ARGHAVAN (NOVA) **EBRAHIMI**

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https://scholar.google.com/citations?user=ovA8yAIAAAAJ&hl=en&oi=ao

PhD researcher specializing in the design of immersive virtual learning environments, with a focus on understanding how spatial and social factors shape user engagement in educational contexts. My research systematically identifies design patterns from expert practitioners and translates them into frameworks that guide the development of effective virtual learning spaces. Currently developing computational methods and AI-assisted tools that analyze virtual world interfaces and provide design recommendations for educators and designers. I bridge UX research methodologies with architectural spatial design principles to create actionable guidance for building immersive educational systems. My work transforms complex virtual environment research into practical solutions that enhance learning experiences and support strategic implementation across educational institutions and industry training programs.

EDUCATION

Ph.D. in Computing and Information Systems (Aug. 2021 – Present)
University of North Carolina at Charlotte, Charlotte, NC
Human-Centered Computing Lab
Research: The design of Virtual World interfaces and learning environments

Dual Master of Science in Information Technology & Design Computation (May 2021)
University of North Carolina at Charlotte, Charlotte, NC
IT Coursework: Human-Centered Design, Web Application Design, Augmented Reality (AR) User Experience Design in a Museum, IT Project Management

Design Computation Coursework: Connective Environments Design, Computational Design Theory, Augmented Reality Design Studio, Digital Fabrication, Augmented Reality Prototyping

Master Thesis: Revealing the Hidden Layers in an Environment: A Case Study of the Visualization of the Coronavirus Contamination and Navigation in a Hospital (an Augmented Reality Project)

Master of Science in Architectural Engineering (Feb. 2013)
Rouzbahan Institute of Higher Education, Sari, Iran
Coursework: Design Theory, Urban Design, Parametric Design, Design patterns

Bachelor of Science in Architectural Engineering (Sep. 2010)
Tabriz Art University, Tabriz, Iran
Coursework: Architectural design, Prototyping, Design theory, Urban Design, 3D Modeling, Product Design

Certificates

Foundations of User Experience (UX) Design _ Google

Start the UX Design Process: Empathize, Define, and Ideate _ Google

KEY SKILLS / RESEARCH METHODS / TOOLS

Programming Languages: Python

Soft Skills: Empathy and active listening, Problem-solving, and critical thinking

Research Methods & Analysis: Mixed Methods

- *Qualitative Research:* Usability Testing, Focus Groups Studies, In-depth Semi-Structured interviews, Structured interviews, Ethnography, Tree Testing, Concept/prototype Testing, Thematic Analysis, Content Analysis
- *Quantitative methods:* Survey Design & research, A/B Testing, Statistical Analysis (Descriptive & Inferential)

Prototyping:

- Rapid Prototyping
- Wireframes
- Paper prototyping
- Low-Fidelity Prototyping
- High-fidelity Prototyping

Tools:

- Figma
- Balsamiq
- FigJam
- Qualtrics
- Airtable
- Miro
- Adobe Photoshop
- Rhinoceros 3D
- Illustrator

DESIGN RESEARCH & TEACHING EXPERIENCE

Teaching Assistant (Fall 2021 – Present)

Human-Centered Computing lab (UNCC) - Charlotte, NC

Interaction Design Studio, Rapid Prototyping - Human-Centered Design Courses

- **Enhanced my communication skills**
- Developed experience assisting college-aged individuals in the United States
- **Developed the Socio-Spatial Embodiment Model for virtual learning environments** through mixed-methods research, published across 5 venues (FIE 2022, 2024, 2025; ACM ISS 2023; Virtual Worlds Journal)
- **Conducted comprehensive qualitative research** including in-depth educator interviews and student focus groups, to identify design strategies and interface patterns in virtual world education
- **Designed a psychometric instrument** to measure integrated student experiences of place, presence, and community in virtual learning environments
- **Developed computational taxonomy of virtual world interface patterns** using computer vision, machine learning clustering, and systematic pattern analysis to inform educational design decisions
- **Applied interdisciplinary expertise** combining user experience research, human-computer interaction, architectural design principles, and educational technology to solve complex interface usability challenges in virtual environments
- **Developed systematic design pattern identification** for desktop virtual worlds, transitioning from qualitative insights to computational analysis for scalable educational technology improvements
- **Led teaching assistant teams** for HCI, Rapid Prototyping, and Interaction Design Studio courses while conducting doctoral research on virtual environment design

Research Assistant (Jan.2021 – May 2021)

Integrated Design Research lab (UNCC) - Charlotte, NC

- Researched and designed spatial typologies along human and machine perceptions by prototyping and programming a scanner robot using Raspberry Pi, proximity sensors, and lidar

Research Assistant (Jan.2020 – Jan.2021)

Studio Dickey Lab (UNCC) - Charlotte, NC

- Researched and designed origami acoustic structures by designing simulations in Rhinoceros 3D using the Grasshopper, and Pachyderm Acoustic plugins
- Designed and prototyped origami structures using Rhinoceros 3D, Grasshopper
- Presented and animated design patterns using Grasshopper, and Photoshop, with a final presentation using InDesign

Research Assistant (Aug. 2019 – Jan. 2020)

Urban Synergetic Lab (UNCC) - Charlotte, NC

- Researched mechanical computer shape grammar using the Logic Gate Simulator

Research Assistant (Sep. 2016 – Jul. 2019)

High-Performance Architecture Lab, Tarbiat Modarres University, Tehran, Iran

- Researched and published papers on shape grammar

DESIGN EXPERIENCE

Interior Architect (Oct. 2014 – Jun. 2016)

Pasar Interior & Decoration Design Office, Tehran, Iran

- Designed residential and commercial design plans and details using Rhinoceros 3D, AutoCAD
- Monitored implementation of designs
- Created presentations and renderings using Rhinoceros 3D, AutoCAD, 3D Max, Photoshop
- Performed cost estimation tasks

Interior Designer & Architect (May 2014 – Oct. 2014)

Shabahang Interior Design Office, Tehran, Iran

- Co-designed commercial project plans and details
- Monitored implementation of designs

Junior Architect (Aug. 2013 – May 2014)

Emarat-e-Khorshid (EK) Consulting Engineers, Tehran, Iran

- Designed a commercial complex within a historical context in Tabriz using AutoCAD, 3D Max

Architectural Design Intern (Apr. 2010 – Sep. 2010)

ERA Consulting Engineers, Tehran, Iran

- Drafted the projects using AutoCAD
- Assisted in the rendering and presenting of the projects using Rhinoceros 3D

SELECTED PUBLICATIONS

- Ebrahimi, A., Maher, M.L. & Ramaprasad, H. (2025). ***"Successful Teaching Strategies in Virtual World Education for Engineering and Computing."*** In Proceedings of Frontiers in Education 2025: Digital Riffs: Harmonizing Engineering and Computing Education for the Future, Nashville, Tennessee, USA. **(Accepted)**
- Ebrahimi, A., & Ramaprasad, H. (2025). ***"Successful Practices for Avatars in Virtual Learning: Perspectives from Experienced Educators".*** In Proceedings of IEEE Digital Education and MOOCS Conference, Boca Raton, Florida, USA. **(Accepted)**
- Ebrahimi, A., & Ramaprasad, H. (2025). ***"Student Experiences in Online Learning Environments: A Comparative Study of Virtual Worlds and Video Conferencing Platforms".*** In Proceedings of IEEE Digital Education and MOOCS Conference, Boca Raton, Florida, USA. **(Accepted)**
- Ebrahimi, A., & Ramaprasad, H. (2025). ***"Advantages of Virtual Worlds Versus Video Conferencing Tools for Online Education: a Comparative Study".*** In Proceedings of IEEE Digital Education and MOOCS Conference, Boca Raton, Florida, USA. **(Accepted)**
- Ebrahimi, A., & Ramaprasad, H. (2025). "***Interaction Design Strategies for Socio-Spatial Embodiment in Virtual World Learning, In Virtual Worlds"*** (Vol. 4, No. 3, p. 30). MDPI.
- Ebrahimi, A., & Maher, M.L. (2024). ***"Designing Presence and Place: A Framework for Engaging Student Interaction in Desktop Virtual World Learning Environments."*** In Proceedings of Frontiers in Education 2024: Embracing the Challenges and Transforming Engineering and Computing Education in a Technology-Enhanced World, Washington DC, USA.
- Ebrahimi, A. (2023). ***"Empowering Online Learning: AI-Embedded Design Patterns for Enhanced Student and Educator Experiences in Virtual Worlds."*** In Proceedings of ACM Interactive Surfaces and Spaces 2023, Pittsburgh, USA.
- Najjar, N., Ebrahimi, A., & Maher, M.L. (2022). ***"A Study of the Student Experience in Video Conferences and Virtual Worlds as a Basis for Designing the Online Learning Experience."*** In Proceedings of Frontiers in Education 2022: Grand Challenges in Engineering Education, Uppsala, Sweden.