AI at your Fingertips: Wearable Ring as a Low-Friction Interface for Agentic AI

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Vision & Motivation

We envision a future of human-AI partnership that moves **beyond the screen**. A world where users can converse with a powerful AI assistant as naturally as they think.

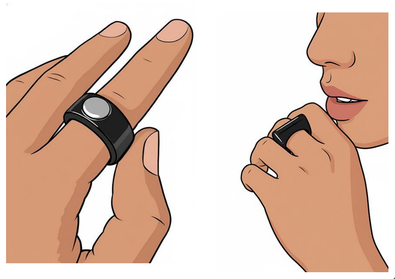
The Problem: Powerful AI is Held Back by Clunky Interfaces.

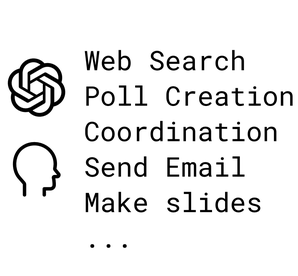
- **High-Friction Interaction**: Today's best LLM agents are tethered to screens and keyboards, demanding users' full attention and interrupting their flow.
- **Limited Voice Control**: Existing voice assistants are convenient but lack the intelligence, memory, agency, and deep reasoning abilities needed for complex tasks.

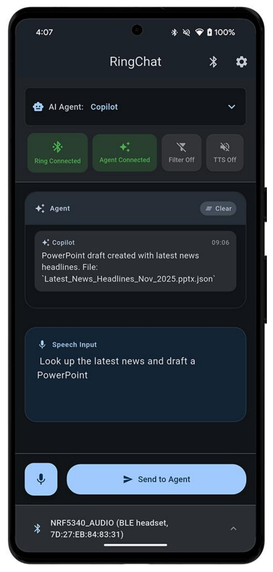
Our Goal: To bridge this gap by creating a **truly seamless and low-friction** interaction model for a powerful, agentic AI that is always by your side.

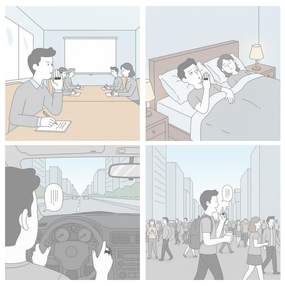
Proposed Solution

We introduce a system built around a **discreet, always-on** wearable ring. It's designed to be a "wear-and-forget" extension of the users' thoughts, making powerful AI instantly accessible.

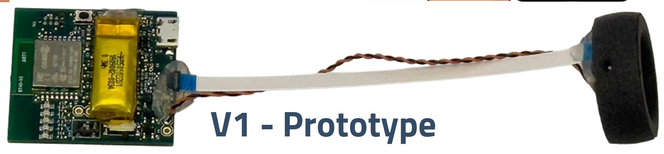








Use Cases



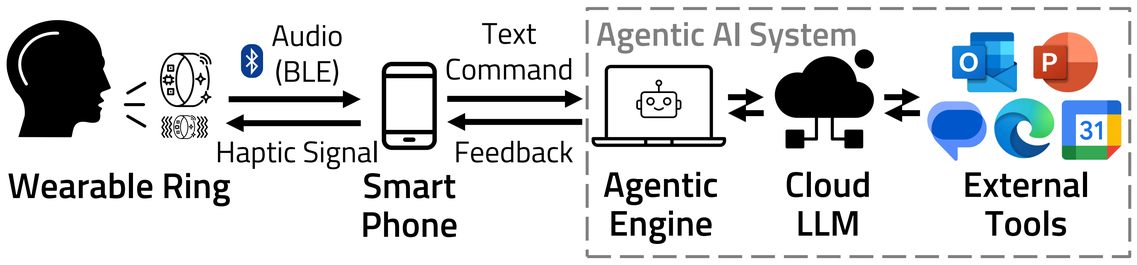
V1 - Prototype

V2 - Integrated

Mobile APP

System Architecture

Our system architecture is designed for low-latency, low-power, context-aware human-AI interaction. It connects a lightweight wearable to powerful remote AI through a smartphone hub.



- ❑ Touch Sensor (activation)
- ❑ Microphone (capture voice)
- ❑ Haptic Motor (haptic feedback)
- ❑ Speech-to-Text
- ❑ Context Injection (location, time, etc.)
- ❑ BLE Interface
- ❑ Task Planner & Decomposer
- ❑ MCP Servers (browser, calendar, email, MS Office)
- ❑ LLM Supervisor for accuracy

Exploratory Lab Study

Objective: To investigate user trust, confidence, and social dynamics when delegating tasks to a screenless AI agent.

Methodology: An exploratory lab study with 11 participants using a progressive exposure design for feedback modalities (haptics only → audio feedback → visual) on 3 increasing complex tasks.

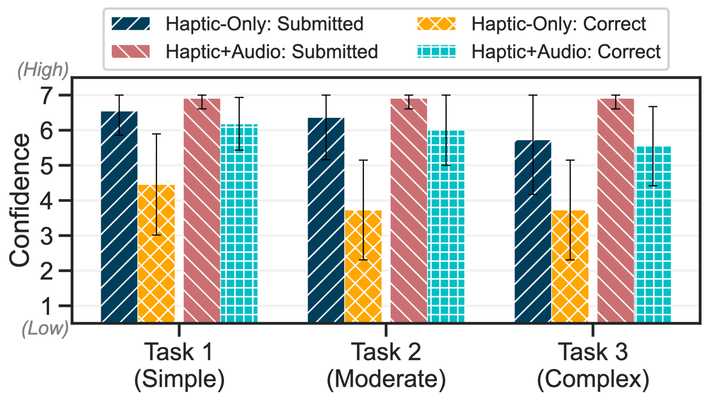
Tasks: while on the go (walking / driving), use the ring to perform

- Capture (simple): summarize meeting notes and email
- Coordination (moderate): research hiking trails, creating a pool, and emailing friends
- Creation (complex): retrieve stock data, analyze trend using code, and generate a presentation

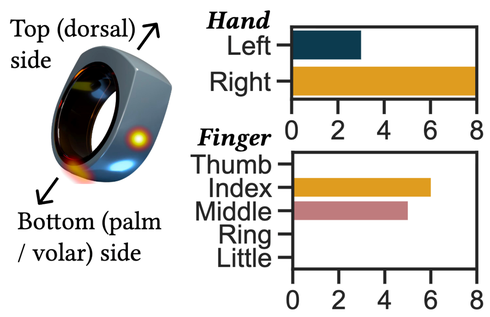
Metrics:

- Users rated their confidence on 7-point Likert scales to measure their confidence that the commands were submitted versus executed correctly across different feedback modalities
- Semi-structured discussion focused on *perceived value*, *moments of frustration or delight*, *social comfort*, and *formfactor*

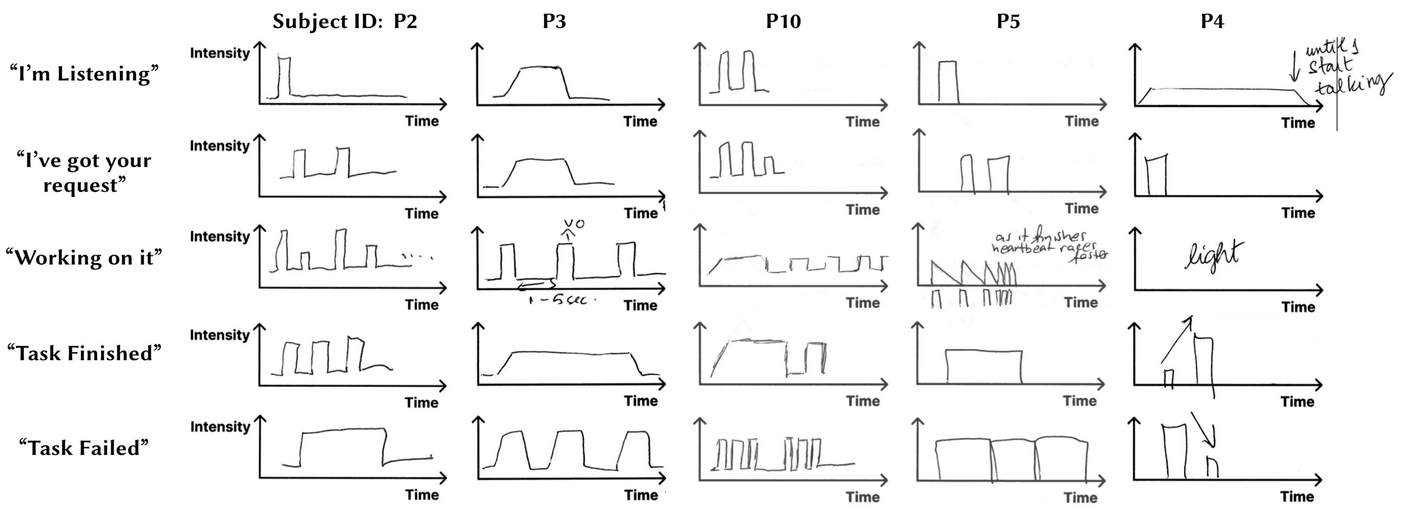
Results



Confidence Across Feedback Modalities & Task Complexity



User Preferred Ring Activation Location and Wearing Hand & Finger



Sample Vibration Patterns Sketched by Participants

Design Implications

Adaptive Feedback Granularity: System feedback must scale with task complexity; a simple reminder needs only a binary vibration, while a complex workflow requires a "heartbeat" vibration and audio summaries.

Context-aware Audio Verbosity: Detailed audio updates can introduce tension in attention-demanding scenarios (such as driving). The feedback verbosity should adapt to usage scenarios and task execution states (i.e. concise confirmation for success, detailed explanations for failures).

Conversational Scaffolding: Screenless agents should support a hybrid mode: accepting one-shot triggers but proactively initiating clarifying questions for ambiguous tasks.

The "Ring-to-Ear" Gesture for Audio: To solve public audio tensions and support conversational scaffolding, systems should support a mode to output low-volume audio when the user raises their hand to their ear.

Transparent Failure Recovery: To gain trust from users, the AI agent should optionally communicate its resilience by explicitly stating when it recovers from mid-task failures.

Simple Status Indication: Other simple modalities could be used on the ring to indicate long running task status at a glance, such as an LED light.