

Ali Ghasempouri

PhD Candidate in Computer Science and Engineering | Decision-Relevant Context,
Adaptive Information Selection, and Multimodal Intelligent Systems
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Research Profile

My research studies how intelligent systems determine which available information should become decision-relevant context, how that context should be maintained when persistence is required, and how it should influence downstream decisions. I investigate mechanisms for context selection, admission, state maintenance, retrieval, and controlled use across multimodal, recommendation, and LLM-based systems. Reproducible benchmarks and validity-aware evaluation provide the experimental tools for testing these mechanisms and their effects.

Research Experience

University of Bologna

Bologna, Italy

PhD Research

Nov. 2023 – Present

- Research theme: decision-relevant context in multimodal, conversational, and adaptive intelligent systems.
- Developing a functional architecture that distinguishes available observation, interpretation, context formation or control, optional state maintenance and later read, the named downstream consumer, and external scientific evaluation.
- Evaluating these responsibilities across affect-guided temporal evidence selection, controlled context-conditioned recommendation, lifecycle-aware conversational state, persistent recommendation-related memory, and validity-constrained continual updates.
- Led the research lifecycle for several thesis studies, from problem formulation and protocol or benchmark design through implementation, experimentation, reproducibility checks, analysis, and manuscript preparation.

Pattern Recognition and Human Language Technology Research Center (PRHLT), Universitat Politècnica de València

Valencia, Spain

Visiting Researcher

Jul. 2025 – Jan. 2026

- Host supervisor: Prof. Paolo Rosso.
- Conducted research on affect-targeted temporal evidence selection for depression classification from long interview videos.
- Developed a controlled visual evaluation against matched-random evidence with explicit coverage and abstention, and extended the research line to aligned audio-visual analysis.

Peer-Reviewed Publications

Generative Models for Context-Aware Recommender Systems: A Survey

ACM Computing Surveys

Seyedali Ghasempouri and Ilaria Bartolini

2026

- Vol. 58, No. 13, Article 326. DOI: 10.1145/3816031.

Recent Developments in Incremental Learning for Graph-Based Recommender Systems from a Complex Network Perspective

Foundations and Trends in
Information Retrieval

Seyedali Ghasempouri and Ilaria Bartolini

2026

- Vol. 20, No. 3, pp. 177–224. DOI: 10.1108/FTINR-07-2025-0111.

Exploring Symbolic Narratives in Virtual Spaces: Leveraging Curiosity-Driven Design and the Attention-Value Model for Educational VR Museum Experiences

Mimesis Journal

Shirin Hajahmadi, Seyedali Ghasempouri, and Gustavo Marfía

2024

- Vol. 13, No. 2, pp. 499–511.

Selected Current Research Manuscripts

When Should Facial Feedback Enter Memory? A Controlled Study of Temporal Gating for Recommendation

Journal manuscript in
preparation

Ali Ghasempouri and Ilaria Bartolini

- Controlled study of temporal write admission for persistent recommendation-related state, separating admission, persistence, later read access, and downstream action under a fixed controller.
- Uses controlled timing truth and explicit evidence boundaries to keep timing quality, state use, and downstream utility as distinct empirical questions.

ContextCheck: Testing Whether Recommendations Change for the Right Reasons

Manuscript in preparation

Ali Ghasempouri and Ilaria Bartolini

- Designed and implemented a paired-intervention benchmark for one-shot LLM reranking with executable valid-set and directional-order obligations, semantic interventions, and presentation controls.
- Separates output evaluability, exact admissibility, directional behaviour, required change or preservation, and presentation sensitivity instead of collapsing them into a single recommendation score.

State-Specific Performance Differences in Affect-Targeted Temporal Selection for Video-Based Depression Classification

Conference manuscript in preparation

Ali Ghasempouri, Miguel Zaragoza, Paolo Rosso, and Ilaria Bartolini

- Evaluates predefined visual affect states against matched-random temporal evidence while holding evidence-covered videos and per-video evidence counts fixed.
- Treats coverage and abstention as part of the result and tests whether observed differences are state-specific rather than assuming a uniform benefit from affect-targeted selection.

Testing Anomaly-Gated Updates under Validity Constraints: A Preliminary Security-Graph Study

Manuscript in preparation

Ali Ghasempouri and Ilaria Bartolini

- Studies continual-update policies on controlled dynamic security graphs using anomaly signals, retention validation, routing, withholding, and independent validity checks.
- Separates system-level safety findings from component-level attribution when routing changes which candidates receive validation evidence.

Live Map: Toward Benchmarking Lifecycle-Aware Conversational State

Research-in-progress manuscript

Ali Ghasempouri and Ilaria Bartolini

- Developed a controlled benchmark for conversational branches that may remain current, open, intentionally parked, and later resumed under explicit or implicit return cues.
- Combines frozen human semantic authority with descriptive analysis of natural recommendation dialogue; the planned comparative model evaluation remains a separate empirical stage.

Education

University of Bologna, Department of Computer Science and Engineering

Bologna, Italy

PhD in Computer Science and Engineering (ongoing)

Nov. 2023 – Present

- Supervisor: Prof. Ilaria Bartolini.

University of Bologna, Department of Classical Philology and Italian Studies

Bologna, Italy

Master's Degree in Digital Humanities and Digital Knowledge

Sep. 2021 – Oct. 2023

- Thesis: *Integrating SPARQL Querying with Chart Creation and Statistical Summarization*. Developed a Python/Flask system for querying SPARQL endpoints, generating visualizations, and producing statistical summaries.

Azad University, Ghaemshahr Branch

Ghaemshahr, Iran

Bachelor of Science in Mathematics Education

Oct. 2006 – Sep. 2009

- Thesis on geometry-skills learning in dynamic computer-algebra environments compared with traditional secondary-school instruction.

Iran University of Science and Technology

Tehran, Iran

Associate of Science in Applied Mathematics

Sep. 2002 – Jul. 2006

Teaching and Student Supervision

University of Bologna

Bologna, Italy

Teaching Assistant / Tutor – Multimedia Data Management

A.Y. 2023–2024 to 2025–2026

- Designed and delivered teaching sessions on multimedia data architecture and classical versus modern multimodal retrieval within the course coordinated by Prof. Ilaria Bartolini.
- Developed slides, Jupyter notebooks, GitHub resources, implementation examples, and practical demonstrations.
- Guided Master's students in project-based work on multimodal retrieval, personalization, recommendation, and cross-media educational systems.
- Teaching materials: github.com/ghasempouri1984/mdm.

University of Bologna

Bologna, Italy

Co-supervision of Bachelor's Degree Students

2026 – Present

- Co-supervising undergraduate projects in multimedia data management and data-intensive Web applications under the primary supervision of Prof. Ilaria Bartolini.

Fellowships and Awards

2026	Winner. Coopstartup Changemakers (13th edition), MemExCoop team	Legacoop Bologna, Italy
2023	Selected Participant. AIUCD 2023 student participation call	Italy
2019	Grant. Workshop series on task design and spatial-cognition studies in virtual environments	Cognitive Sciences and Technologies Council, Iran

Technical Skills

Research Methods & Experimental Design	Benchmark and protocol design; controlled experiments and interventions; ablation and failure analysis; reproducibility, validity, provenance, and statistical evaluation.
LLM, Retrieval & Multimodal	LLM evaluation; conversational-state and memory evaluation; classical and embedding-based retrieval; FAISS; CLIP; multimodal text, image, audio, and video pipelines; multimodal fusion.
ML & Research Tooling	Python; PyTorch; Hugging Face Transformers; pandas; scikit-learn; Jupyter; OpenCV; Git/GitHub; Docker; LaTeX.
Data & Knowledge Systems	Relational and XML data modelling; SQL; SPARQL; knowledge graphs; ontologies; Wikidata; Flask; Streamlit.
Additional	C#; JavaScript; R; Mathematica; Unity/VR development.
Languages	Farsi (native); English (B2); Italian (A2).

Selected Additional Experience

MemExCoop - early-stage startup initiative

Bologna, Italy

Co-founder and Project Lead

Dec. 2025 – Present

- Leading concept development for responsible AI software with emphasis on privacy, transparency, and data traceability within the Coopstartup Changemakers programme.

Digital Humanities Advanced Research Centre (/DH.arc), University of Bologna

Bologna, Italy

Full-Stack Developer – Master's Thesis Internship

Feb. 2023 – Sep. 2023

- Developed a Flask application and SPARQL pipelines for querying, processing, visualising, and extracting labelled knowledge from Wikidata results, including backend validation and error handling.

Earlier Conference Contribution

Map-Based Misalignment Effect in Virtual Spatial Navigation.

Shirin Hajahmadi, Farzaneh Safavimanesh, and Seyedali Ghasempouri. 8th Basic and Clinical Neuroscience Congress, Tehran, Iran, 2019.