Publications

Selected Peer-Reviewed Research (20+ publications, 1500+ citations)

My research bridges human factors, data science, and systems design - exploring how humans interact with complex systems, make decisions under uncertainty, and respond to AI/automated technologies. This work directly informs my approach to building human-centered AI systems.

Research Recognition:

- Liberty Mutual Presidents Award Winner (Safety Climate Research Team)
- 6 years on Best Paper award-winning research teams - most awarded team member at the Liberty Mutual Research Institute
- 1500+ citations across publications

Google Scholar Profile

Human-AI Interaction & Attention (High-Frequency Data & Time Series Analysis)

Distraction and task engagement: How interesting and boring information impact driving performance and subjective and physiological responses
Horrey, W. J., Lesch, M. F., **Garabet, A.**, Simmons, L., & Maikala, R. | *Applied Ergonomics*
🏆 **Institute Best Paper Award**
Read Paper

Relevance: High-frequency time series analysis (60Hz driving simulator data, physiological signals, eye-tracking), modeling human attention patterns and cognitive load in real-time - foundational for designing AI autonomous driving systems that understand human state.

The effects of brief visual interruption tasks on drivers' ability to resume their visual search for a pre-cued hazard
Borowsky, A., Horrey, W. J., Liang, Y., **Garabet, A.**, Simmons, L., & Fisher, D. L. | *Accident Analysis and Prevention*
Read Paper

Relevance: Time series analysis of visual attention patterns, understanding task interruption and resumption dynamics - critical for human-in-the-loop AI workflows.

The effects of momentary visual disruption on hazard anticipation and awareness in driving

Borowsky, A., Horrey, W. J., Liang, Y., **Garabet, A.**, Simmons, L., Fisher, D. L. | *Traffic Injury Prevention*

🏆 **Institute Best Paper Award**

Read Paper

Relevance: Synchronizing multiple high-frequency data streams (eye-tracking, vehicle dynamics, simulator events), analyzing temporal patterns in human performance.

Assessing the awareness of performance decrements in distracted drivers

Horrey, W. J., Lesch, M., **Garabet, A.** | *Accident Analysis and Prevention*

🏆 **Institute Best Paper Award**

Read Paper

Relevance: Meta-cognition and self-awareness in complex tasks, time series analysis of performance degradation patterns - understanding when humans know they need AI assistance.

Dissociation between driving performance and drivers' subjective estimates of performance and workload in dual-task conditions

Horrey, W. J., Lesch, M., **Garabet, A.** | *Journal of Safety Research*

🏆 **Institute Best Paper Award**

Read Paper

Relevance: Multi-modal time series analysis (instrumented vehicle data, subjective measures), measuring gaps between perceived and actual performance - essential for calibrating human trust in AI systems.

Predictive Analytics & Risk Management (Safety Climate Research)

Measurement equivalence of a safety climate scale across multiple trucking companies

Lee, J., Huang, Y.-H., Murphy, L. A., Robertson, M. M., & **Garabet, A.** | *Journal of Occupational and Organizational Psychology*

Read Paper

Relevance: Multi-level modeling, psychometric validation, developing leading indicators for risk prediction across organizations.

Development and validation of safety climate scales for mobile remote workers using utility/electrical workers as exemplar

Huang, Y.-H., Zohar, D., Robertson, M.M., **Garabet, A.**, Murphy, L.A., Lee, J. | *Accident*

Analysis and Prevention
Read Paper

Relevance: KPI development, causal modeling linking organizational climate to safety outcomes, creating predictive indicators for risk management.

Development and validation of safety climate scales for lone workers using truck drivers as exemplar
Huang, Y.-H., Zohar, D., Robertson, M.M., **Garabet, A.**, Lee, J., Murphy, L.A. | *Accident Analysis and Prevention*
Read Paper

Relevance: Hierarchical modeling, developing leading indicators that predict lagging safety outcomes, causal inference in organizational systems.

External validity of a generic safety climate scale for lone workers across different industries and companies
Lee, J., Huang, Y.-H., Robertson, M. M., Murphy, L. A., **Garabet, A.**, Chang, W.-R. | *Accident Analysis and Prevention*
🏆 **Institute Best Paper Award**
Read Paper

Relevance: Cross-industry validation, developing generalizable predictive models for risk assessment.

Supervisory interpretation of safety climate vs. employee safety climate perception: Association with safety behavior and outcomes for lone workers
Huang, Y.-H., Robertson, M. M., Lee, J., Rineer, J., Murphy, L. A., **Garabet, A.**, Dainoff, M. J. | *Transportation Research Part F*
Read Paper

Relevance: Multi-level hierarchical modeling, causal pathways from perception to behavior to outcomes, understanding leading vs. lagging indicators in risk management.

Work Systems & Human Factors Engineering

Office ergonomics training and a sit-stand workstation: Effects on musculoskeletal and visual symptoms and performance of office workers
Robertson, M. M., Ciriello, V. M., **Garabet, A.** | *Applied Ergonomics*
Read Paper

Relevance: Intervention studies, work systems analysis, human performance measurement.

Examination of computer task exposures in radiologists: A work systems approach
Robertson, M. M., Boiselle, P., Eisenberg, R., Siegal, D., Chang, C. H., Dainoff, M., **Garabet, A.**, Garza, J. B., Dennerlein, J. | *Work*
Read Paper

Relevance: Work systems analysis, task analysis, understanding how professionals interact with technology.

Human-Computer Interaction & Design

Collaboration with Ecological Interface Design
Garabet, A., Burns, C. | *Proceedings of the Human Factors and Ergonomics Society*
Read Paper

Relevance: Interface design principles, ecological approaches to system design.

Exploring Design through Wearable Computing (Art)ifacts
Garabet, A., Mann, S., Fung, J. | *Proceedings of CHI Conference on Human Factors in Computing Systems*
Read Paper

Relevance: Early work on wearable computing and human-computer interaction.

Recent Work: AI & Human Rights

All Tech Is Human - Human Rights and AI Report (Contributor)
Contributing to responsible AI development and ethical frameworks

All Tech Is Human - Aligning Our Tech Future with Our Human Experience (Product Design Contributor)
Shaping human-centered approaches to AI product development

Media Coverage

Research featured on:

- ABC World News and Nightline

- The Rachel Ray Show
- Boston Globe

ABC News: "In the Blink of an Eye: Dozing while driving"

Why This Research Matters for AI

My years of human factors research provides a foundation for building AI systems that:

- **Process high-frequency time series data** from multiple sensors (60Hz vehicle dynamics, eye-tracking, biometric signals)
- **Understand human cognitive load** and attention patterns through real-time physiological and behavioral signals
- **Model human decision-making** under uncertainty using causal inference frameworks
- **Develop leading indicators** that predict outcomes before they occur - essential for proactive AI systems
- **Measure perception gaps** between human and system performance
- **Design for human-in-the-loop** workflows that leverage both human and AI strengths
- **Create validated KPIs** for risk management and organizational outcomes
- **Apply causal modeling** to understand relationships between organizational climate, behavior, and outcomes

Technical Skills Demonstrated:

- Time series analysis and synchronization of multi-modal data streams
- Hierarchical/multi-level statistical modeling
- Factor analysis and psychometric validation
- Causal inference and path analysis
- Leading vs. lagging indicator development
- Real-time data pipeline design (high-frequency sensor data)
- Risk prediction and management analytics

Selected Tools Used in Research: Python | MATLAB | C++ | R | SPSS | Qualtrics | API Programming | JavaScript | HTML

The principles from this research directly inform my approach to agentic AI systems and workflow design.