Matthew J. Scalia

Human Systems Engineer | Engineering Psychologist | Human Factors Professional | User Experience Researcher

516-761-8558 • matthew.scalia2@gmail.com • linkedin.com/in/matthew-j-scalia • www.matthewscalia.com

SUMMARY

Ph.D. student in Human Systems Engineering with 10+ years of experience as a human factors professional. Leads cross-functional teams to drive project priorities, derive research-driven insights, and support user-centric products and solutions. Combines a knowledge of human-AI teaming, human-computer interaction, psychology, and statistics. Seeking full-time positions June 2026.

EDUCATION

Ph.D. Human Systems Engineering May 2026
Arizona State University, Tempe, AZ 4.19 GPA

Ph.D. Certificate Complex Adaptive Systems Science May 2026
Arizona State University, Tempe, AZ 4.20 GPA

M.S. Engineering Psychology August 2022
Georgia Institute of Technology, Atlanta, GA 3.78 GPA

B.S. Psychology; Behavioral Neuroscience Minor and Green Engineering Scholar May 2018
The Ohio State University, Columbus, OH 3.18 GPA

RELEVANT RESEARCH AND TECHNICAL SKILLS

Research Design and Practices: Experimental design, research proposals, study protocol, survey creation, field studies, usability, summative, formative, and simulated-use studies, validation testing, heuristic evaluations, and reporting
Quantitative Methods: t-test, ANOVA, regression, multivariate statistics, structural equation modeling, multilevel modeling, growth modeling, dynamical systems methodology, real-time data analysis, signal detection, biometrics, and data visualization
Qualitative Methods: User Experience (UX) research and methodology, cognitive work analysis, task analysis, KSAO analysis, interviewing, focus group facilitation, observational studies, contextual inquiry, literature review, and systematic review
Data Analysis Languages and Software: R, Python, MPlus, SPSS, GPower, JASP, LIWC, and Excel
Programming Languages: MATLAB, R, Python, UML, SysML, LaTeX, C++, Arduino C/C++, HTML, CSS, Visual Basic, and SQL
Software: OpenSesame, Qualtrics, Amazon Mechanical Turk, SolidWorks, Autodesk, Adobe Creative Cloud, Microsoft Office
Security Clearances: Full U.S. Secret Clearance and Confidential Clearance

RELEVANT PROFESSIONAL EXPERIENCE

Center for Human, Artificial Intelligence, and Robot Teaming (CHART), Mesa, AZ: Ph.D. Researcher Jan 2022 – Present
Collaborates on 3 concurrent projects. Responsible for research design, human factors and user experience research, and reporting

- Develops normative design principles by interviewing domain experts, conducting thematic analyses and modeling workflow innovation using cognitive task analyses
- Performs field studies to collect biobehavioral and performance data to develop real-time measurement systems
- Designs, runs, analyzes, and writes reports on experiments related to how trust and distrust spread in and across human-AI teams and multiteam systems
- Developed a real-time predictive model of trust and distrust in human-AI teaming using dynamical systems
- Leads project meetings for cross-functional teams across DoD and academic partners; reports to CHART director
- Hired, oversaw and trained 21 master's and 16 undergraduate research assistants on conducting experiments, human factors, user experience research, statistical analysis, report writing, and dynamical systems modeling

Oak Ridge Institute for Science and Education, Dayton, OH: Researcher May 2024 – July 2024
Developed an AI agent and designed experiments involving trust, transparency, and search coordination strategies in human-AI teaming with the Team Enhancement, Assessment, and Measurement Lab at the Air Force Research Lab

- Employed dynamical systems and advanced statistical techniques to monitor and assess teamwork for breakdowns to support team process and performance
- Led the experimental design and research protocol for a series of experiments involving human-AI teaming
- Initiated the development of an AI agent that dynamically predicts when human teammates need assistance and prompts them to change their coordination strategies and provide feedback to enhance search strategies
- Conducted semantic analyses and NLP using R to create and tokenize training data to train and enhance the AI model's predictive accuracy

Georgia Tech Research Institute, Atlanta, GA: Human Systems Engineer May 2020 – Dec. 2021

Responsible for research protocol and reporting, and incorporating human factors methodology to provide user-centric tools, education, and leadership that support acquisition and life-cycle sustainment problems related to national security

- Conducted literature reviews, SME interviews, UI and product development, task/KSAO analyses, and experimental and usability studies for 3D audio, human-only and human-AI teaming, and military warfighter and medical teams
- Led the creation of a human-centric workflow and process model for a complex DoD and industry systems-of-systems product across DoD and industry partners

Battelle Memorial Institute, Columbus, OH: Human Factors Psychologist Intern/Co-op May 2017 – April 2018

Streamlined development, accelerated regulatory approval, and built safer, more competitive consumer, industrial, and military medical device products as part of Battelle's human-centric design team

- Created task analyses, workflows, instructions for use, recruitment screeners, study protocols, and reports
- Conducted summative, formative, simulated-use, and usability studies, as well as validation testing and heuristic evaluations, for medical devices including autoinjectors, inhalers, insulin pumps, e-cigarettes, surgical gowns, etc.
- Directed the "Universal Medical Symbol Comprehension, User Interpretation, and Usability Study"
- Led cross-functional meetings with UX/UI designers, psychologists, and mechanical, electrical, and material science engineers throughout the product development lifecycle—from research and prototyping to finalization

SELECT PUBLICATIONS

Harrison, J. L., Zhou, S., **Scalia, M. J.**, Grimm, D. A. P., Demir, M., McNeese, N. J., Cooke, N. J., & Gorman, J. C. (2024). Communication Strategies in Human-Autonomy Teams During Technological Failures. *Human Factors, 0*(0). https://doi.org/10.1177/00187208231222119

Scalia, M. J., Harrison, J. L., Zhou, S., Grimm, D. A. P., & Gorman, J. C. (2022). Interaction with an Autonomous Team Member Determines the Relationship between Team Trust and Team Performance. *2022 IEEE 3rd International Conference on Human-Machine Systems (ICHMS)*, 1-4. https://doi.org/10.1109/ICHMS56717.2022.9980616

Scalia, M. J., Zhang, R., Zhou, S., Yin, X., Duan, W., Weng, N., Tolston, M., Funke, G., Freeman, G., McNeese, N. J., & Gorman, J. C. (2025). *A Dynamic Trust and Distrust Influence Metric that Predicts Team Trustworthiness and Affective Trust in Human Teams and Human-AI Teams.* [Manuscript under review].

Scalia, M. J., Zhou, S., Grimm, D. A. P., Harrison, J. L., & Gorman, J. C. (2022). The Role of Timing of Information Front-Loading and Planning Ahead in All-Human vs. Human-Autonomy Team Performance. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 66*(1), 530–534. https://doi.org/10.1177/1071181322661251

Zhou, S., Yin, X., **Scalia, M. J.**, Zhang, R., Gorman, J. C., & McNeese, N. J. (2023). Development of a Real-Time Trust/Distrust Metric Using Interactive Hybrid Cognitive Task Analysis. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 67*(1), 2128-2136. https://doi.org/10.1177/21695067231192549

RELEVANT PROJECTS

Human-Artificial Intelligence Team Interaction Dynamics and Team Trust Jan. 2024 – May 2024

- Conducted joint and multidimensional recurrence quantification analysis (JRQA and MdRQA) on communication frequency in human-AI teams using MATLAB to examine their relationship with team trust

Trust and Communication's Multilevel and Mediated Relationship with Performance in Human-AI Teams Aug. 2022 – Mar. 2024

- Used R to analyze four multilevel mediation models examining how team communication mediates trust and individual performance, and two growth models assessing trust's impact on individual performance in human and human-AI teams

MSEM Human-AI Trust and Team Performance Model Aug. 2023 – Dec. 2023

- Tested a multilevel structural equation model in MPlus using individual-, mission-, and team-level variables to predict team performance in three-role remotely piloted aircraft military teams with AI pilots and navigators

Ergonomic Moka Pot: A User Experience Research Approach Jan. 2023 – May 2023

- Led all phases of the design process—including survey, observational, and co-design sessions; heuristic evaluation; PCA task analysis; persona and journey map development; iterative prototyping; usability testing; and qualitative and quantitative data analysis—to create a moka pot with a smart pressure gauge

The Integration of Human Factors Teams in Healthcare Systems Jan. 2023 – May 2023

- Developed a systems-based solution to integrate human factors teams into medical device development lifecycles by securing administrative and stakeholder support through a complexity leadership approach

RELEVANT TEACHING EXPERIENCE

Arizona State University

Guest Lecturer, Team Cognition (HSE 598) April 2025
Guest Lecturer, Human Automation Interaction (HSE 524) Oct. 2023
Guest Lecturer, Dynamical Systems Use Cases in Human Factors (HSE 598) Jan. 2023 – May 2023

RELEVANT PROFESSIONAL AFFILIATIONS AND PROFESSIONAL COMMUNITY SERVICE

The Association of Computing Machinery – Computer Human Interaction: Member and Reviewer 2024 – Present
Human Factors and Ergonomics (HFES): Member and Reviewer 2019 – Present
National Intelligence Council (NIC) – Strategic Futures Group (SFG): Consultant Feb. 2024

- Identified key trends in climate security, geopolitics, strategic competition, global health, human security, democratization, and human-AI interaction for the 2025 Global Trends report