MOHAMAD EL ISKANDARANI

EDUCATION

University of Virginia (UVA) Charlottesville, VA
Ph.D., Systems & Information Engineering, GPA: 4.00 05/2023 – 07/2025
- Thesis topic: I examined to what extent different sensory modalities can be used to enhance multitasking performance, and how these findings can inform computational models of dual-tasking and multisensory processing
- Advisors: Prof. Sara Lu Riggs & Prof. Matthew L. Bolton

M.Eng., Systems & Information Engineering, GPA: 4.00 08/2021 – 05/2023

American University of Beirut (AUB) Beirut, Lebanon
B.Eng. in Computer & Communications Engineering, GPA: 3.9 08/2017 – 05/2021

WORK EXPERIENCE

Sight Research Intern, Dolby Laboratories Inc. 09/2025 – 12/2025
- Designed a VR experiment in Unity to evaluate spatial awareness recovery during autonomous vehicle takeovers
- Collected and analyzed participant data, with findings being prepared for submission to the *Human Factors* Journal

Graduate Researcher, Riggs Lab @ UVA 07/2021 – 08/2025
- Investigated how humans multitask using different sensory channels to inform multimodal interface design
- Authored 15 manuscripts for top-tier conferences and journals; invited to peer-review 24 papers
- Received the Endowed Graduate Engineering Fellowship in 2024 (2 per department of 100 graduate students)
- Collaborated with 5 graduate lab mates on 6 different projects

Data Science Intern, Darden School of Business @ UVA 05/2022 – 08/2022
- Conducted text mining and sentiment analysis on the NIST National Vulnerabilities Database
- Identified vulnerability mislabeling patterns contributing to delays in software patch rollout

Research Assistant, Industrial Engineering Department @ AUB 08/2020 – 08/2021
- Applied novel scanpath similarity methods to analyze unmanned aerial vehicle (UAV) operators' eye-tracking data
- Demonstrated that eye movement similarity can predict team performance, and published the findings in the *Journal of Cognitive Engineering and Decision Making*

Research Intern, Riggs Lab @ UVA 05/2020 – 08/2020
- Developed a novel eye event identification algorithm in Python based on the most recent eye tracking literature
- Collaborated with 3 interns to design a user-friendly GUI for the eye data analysis pipeline

TEACHING EXPERIENCE

Teaching Assistant, Systems and Information Engineering Department @ UVA 01/2025 – 05/2025
SYS 2202: Data and Information Engineering (87 students)
- Taught relational database principles in SQL, data processing in Python, and cloud-based data engineering in AWS

Teaching Assistant, Systems and Information Engineering Department @ UVA 08/2023 – 12/2023
SYS 3501: Design of Human Technology Systems (11 students)
- Taught human factors principles, devised interactive lab assignments, and graded midterms and projects

Teaching Assistant, Computer and Communications Engineering Department @ UVA 07/2019 – 12/2019
EECE 312: Electronics (required undergraduate course; 60 students)
- Taught circuit and logic design principles, held interactive problem-solving sessions, and graded exams

RECENT PROJECTS

Predicting Stock Price Changes Using Trends in the Scientific Literature 04/2025 – 06/2025
- Developed a full-stack data pipeline to forecast stock price movements based on emerging research trends
- Automated data collection of publication metadata via Python APIs, applied NLP techniques for feature extraction, and managed data storage on an AWS server
- Modeled temporal relationships using vector autoregression and Bayesian structural time series to analyze the predictive influence of scientific trends on market dynamics

Augmented Reality (AR) Interface Design 05/2024 – Present

- Investigated how interface layout depth, width, and curvature in AR influence visual search behavior
- Assessed the benefit of using an AR display using the Multi-Attribute Task Battery (MATB-II), and concluded that performance benefits depend on visual angle separation and task load, with findings published at *IEEE TVCG*

Multimodal Multitasking in VR 04/2022 – Present

- Designed two VR experiments to assess multitasking across vision, audition, and touch under varying task loads
- Improved a computational model of dual task performance by 49%, with findings under review at *ASPIRE 2025*
- Suggested theory improvements, with findings published in *Human Factors* and the *International Journal of Human-Computer Studies*

Visual Search Strategies in VR 08/2021 – 09/2025

- Designed a VR experiment to examine how time pressure and reward value influence eye movements in search tasks
- Developed machine learning (ML) models to predict operator time stress from eye movements with 78% accuracy
- Published results in two peer-reviewed conference proceedings, won the HFES Extended Reality Best Student Paper Award in 2023, and was a University of Virginia Research Symposium finalist in 2023

Reliance on Explainable Artificial Intelligence (XAI) in Multitasking Environments 07/2023 – 03/2025

- Investigated how task priority and load affect operator reliance on XAI and visual search behavior in a UAV simulation
- Developed a data analysis pipeline in R, and published the results in *Human Factors*

Hand Movement Kinematics in VR 01/2022 – 08/2023

- Investigated the impact of hand dominance, movement direction, and hemispace on hand reaching movements in VR
- Developed a data pipeline in R to calculate and analyze hand movement kinematic metrics
- Published findings in *CHI 2023* and *Springer Nature Virtual Reality*

Arrow: A RISC-V Vector Accelerator for Machine Learning Inference 10/2019 – 07/2021

- Designed and implemented a vector processor unit on a field programmable gate array (FPGA) using VHDL
- Achieved up to 78× faster ML inference while reducing energy consumption by 90% compared to a scalar processor
- Nominated for best capstone project in computer engineering department, with findings published in *CARRV 2021*

PUBLICATIONS

Peer-Reviewed Papers:

1. Zhang, P., **El Iskandarani, M.,** & Riggs S. L. (*In press*) Combining Real and Virtual Displays: Effects of Spatial Layout and Task Load on Multitasking in Augmented Reality. Accepted in *IEEE Transactions on Visualization and Computer Graphics.*
2. **El Iskandarani, M.,** Riggs S. L., & Bolton M.L. (*Accepted*) Multitasking Tug-of-War: Exploring the Impact of Task Modality, Task Load Level, and Task Load Type on Dual-Task Interference in Virtual Reality. Submitted to *Human Factors.*
3. **El Iskandarani, M.,** Bolton, M., & Riggs, S. L. (2025). Examining Dual-Task Interference Effects of Visual and Auditory Perceptual Load in Virtual Reality. *International Journal of Human-Computer Studies*, 103619.
4. **El Iskandarani, M.,** Wickens, C. D., Bolton, M. L., & Riggs, S. L. (2025). A Computational Multiple Resource Theory Approach to Modeling Dual-Task Interference in VR: The Roles of Resource Demand, Resource Conflict, Visual Angle Separation, and Task Priority. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (p. 10711813251358799). Sage CA: Los Angeles, CA: SAGE Publications.
5. Alami, J., **El Iskandarani, M.,** & Riggs, S. L. (2025). The effect of workload and task priority on multitasking performance and reliance on level 1 explainable AI (XAI) use. *Human Factors, 00187208251323478.*
6. **El Iskandarani, M.,** Atweh, J. A., & Riggs, S. L. (2024). Time Pressure Detection in a Visual Search Task Using Eye Tracking Metrics: A Virtual Reality Study. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 68, No. 1, pp. 1240-1245). Sage CA: Los Angeles, CA: SAGE Publications.
7. Atweh, J. A., **El Iskandarani, M.,** & Riggs, S. L. (2024). Real-time gaze sharing techniques and their influence on performance and shared situational awareness of teammates in UAV C2 operations. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 68, No. 1, pp. 146-154). Sage CA: Los Angeles, CA: SAGE Publications.
8. Clark, L., **El Iskandarani, M.,** & Riggs, S. L. (2024). Reaching interactions in virtual reality: the effect of movement direction, hand dominance, and hemispace on the kinematic properties of inward and outward reaches. Virtual Reality 28, 43.
9. **El Iskandarani, M.,** & Riggs S. L. (2023). The Effect of Time Pressure on Visual Search Eye Tracking Metrics in Virtual Reality. Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 67(1), 1525-1528.

10. **El Iskandarani, M.,** Atweh, J. A., McGarry, S. P. D., Riggs, S. L., & Moacdieh, N. M. (2023). Does It MultiMatch? What Scanpath Comparison Tells Us About Task Performance in Teams. Journal of Cognitive Engineering and Decision Making, 17(3), 294–309.
11. Clark, L. D., **El Iskandarani, M.**, & Riggs, S. L. (2023). The Effect of Movement Direction, Hand Dominance, and Hemispace on Reaching Movement Kinematics in Virtual Reality. Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems, 1–18.
12. Al Assir, I., **El Iskandarani, M.**, Sandid, H., & Saghir, M. (2021). Arrow: A RISC-V Vector Accelerator for Machine Learning Inference. Fifth Workshop on Computer Architecture Research with RISC-V (CARRV 2021), co-located with ISCA 2021.

Peer Reviewed Abstracts and Posters:

1. **El Iskandarani, M.,** & Riggs S. L. (2024). The Interacting Effects of Time Pressure and Reward Value on Naturalistic Visual Search in Virtual Reality. Presented at the *2024 IISE Annual Expo, Montreal, Canada.*
2. Al Assir, I., **El Iskandarani, M.**, Sandid, H., & Saghir, M. (2023). Arrow: A Soft RISC-V Vector Accelerator for Machine Learning Inference. Presented at the 2023 *Design Automation Conference, San Fransisco, CA*.

Papers In Progress:

1. Zhang, P., **El Iskandarani, M.,** & Riggs S. L. (*Conditionally accepted*). Multitasking Across Physical and Virtual Displays: Effects of OST-HMD Use, Spatial Discontinuity, and Task Load. Submitted to *IEEE VR 2026*.
2. **El Iskandarani, M.,** & Riggs S. L. (*Under Review*) Time Pressure and Reward Value's Influence on Target Acquisition, Verification, and Search Performance: An Eye-Tracking VR Study. Submitted to *Cognitive Research: Principles and Implications.*
3. **El Iskandarani, M.,** Zhang, P., Bolton M.L., & Riggs S. L. (*In preparation*) Can Visuo-Tactile Interfaces Attenuate Load-Induced Dual-Task Costs? A VR Study. To be submitted to *Computers in Human Behavior.*
4. **El Iskandarani, M.,** Kunkel, T., Pytlarz, J., Zuena, J., & Mittal, T. (*In preparation*) The Effect of Non-Driving Related Task and Display View on Autonomous Vehicle Takeovers. To be submitted to *Human Factors.*

AWARDS

- University of Virginia Endowed Graduate Engineering Fellowship 2024
- IISE Annual Expo 3-Minute Thesis Pitch Competition Finalist 2024
  - 2 were selected from UVA to participate in the competition
- HFES Extended Reality Technical Group (XRTG) Best Student Paper Award 2023
- University of Virginia Engineering Research Symposium Finalist 2023
  - Selected to represent the Systems and Information Engineering department

PROFESSIONAL AFFILIATIONS & SERVICE

Treasurer, Human Factors and Ergonomics Society Student Chapter @UVA 05/2022 – 05/2023

- Managed chapter finances, coordinated events with peer student chapters, and supported initiatives that contributed to earning the Silver Student Chapter Award

Vice President, Lebanese Club @UVA 05/2022 – 05/2023

- Organized cultural events and community activities to promote Lebanese identity and student engagement

Professional Society Membership

- Association for Computing Machinery (ACM)
- Human Factors and Ergonomics Society (HFES)
- Institute of Industrial and Systems Engineers (IISE)

Review Service

- Journal paper reviewer for: *Springer Nature Virtual Reality; Human Factors*; *Institute of Industrial and Systems Engineers Institute Transaction*s, *Cognitive Research: Principles and Implications, Ergonomics, International Journal of Human-Computer Studies,*
- Conference paper reviewer for: *Annual Proceedings of Human Factors and Ergonomics Society; IEEE International Conference on Systems, Man, and Cybernetics; International Symposium on Mixed and Augmented Reality*

Undergraduate Student Mentorship

- Noah Simsic, B.Eng., in Systems Engineering 06/2024 – 08/2025
- Nader Elsarrag, B.A., in Cognitive Science 06/2023 – 06/2024