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Research Statement

My research sits at the intersection of embodied AI, agentic memory systems, and human-centered technology. I study how intelligent agents acquire, retain, and act on experience across physical and digital environments, and how those systems can be designed to serve the humans they interact with. My work is grounded in over fifteen years of software and systems engineering across defense simulation and cloud computing, which keeps my research oriented toward architectures that can actually ship, deploy, and scale.

Research Trajectory: Past and Current Work

My early work in information systems examined influencer-led information disclosure on social media. Through my dissertation, I developed computational methods to classify and model privacy-related disclosures, combining discourse analysis, network modeling, and NLP to uncover the social and cognitive factors driving privacy decisions in influencer-follower dynamics. This work established a foundation for studying how technology mediates human behavior under real social pressure.

I then expanded into computational psychology and psycholinguistics, developing the Adaptive PERMA Framework (APF) to model how emotional and cognitive states evolve through language use. Published on the Open Science Foundation, APF reconceptualizes well-being as dynamic and context-responsive rather than static. In parallel, I built PII-Codex, an open-source Python library for PII detection, categorization, and severity assessment (Journal of Open Source Software, 2023), and advanced applied privacy research on influencer-driven PII disclosures in social media discourse (Digital Transformation and Society, 2026).

Throughout this trajectory, my industry and research engineering work kept systems design central. That combination (behavioral science on one side, production software on the other) is what now drives my focus on embodied and agentic systems.

Current and Emerging Work

My current research extends in four directions:

First, I am developing memory architectures for embodied agents, including a device-agnostic experience memory framework that decouples learned knowledge from the hardware it runs on. The goal is portable experience memory: agents that accumulate context, safety-relevant decisions, and interaction history in a form that survives platform changes, from simulation twins and edge devices to field robots. This work connects directly to human-centered robotics and to agentic systems that must operate reliably outside a single cloud or chassis.

Second, I am building platform-agnostic stacks for affective and agentic behavior in robotics. Through projects such as Hedon, I explore how multimodal perception can be fused into emotional profiles and concrete actions through a vendor-free core and narrow ports/adapters, rather than binding intelligence to one operator backend or robot SDK. Reference platforms (including UGV-style edge deployment) let the same fusion loop, safety-style decisions, and experience logging contract stay stable across targets.

Third, I maintain a parallel research track in digital well-being, privacy behavior, and social computing. This includes ongoing work on adaptive well-being modeling, privacy-averse behavior in digital environments, and controlled studies of how small language models detect PII under different agent-skill and tool-use configurations (Transactions on Machine Learning Research, review in progress). I treat privacy and psychological safety not as abstract principles but as lived experiences that system design must respect.

Fourth, I study how framing and context shape trust, adoption, and practical use of AI systems in applied settings. Technical benchmarks alone do not explain how people integrate new tools into work and life; my research examines how system framing influences reasoning, collaboration, and responsible use across professional and educational environments.

Research Goals and Philosophy

My long-term goal is to build human-centered intelligent systems that are technically rigorous, psychologically informed, and deployable in the real world. That requires treating embodied agents as more than model endpoints: they are situated actors whose memory, safety boundaries, and interaction history matter as much as their perception stack.

My research is collaborative by design, bridging computer science, information systems, psychology, robotics, and user experience. I work across academic and industry settings to keep theory and implementation aligned. My guiding philosophy is that technology is both mirror and lens: it reflects human behavior while shaping how we think, feel, connect, and act. Technical advances should serve human flourishing, not merely capability benchmarks.

Funding Strategy

My research program requires support for edge and robotics hardware, simulation infrastructure, large-scale data collection, interdisciplinary collaboration, and the development of deployable agentic systems. I plan to pursue funding from NSF, NIH, foundations focused on responsible AI and digital health, and partnerships with organizations building human-centered robotics, agentic platforms, and privacy-preserving AI applications.