Healthcare Workshop at IEEE AIXVR 2025*. IEEE. <https://doi.org/10.1109/AIXVR63409.2025.00072>
- Garzarella, S., Vallasciani, G., Cascarano, P., **Hajahmadi, S.**, Cervellati, E., & Marfia, G. (2025, January). An extended reality platform powered by large language models: A case study on teaching dance costumes. In *Generative AI Workshop at IEEE AIXVR 2025*. IEEE. <https://doi.org/10.1109/AIXVR63409.2025.00069>
- **Hajahmadi, S.**, Clementi, L., López, M. D. J., & Marfia, G. (2024, March). ARELE-bot: Inclusive learning of Spanish as a foreign language through a mobile app integrating augmented reality and ChatGPT. In *IEEE VR 2024 Abstracts and Workshops (VRW)* (pp. 335–340). IEEE. <https://doi.org/10.1109/VRW62533.2024.00067>
- Stacchio, L., Angeli, A., **Hajahmadi, S.**, & Marfia, G. (2021, October). Reviving family photo albums through a collaborative environment exploiting HoloLens 2. In *2021 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct)* (pp. 378–383). IEEE. <https://doi.org/10.1109/ISMAR-Adjunct54149.2021.00086>
- Stacchio, L., **Hajahmadi, S.**, & Marfia, G. (2021, March). Preserving family album photos with HoloLens 2. In *IEEE VR 2021 Abstracts and Workshops (VRW)* (pp. 643–644). IEEE.

Poster Papers

- Cascarano, P., Meglioni, J., Vallasciani, G., Armandi, V., Augello, G., Carradori, S., **Hajahmadi, S.**, & Marfia, G. (2025, January). A comparative analysis of 3D modeling methods for integration into an extended reality platform. In *Posters & Demos at IEEE AIXVR 2025*. IEEE. <https://doi.org/10.1109/AIXVR63409.2025.00041>
- **Hajahmadi, S.**, Mostajeran, F., Heuer, K., Lux, A., Mends-Cole, G. O., Cascarano, P., Steinicke, F., & Marfia, G. (2024). PuzzleAide: Comparing audio and embodied assistants for MR puzzle solving [Poster]. In *Proceedings of the ACM Symposium on Spatial User Interaction (SUI 2024)*. ACM. <https://doi.org/10.1145/3677386.3688899>
- Di Maria, G., **Hajahmadi, S.**, Sapienza, S., Marfia, G., & Palmirani, M. (2024). XR4LAW: Implementing an immersive ergonomic user interface for legislative and deliberative institutions [Poster]. In *Proceedings of the ACM Symposium on Spatial User Interaction (SUI 2024)*. ACM. <https://doi.org/10.1145/3677386.3688891>

PhD Thesis

- **Hajahmadi, S.** (2025). *Cognitive augmentation systems through extended reality, artificial intelligence, and sensors: A human-computer interaction perspective* (Doctoral dissertation). University of Bologna. Advisor: Prof. Gustavo Marfia. [Link](#)

Tutoring & Mentoring

eXRAI: Exploring XR and AI in the Creative Industries Workshop (sponsored by University of Bologna and Universidad Rey Juan Carlos)

Bologna, Italy

Workshop Lecturer

Jul. 2024

- Taught Unity for creating virtual environments and supervised the implementation of an example Unity project (6 hours).

VR/AR Laboratory (MSc Computer Science) — Department of Computer Science and Engineering, University of Bologna

Bologna, Italy

Tutor (instruction-only)

2019–2025

- Led tutorials and labs; weekly office hours; project mentoring; no grading responsibilities.
- 75–100 students total; 20 contact hours.

Data Science and Immersive Technologies for Fashion E-commerce (MSc Fashion Studies) — Department of Arts, University of Bologna

Rimini, Italy

Tutor (instruction-only)

2020–2024

- Led tutorials and labs; weekly office hours; project mentoring; no grading responsibilities.
- 40–45 students total; 20 contact hours.

Advanced Information and Communication Technologies (MSc Fashion Studies) — Department of Arts, University of Bologna

Rimini, Italy

Lecturer

2023–2024

- Led tutorials and labs; weekly office hours; project mentoring; no grading responsibilities.
- 3 students total; 18 contact hours.

Supervision Experience

Department of Informatics, University of Hamburg

Hamburg, Germany

Project Supervisor, BSc Lab Course

2023–2024

- Supervised teams on social dynamics and task performance in MR puzzle tasks under different virtual-assistant conditions.
- **SUI 2024 poster, IEEE VR 2025 paper, Video demo.**

Dept. of Computer Science & Dept. of Fashion Studies, University of Bologna

Bologna/Rimini, Italy

Co-supervisor (MSc theses)

2022–2023

- Maryam Arjomandi — VR fashion experience (“Alice in Wonderland”).
- Igor Iurevici — User enactments in VR: smart-home interaction study.
- Ranim Elnabouche — Virtual fashion show; **IEEE AIXVR 2025 Workshop paper, Video demo**
- Yue Chen — Retail–metaverse synergy for consumer engagement.

Dept. of Fashion Studies, University of Bologna

Rimini, Italy

Course Project Supervisor (MSc)

2021–2022

- The Antique Museum — Mina Etesam. **GitHub**
- Thierry Mugler Virtual Exhibition — Meizi Yu; Ting Su. **GitHub**
- Ralph Lauren F/W 2022 Collection — Afshan Khan. **GitHub**
- Urban Glamour in Gucci Style — Chiara Melchiori; Elizaveta Uvarova.

Positions held to date

Department of Computer Science and Engineering, University of Bologna

Bologna, Italy

Postdoctoral Researcher

Apr. 2025 – Present

- Research on privacy and security in XR; system design, implementation, and empirical evaluation.

Human–Computer Interaction Lab, Department of Informatics, University of Hamburg

Hamburg, Germany

Visiting Researcher

Sep. 2023 – Nov. 2023

- Inclusive VR for users with limb loss; an MR assistant for puzzle solving; supervision of a BSc lab team; outputs include a poster and a conference paper.

Dept. of Computer Science and Engineering (VARLab), University of Bologna

Doctoral Researcher

- XR, AI, and sensors for cognitive augmentation.

*Bologna, Italy**Nov. 2021 – Apr. 2025***University of Bologna & Anastasis Srl — COMPRENDO Project**

Research Fellow

- Inclusive AR and desktop applications for learning autism support; industry–academic collaboration.

*Bologna, Italy**Mar. 2020 – Oct. 2021***Shahid Beheshti University**

Research Assistant

- Spatial cognition studies in virtual environments.

*Tehran, Iran**Feb. 2019 – Mar. 2020*

Fellowships & Grants

European Union — NextGenerationEU, University of Bologna

PNRR Research Fellowship (Postdoctoral)

*Bologna, Italy**2025 — ongoing***University of Bologna**

Marco Polo Incentive Fellowship supporting a three-month research stay abroad.

*Hamburg, Germany**2023 — 2024***Dept. of Computer Science and Engineering (VARLab), University of Bologna**

Ph.D. Scholarship

*Bologna, Italy**2021 — 2024***Institute of Advanced Studies, University of Bologna**

ISA Fellowship (International Ph.D. College)

*Bologna, Italy**2021 — 2024***Emilia–Romagna Region**

Research Fellowship

*Bologna, Italy**2020 — 2021***Cognitive Sciences & Technologies Council (Iran)**

Workshop Grant

*Tehran, Iran**2019*

Research Collaborations / Partners

Universidad Carlos III de Madrid (Spain)**Topic:** Generative AI video realism (“Sora” study).*Madrid, Spain**2024***University of Hamburg, Dept. of Informatics (Germany)****Topic:** Inclusive VR for limb-loss users; MR assistant for puzzle solving.*Hamburg, Germany**2023***Universitat Rovira i Virgili, Dept. of Romance Philology (Spain)****Topic:** AR + ChatGPT app for inclusive language learning.*Tarragona, Spain**2023*

Commissions of Trust and Service

- **Workshop Co-chair & Organizer**, *GenAI–XR: Generative AI meets Extended Reality*, IEEE VR 2025, Saint-Malo, France, 8–12 Mar 2025. [link](#)
- **Technical Program Committee (TPC) Member**, *GenAI & LLMs for XR (GenAI–LLM–XR)*, IEEE AIXVR 2025 Workshop, Instituto Superior Técnico, Lisbon, Portugal, 27–29 Jan 2025. [link](#)

- **Reviewer**, Taylor & Francis journals (hypermedia, multimedia, HCI), 2025.
- **Reviewer**, *Frontiers in Computer Science* — Human–Media Interaction, 2025.
- **Ad-hoc Reviewer**, ACM Symposium on Virtual Reality Software and Technology (VRST), 2025.
- **Ad-hoc Reviewer**, Workshops at IEEE VR, ISMAR, and AIXVR, 2023–2025.

Seminars and Conference Presentations

- **IEEE VR 2025 — The 32nd IEEE Conference on Virtual Reality and 3D User Interfaces**: Investigating the Impact of Voice-only and Embodied Conversational Virtual Agents on Mixed Reality Puzzle Solving. Saint-Malo, France, Mar 2025.
- **IEEE AIXVR 2025 — XRiM Workshop**: Redefining Fashion: A VR Journey from 360° Runway Show to Contextual Avatar Customization. Lisbon, Portugal, Jan 2025.
- **ACM SUI 2024 — Symposium on Spatial User Interaction** (Poster): PuzzleAide: Comparing Audio and Embodied Assistants for MR Puzzle Solving. Trier, Germany, Oct 2024.
- **CREA(I) 2024**: The Influence of Audiovisual Elements on the Realism of Generative AI Videos: The Case of Sora. Santiago de Compostela, Spain, Oct 2024.
- **GRLMC Seminar 2023** (Invited talk): ARELE-bot: Inclusive ELE Learning with AR and ChatGPT. Tarragona, Spain, Dec 2023.
- **DRHA 2023 — Digital Research in the Humanities and Arts**: *Exploring Symbolic Narratives in Virtual Spaces*. Turin, Italy, Sep 2023.
- **HCI 2023 — Human–Computer Interaction International**: Toward a Shared Experience of Uncertainty in Interpersonal Communication Through an Immersive VR Serious Game. Copenhagen, Denmark, Jul 2023.

Skills

RESEARCH & METHODS

- Design and run qualitative/quantitative studies; usability testing, interviews, surveys.
- Instrument cognitive measures for XR/HCI (EMG, eye tracking, motion capture).
- Academic writing and editing; competitive grant preparation.

TEACHING, MENTORING & SUPERVISION

- Supervise MSc/BSc theses across computer science, cognitive psychology, and fashion studies.
- Mentor interdisciplinary teams; lead collaborative research projects.
- Deliver lectures and workshops in XR, AI, and HCI.

TECHNICAL & DEVELOPMENT

- **XR development**: Unity (C#), Unreal; ARFoundation, MRTK, OpenXR; **devices**: HoloLens, Quest/Vive/Varjo.
- **Sensors**: optical/IMU mocap, eye tracking (Tobii/Varjo), EMG, depth (Azure Kinect), hand tracking (Leap Motion).
- **Programming**: Python (data/ML), C# (Unity), C++, Java, Kotlin, Arduino, HTML.
- **Machine learning/Deep learning**: model design, training, and optimisation (CNN/RNN/Transformers) in PyTorch/TensorFlow.
- **Statistics**: experimental design, evaluation metrics, and modelling in Python/R.

DESIGN & PROTOTYPING

- UX/UI and interaction design for XR.
- **Prototyping**: Figma, SketchUp; media: Kdenlive, Audacity.

References available upon request.