

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.matthewscaliam.com

SUMMARY

Ph.D. Candidate 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 and quasi-experimental design; research proposals; study protocols; survey creation; field, case, 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 and KSAO analysis; interviewing; focus group facilitation; observational studies; contextual inquiry; literature and systematic reviews; and thematic analysis

Data Analysis Languages and Software: R, Python, MPlus, SPSS, GPower, JASP, Dedoose, LIWC, and Excel

Programming Languages: MATLAB, R, Python, UML, SysML, LaTeX, C++, Arduino C/C++, HTML, CSS, Visual Basic, and SQL

Software: Anaconda, Jupyter, Qualtrics, Amazon Mechanical Turk, SolidWorks, Autodesk, Adobe Creative Cloud, and Microsoft Office

Security Clearances: Full U.S. Secret Clearance (May 2020 – Dec. 2021) and Confidential Clearance (May 2024 – Aug. 2024)

RELEVANT PROFESSIONAL EXPERIENCE

Center for Human, Artificial Intelligence, and Robot Teaming (CHART), Mesa, AZ: Ph.D. Research Assistant 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 creating a human-centered interactive network to enable analyses of relationships, constraints, and cross-domain influences
- 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: Research Fellow

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., Hao, R., Zhou, S., Yin, X., Duan, W., Weng, N., Tuttle, J., Bell, C., Tolston, M. T., Funke, G. J., 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. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 69(1), 436–441. <https://doi.org/10.1177/10711813251369794>

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**Thematic Analysis and Network Dashboard Visualization**

Aug. 2025 – Dec. 2025

- Led SME interviews and thematic analysis across academic, industrial, government, and military UAV domains to identify cross-domain innovation principles, and built a Python Dash/Cytoscape.js interactive dashboard that translates qualitative insights into a data-agnostic network model with hierarchical layouts, and dynamic filtering for intuitive exploration

Human-Artificial Intelligence Team Interaction Dynamics and Team Trust

Jan. 2024 – May 2024

- Applied recurrence quantification methods (JRQA & MdrQA) in MATLAB to human-AI communication time-series data to identify interaction-pattern signatures linked to trust and distrust, generating insights on messaging stability, coupling, and predictability to inform adaptive, trust-aware AI teammate design across different human-AI team compositions

Trust and Communication's Multilevel and Mediated Relationship with Performance in Human-AI Teams

Aug. 2022 – Mar. 2024

- Conducted multilevel mediation, growth curve, and moderation models in R to examine how communication and trust shape individual performance, identifying role- and team-type effects and produced recommendations for communication strategies and AI teammates with explicit teamwork skills to enhance trust calibration in human-AI teams

Comparative Usability Study: Reusable Insulin Cartridge Delivery Pen

Mar. 2023 – May 2023

- Designed an FDA-aligned usability study for users with dexterity and vision limitations, developing task scenarios, safety metrics, and analysis plans to evaluate improvements to feedback, indicators, and dosing controls

Ergonomic Moka Pot: A User Experience Research Approach

Jan. 2023 – May 2023

- Led mixed-methods UX research including observation, co-design, PCA task analysis, personas, prototyping, and usability testing to identify ergonomic issues and deliver a redesigned moka pot prototype with improved usability and user safety

RELEVANT TEACHING EXPERIENCE**Arizona State University**

Graduate Student Instructor, Human Systems Engineering Individualized Study Course (HSE 499)

Aug. 2023 – May 2024

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**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