



Radio GaGa

An Agentic AI Radio for Ambient, Physical, and Communal Interactions

Team

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Timeline

48 hours, 2026 Spring
(Hackathon project at MIT Media Lab)

Context

People used to feel connected just by tuning into the same thing at the same time. For most of the twentieth century, the household radio was exactly this: ambient, always on, belonging to the home rather than to any individual. It connected people across distance not through direct messaging but through the act of tuning in and discovering each other.

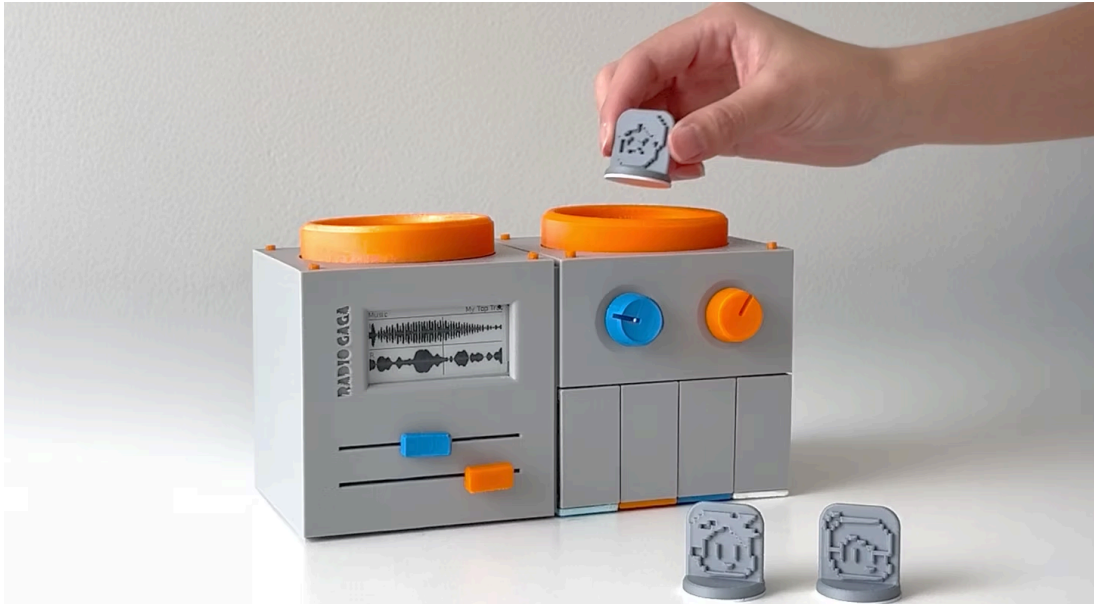
Radio Ga Ga revives this quality for the age of agentic AI. It is an AI-powered household radio that embeds a conversational agent inside a vintage radio form factor, using analog controls and physical tokens to deliver live, context-aware audio content while quietly establishing connections between people.

Problem

Why does every AI device want to be in your pocket? Voice assistants live in your ear. Wearable pins clip to your chest. The next generation of AI consumer hardware will almost certainly be personal, portable, and screen-adjacent. The entire industry is converging on the same bet: that the future of AI interaction is one person, one agent, one device.

Solution

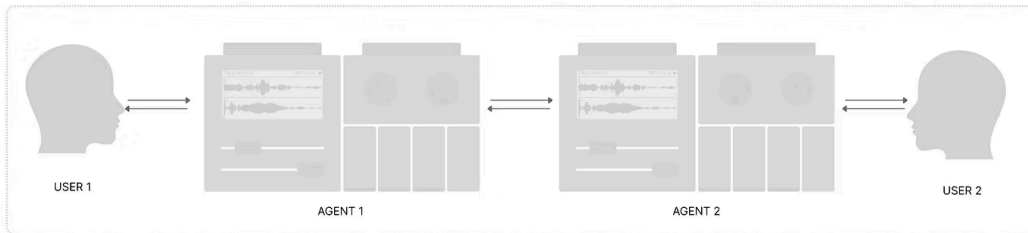
We wanted to go the other direction. We looked at the history of domestic technology for a form factor that was shared rather than personal, ambient rather than demanding, and rooted in a room rather than attached to a body. The radio, at its peak, did something that no technology since has replicated. It made people feel connected across distance without requiring them to face a screen or send a message. You simply tuned in. The experience was simultaneous, communal, and ambient. You could listen while cooking, while talking, while doing nothing at all. The radio belonged to the home the way furniture does it was there for whoever walked into the room. The interaction modes embedded in a radio offer ambient and passive qualities that we believe are unique qualities applicable to designing physical AI products.



Radio GaGa

The core design thesis of Radio Ga Ga is that the most interesting surface for embodied AI is not the personal device that isolates the user but the ambient product that blends itself with the user's world around them, and that a familiar physical form factor can make a complex agentic system feel immediately legible.

Interaction Overview



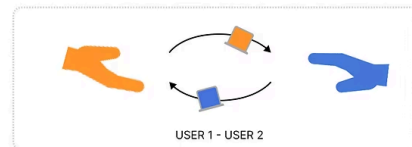
Human-Agent Interaction



Agent-Agent Interaction



Human-Human Interaction



Human-Agent+Agent Interaction



Interaction Overview between Humans and Agents

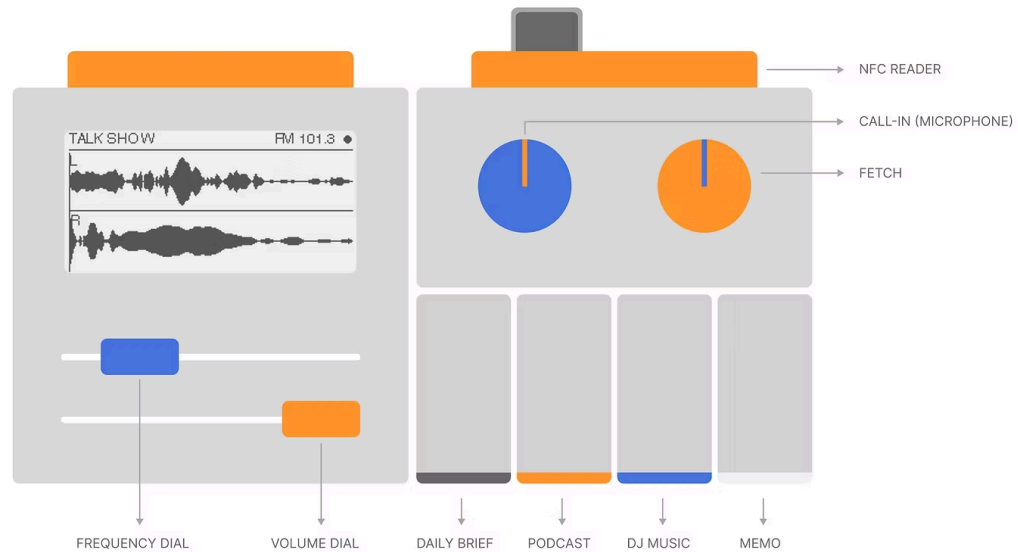
Process and Design Decisions

The most important decisions were about what we left out. No touchscreen. No app. No companion screen. No voice wake word. We wanted the entire interaction to be physical and continuous: you approach the radio, you turn the dial, you hear what's there.

One of the dials map to what we call the "radius of attention," a spectrum from private to shared to public. This is the central interaction metaphor: instead of switching between apps or asking an agent to do something, you navigate a continuous field of content by turning a physical control. Everyone knows how to use a radio dial and we want to apply this familiar gesture to navigating a network of AI agents and live content streams.

We chose e-ink for the display for its ambient qualities as well. A backlit screen would have pulled the radio into a different attentional category of something you look at rather than something you listen to. The e-ink display provides just enough information (channel name, current topic, time) to orient you without demanding focus. This was a deliberate application of calm technology principles that the information is available when you glance, but invisible when you don't.

The NFC token system emerged from a conviction that digital connection rituals have become weightless. Adding a friend on a social platform takes a tap and carries almost no social meaning. We wanted the act of connecting two radios to carry real weight, to feel like a commitment and genuine acknowledgement of care. So we made it physical: you hand someone a token that represents your household, they tap it against their radio, and your agents begin a quiet ongoing relationship. It's closer to exchanging house keys than to sending a follow request.



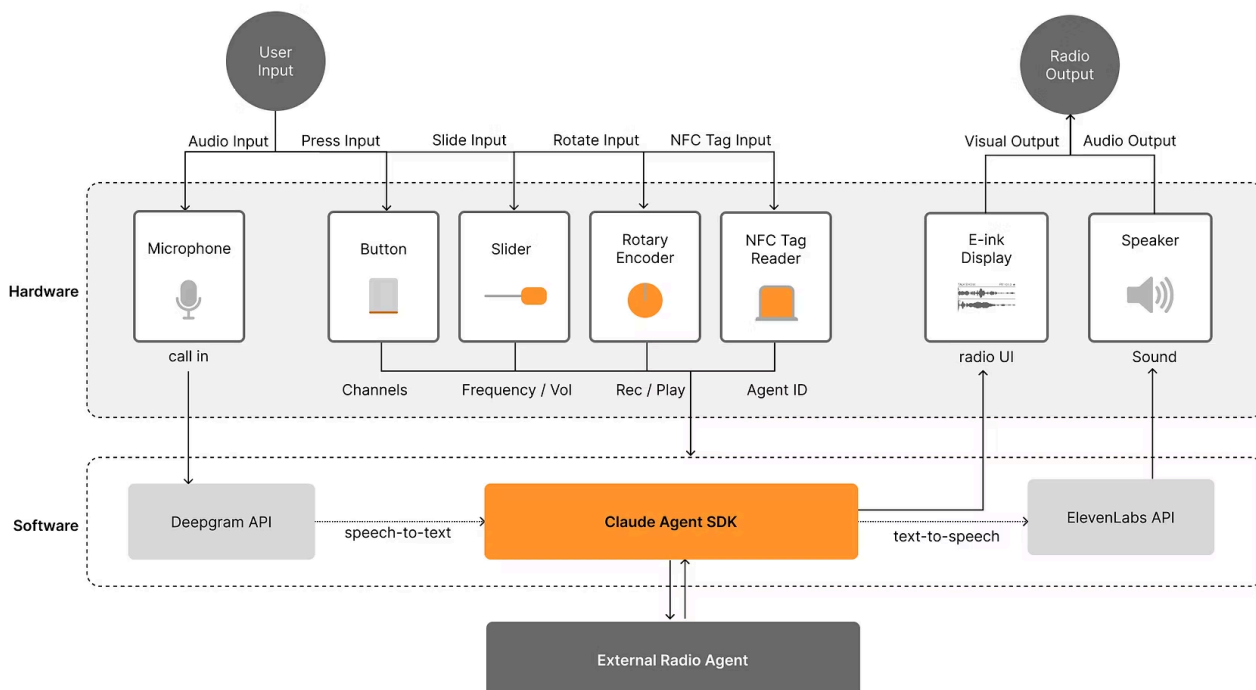
Radio GaGa From Interface with Function Instructions

Technical Architecture

The system runs on a Raspberry Pi 5 with a fully asynchronous Python architecture that manages concurrent hardware inputs, LLM streaming, and audio playback. Content is generated by Anthropic's Claude API, which receives system prompts defining distinct radio host personas alongside live contextual data - weather, news, sports, trending topics, astronomical events. Generated text is streamed to ElevenLabs for real-time voice synthesis, with each host persona mapped to a distinct voice identity. Call-in speech is transcribed via Deepgram, and the host persona responds to the caller's words on-air.

Hardware inputs include four tactile buttons, two rotary encoders, two slide potentiometers, an RFID reader, a Waveshare e-ink display, and USB speaker and microphone. The enclosure is 3D-printed using PLA. Peer-to-peer networking between radios uses WebSocket connections for real-time inter-agent messaging.

A deliberate architectural choice was to use the raw Anthropic SDK rather than a higher-level agent framework. This gave us fine-grained control over streaming behavior, context window management, and the editorial judgment logic. Each channel pre-generates its next segment in the background so that switching channels feels instant, more like tuning a real radio than waiting for an API response.



Stakeholders and Audience

Radio Ga Ga is designed for shared domestic spaces in addition to individuals. This is a deliberate inversion of the current AI hardware paradigm. We envision it in kitchens, living rooms, and studios, places where one person might be performing other tasks while listening, or multiple people might overhear, react, and start a conversation prompted by what the radio says.

The project also speaks to a design and research audience interested in embodied intelligence, calm technology, and the emerging field of multi-agent coordination. The AI industry is actively building software protocols for inter-agent communication such as Google's Agent2Agent (A2A) protocol, Anthropic's Model Context Protocol (MCP), defining how agents discover, authenticate, and collaborate with each other across platforms. These efforts are almost entirely focused on enterprise workflows and software infrastructure. Radio Ga Ga asks a complementary question: what does agent-to-agent connection look like when it's mediated by physical objects and human social rituals rather than API endpoints? The NFC token exchange is a tangible version of the A2A "Agent Card" handshake, except the protocol is a person handing something to someone they trust.