AMIR GOLI

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EDUCATION

2023–PRESENT (EXPECTED MAY 2027)
PhD, Architectural & Building Technology — University of Kansas, Lawrence, KS, USA
Thesis: Conversational AI as a Cognitive Extension Partner: Effects of Embodiment and Competence on Design Cognition
GPA: 4.0/4.0

2018–2022
MSc, Architectural Technology — Pars University, Tehran, Iran
GPA: 3.94/4.0

2013–2018
BSc, Architectural Engineering — Shahid Chamran University of Ahvaz, Ahvaz, Iran
GPA: 3.57/4.0

RESEARCH INTERESTS

- Virtual Reality
- Design Cognition
- Computational Design
- Human-AI Collaboration
- Conversational AI
- LLM fine-tuning

PUBLICATIONS

2025 - Goli, A., and Dastmalchi, M. R. (2025). **Virtual Reality for Adaptive Reuse Thinking in Architecture Education**. *The Association for Computer Aided Design in Architecture (ACADIA) 2025.* Conference paper. (In press) [Video]

2025 - Goli, A., and Dastmalchi, M. R. (2025). **The Role of Virtual Reality in Enhancing Social Interactions for Construction of Tacit Knowledge in Architecture**. In Routledge Handbook of Interior Architecture. Book chapter. (In press)

2025 - Ossen, D. R., and Goli, A. (2025). **A Framework for Prompt Writing for Text-to-Image Generation in Interior Design Education**. In Routledge Handbook of Interior Architecture. Book chapter. (In press)

2025 - Dastmalchi, M., Goli, A., & Haeri, M. (2025). **Development of a human brain matrix through advanced digital fabrication and 3D scanning.** *Journal of Neuropathology & Experimental Neurology*, 84(6), 546. Abstract presented at the 101st Annual Meeting of the American Association of Neuropathologists (AANP). https://doi.org/10.1093/jnen/nlaf040

2025 - Soliman, A. M., Ossen, D. R., Alwarafi, A., & Goli, A. (2025). **Influence of water temperature on mist spray effectiveness for thermal comfort in semi-outdoor spaces in extremely hot and arid climates.** *Buildings*. Journal paper. https://doi.org/10.3390/buildings15091410

2024 - Goli, A., and Dastmalchi, M. R. (2024). **Enhancing Tacit Knowledge Construction in Architectural Engineering Education Through 4E Cognition and Virtual Reality**. *Frontiers in Education.* Conference paper. https://doi.org/10.1109/FIE61694.2024.10893406

2024 - Dastmalchi, M. R., and Goli, A. (2024). **Embodied Learning in Virtual Reality: Comparing Direct and Indirect Interaction Effects on Learning Outcomes**. *Frontiers in Education.* Conference paper. https://doi.org/10.1109/FIE61694.2024.10892964

2024 - Goli, A., and Dastmalchi, M. R. (2024). **From Theory to Practice: An Immersive VR Framework for Developing Tacit Knowledge in Architectural Education**. *IEEE International Symposium on Mixed and Augmented Reality (ISMAR).* Poster paper. (Accepted)

2022 - Goli, A., Teymournia, F., Naemabadi, M., and Andaji, A. (2022). **Architectural design game: A serious game approach to promote teaching and learning using multimodal interfaces**. *Education and Information Technologies*. Journal paper. https://doi.org/10.1007/s10639-022-11062-z

2021 - Goli, A., Alaghmandan, M., and Barazandeh, F. (2021). **Parametric Structural Topology Optimization of High-Rise Buildings Considering Wind and Gravity Loads.** *Journal of Architectural Engineering*. Journal paper. https://doi.org/10.1061/(asce)ae.1943-5568.0000511

RESEARCH AND WORK EXPERIENCE

2024 - Student Volunteer for the organization of IEEEVR 2024 and ISMAR 2024 Conferences.

2023–PRESENT - Research Assistant at the University of Kansas: Specialized in HCI and visualization research for design and educational tools. Developed a VR learning environment in Unity with C# scripting, allowing students to explore adaptive reuse scenarios—such as converting an old factory to residential use—while measuring user performance through usability studies and data analysis [Video].

2020 - The developer of a serious game introduces a multimodal HCI interface that integrates a Leap Motion controller, machine vision, and a voice assistant within a CAD environment, designed to enhance architectural students' learning experience [Project pages] [Video].

2020 - Integrates parametric design and BESO topology optimization to create a modern structural design framework. The results were used to design more efficient and elegant structures based on architectural and structural considerations [Project pages].

2019 - The co-developer of a Climate-Responsive Facade prototype, inspired by a chameleon's eye, can respond based on the Sun's path and other user-reassuring factors. The study reveals improvements in occupant comfort based on simulations [Project pages] [Video].

2019 - The co-developer of the WS-Snake tool for Grasshopper3D, calculating wind pressure on a tall building's facade based on its height and orientation [Food4rhino link].

2019 - R&D team leader in Rangin Profile Kavir Company, developed a Rhino/Grasshopper pipeline (Python) to rule-based curtain wall geometry and automatically produce shop drawings and material takeoffs.

HONORS AND AWARDS

2025 - Nominee, Graduate Student Award for Distinguished Service, University of Kansas.

2025 - The Honor Society of Phi Kappa Phi (ΦΚΦ) — Selection based on academic standing, KU.

2023 - Awarded University Graduate Fellowship, University of Kansas, Lawrence, United States.

2023 - Offered a fully funded PhD opportunity in Civil Engineering at the University of Canterbury, New Zealand.

2023 - Offered a fully funded PhD opportunity in Architecture at the University of Sydney, Australia.

2022 - Awarded first rank in the architectural technology program, Department of Architecture, Pars University (among 49 students).

2018 - Ranked in the top 1% in the national university entrance examination for entering the master program (6,010 participants).

2013 - Ranked in the top 3% in the national university entrance examination for entering the undergraduate program (300,000 participants).

PEER REVIEWER ROLES

2026 - Frontiers in Virtual Reality Journal

2025 - The Journal of Multimedia Tools and Applications

2025 - IEEE International Symposium on Mixed and Augmented Reality (ISMAR)

2024 - Computer-Aided Architectural Design Research in Asia (CAADRIA)

2024 - IEEE Frontiers in Education (FIE) Conference

2024 - Journal of Infrastructure Policy and Development

2024 - International Conference on Higher Education Learning and Teaching (ICHELT)

2024 - IEEE Digital Education and MOOCs Conference (DEMOcon)

TEACHING EXPERIENCE

2020–2021 - Teaching Assistant, *Design Studio I and II* (graduate level) courses, focused on computational design and digital fabrication, Pars University, Tehran, Iran. Assisted Dr. Matin Alaghmandan with course delivery, student mentoring, and evaluation.

2020 - Teaching Assistant, *Building Maintenance* (undergraduate level) course, Pars University, Tehran, Iran. Assisted Dr. Farzad Barazandeh with lectures, student assignments, and evaluations.

FABRICATION EXPERIENCE

2025 - Advanced digital fabrication and 3D scanning for a human-brain cutting matrix enabling reproducible neuropathology sectioning; collaboration with KU Medical Center; invention disclosure submitted to KU Tech Transfer; patent evaluation in progress.

2020 - Co-developed “Integrity,” a nexorade pavilion; CNC fabrication at the University of Art,

Tehran, Iran [Project pages].

2019 - Participant in "Robotism," a ten-day workshop using a robotic arm to construct a timber pavilion, the University of Tehran, Tehran, Iran [Project pages].

2018–PRESENT - Developer and designer in various fabrication Projects, using FDM 3D Printer, Laser Cutter, and CNC Milling Machine

WORKSHOP EXPERIENCE

2024 - Attended "*Design your own Metaverse*" workshop on DigitalFUTURES World.

2022 - Attended "*The Philosophy, Science and Implementation of Virtual Worlds*" workshop on DigitalFUTURES World.

2021 - Attended "*Kinectoscapes: Architecture of Performative Intelligence*" workshop on DigitalFUTURES World [Project pages] [Video].

2020 - Attended "*Machine vision and smart material processing*" workshop on CAADRIA.

2020 - Attended "*Machine Intelligence in Architecture*" workshop on DigitalFUTURES World.

SOFTWARE SKILLS

Grasshopper,

- Scripting in Python
- Custom components development
- Environmental simulation
- Topology optimization
- Structural simulation
- Human-computer interaction
- 3D Printers
- CNC Machines
- Laser Cutters

Unity,

- Scripting in C#
- VR/XR development

Design,

- Rhinoceros
- AutoCAD
- CorelDRAW
- 3Ds Max
- V-Ray

Media,

- Adobe InDesign
- Adobe Photoshop

REFERENCES

- **Dr. Mohammad Dastmalchi**, Assistant Professor, School of Architecture and Design, The University of Kansas, Lawrence, KS, USA (**Email:** dastmalchi@ku.edu)
- **Dr. Matin Alaghmandan**, Assistant Professor, School of Architecture and Urbanism, Shahid Beheshti University, Tehran, Iran (**Email:** m.alaghmandan@gmail.com)
- **Dr. Ali Andaji**, Assistant Professor, Department of Architecture and Civil Engineering, Pars University, Tehran, Iran (**Email:** aliandaji@gmail.com)