



Context-Aware Wearable Device

TECHNOLOGY NUMBERS: 2023-068, 2023-191, 2023-067, 2023-459, 2024-076



Accelerate Blue Foundry - 2025 (Physical Sciences)

OVERVIEW

A portfolio of foundation technology to enable a new class of smart wearables that are aware of their surroundings, what their users are paying attention to, and the emotional states of their users. The underlying technology is a multi-modal AI system that analyzes, visual, linguistic, emotional, and cognitive state data and combines it with user-dependent contextual information to deliver real-time assistance and dialogue.

DESCRIPTION

The next-generation smart glasses enabled by this technology will combine real-time sensors (eye cameras, scene cameras, and microphones), edge processing, and advanced cloud-based AI models to understand what users see, feel, read, and do, as well as their intentions as they move through their day. Systems like MemX automatically capture moments of visual attention for streamlined life-logging; EMOShip and CANINE analyze and explain emotions or behavioral causes in humans and dogs; CASES fuses eye-tracking with semantic text analysis to unobtrusively detect and support cognitive states in reading; and OS-1 turns large language models into true personal companions by leveraging ongoing context—what you see, hear, feel, and have lived—to drive adaptive, relevant conversations. Unlike earlier devices, these platforms combine multi-modal perception, semantic reasoning, continuous memory, and user-centric feedback, enabling richer, more useful, and more human-like support in real-world environments without workflow interruption or privacy compromises.

Technology ID

2023-068

Category

Hardware
Software & Content
Accelerate Blue Foundry -
2025/Physical Sciences

Inventor

Robert Dick

Further information

Ashwathi Iyer
ashwathi@umich.edu

Innovation Partnerships Tech
Marketing Team
IPInventions@umich.edu

[View online](#)



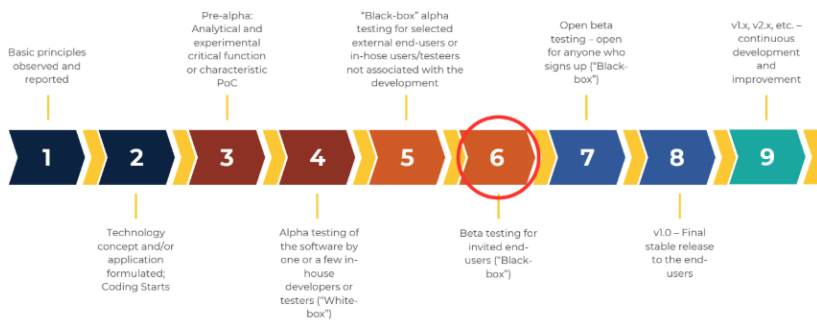
- Direct fusion of real-world vision, sound, and language context to drive personal, explainable AI functions—not just static data capture or generic chat
- Bi-directional feedback: systems don't just detect, but act—providing interventions, summaries, and proactive assistance
- Adaptive, longitudinal personalization: memory is accumulated, organized, and distilled over time, tailoring responses and support ever more closely to the user's unique habits, needs, and emotional cues.

VALUE PROPOSITION

- **Context-Smart & Truly Personal:** Understands the user's visual, emotional, and cognitive realities in real time, enabling proactive, personalized, and adaptive assistance—whether in recording special moments, offering emotional support, improving reading habits, or being a daily companion.
- **Richer, Explainable Insights:** Goes beyond surface signals (visual attention, speech, speech, and environment) to provide interpretable, actionable feedback, explanations, and support; not a black box.
- **Energy-Efficient, Always-on, and Privacy-Respecting:** Smart pipelines trigger advanced analytics only when needed, maximize battery life, and anonymize sensitive data to deliver reliable, unobtrusive, and secure daily use.

TECHNOLOGY READINESS LEVEL

Software Technology Readiness Levels



INTELLECTUAL PROPERTY STATUS

Patent applications granted & pending.

MARKET OPPORTUNITY

There is surging demand across health, education, enterprise, and consumer markets for digital tools that offer effortless self-tracking, coaching, companionship, cognitive and emotional wellness, and advanced workplace learning—capabilities now unlocked by these context-aware

Explore other available products test at [University of Michigan](#)

eyewear solutions. High-value applications include personal life-logging, mental health, coaching, adaptive learning, human-agent companionship, retail/work analytics, cognitive research, and training of both humans and working animals. The global market for context-aware AI wearables and conversational AI is projected to exceed \$45B by 2030, driven by the intersection of AI maturity, smart hardware adoption, and the push for adaptive, hyper-personalized, and privacy-first user experiences.

User studies and field pilots show these technologies dramatically outperform baseline approaches in accuracy, engagement, energy savings, and perceived value—demonstrating strong user acceptance and accelerating demand for contextually intelligent, always-on digital companions and analytics.

- This project has participated in Customer Discovery and the inventors have prior commercialization experience in the wearables industry

REFERENCES

- ["MemX: An Attention-Aware Smart Eyewear System for Personalized Moment Auto-capture"](#)