

An abstract graphic featuring a large, stylized 'U' shape on the left, composed of thick, rounded lines in shades of blue and orange. To the right of the 'U', a series of circuit-like lines branch out, ending in small circles, resembling a network or data flow diagram. The background is a dark, solid color.

Re-envisioning Humane AI Pin

Innovative Use Cases & Prototyping Approach

Senior Creative Technologist Assignment
August 2025

Humane AI Pin: baseline & sensors

- 13-MP ultra-wide RGB camera & depth sensor
- Always-on microphone array for natural voice input
- Upward-firing Personics speakers
- Laser Ink projector for palm-based UI
- Magnetic battery booster & touchpad

This wearable computer lives on your lapel with a downward-facing camera and an always-on mic array that captures your surroundings, while a tiny projector beams a green-hued UI onto your palm. Upward-firing speakers and a magnetic battery booster complete the hardware package.

Existing features & opportunity gaps

Existing features

- Voice translation & language support
- AI calorie counting & nutrition lookup
- Passive digital well-being (fewer notifications)

Opportunity gaps

- No active mood or posture coaching
- Lacks contextual hazard detection for pedestrians
- No teleprompter or memory aid for presentations
- Device pairing & onboarding is cumbersome

While the AI Pin already translates languages, counts calories and embraces a calmer design ethos, it still doesn't proactively coach wellbeing, warn you of oncoming cyclists, help you remember your speech, or make joining the smart home effortless.

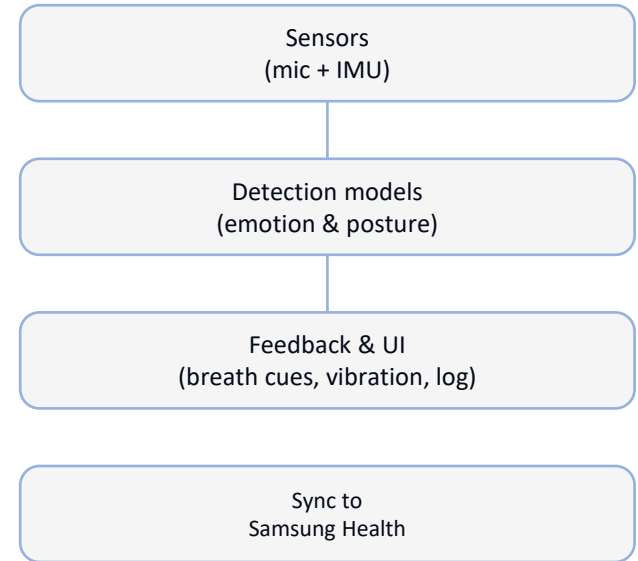
Use case 1 – Mood-Mirror Coach

Problem

Remote work and constant calls create stress, tension and poor posture, yet the AI Pin offers no active wellbeing support.

Solution

Fuse mic and motion data to detect voice tension and slouching via AI. Deliver subtle breathing cues via Laser Ink patterns and chest vibration, log mood to Samsung Health, and gently suggest stretch breaks.



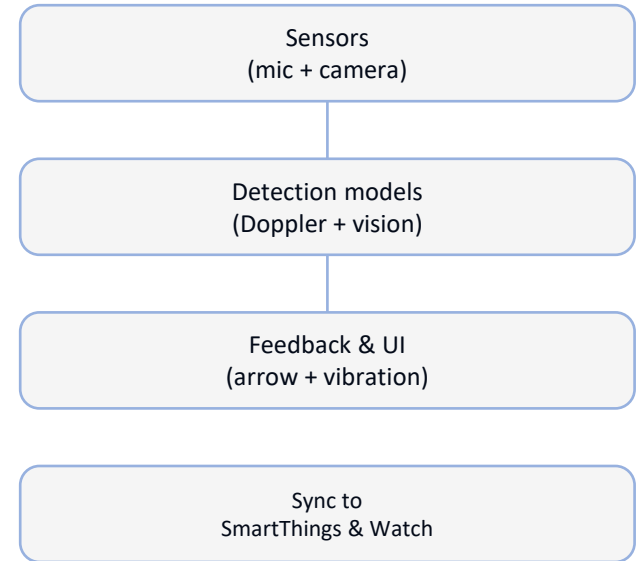
Use case 2 – Spatial Safety Bubble

Problem

City pedestrians face surprise collisions from bikes and scooters with no early warning.

Solution

Fuse Doppler audio cues and vision-based object tracking to detect approaching fast movers. Project a directional arrow onto your palm and buzz your chest if collision is imminent; connect risk scores to Samsung Watch & SmartThings for emergency alerting.



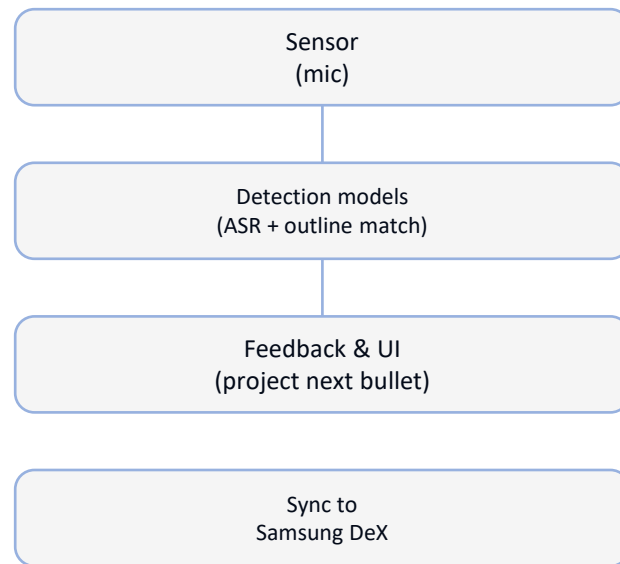
Use case 3 – Stealth Palm-Prompter

Problem

Public speaking often requires scripted notes on a laptop or cue cards, breaking eye contact and flow.

Solution

Listen to your speech via the mic, transcribe it in real time, align with your outline and project the next bullet onto your palm. Maintain eye contact while staying on script. Sync notes seamlessly with Samsung DeX.



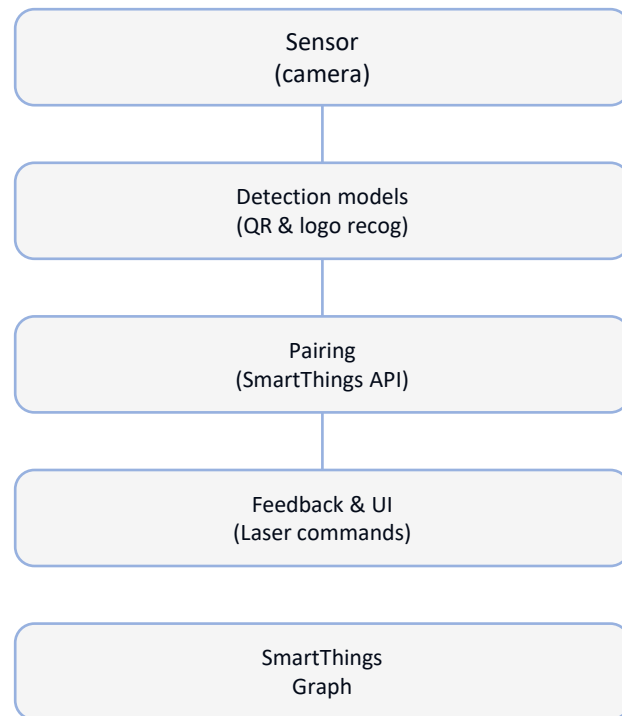
Use case 4 – Point-&-Pair SmartThings Assist

Problem

Smart home onboarding is tedious: scanning QR codes, typing serial numbers and installing apps fragment the experience.

Solution

Aim the Pin at any appliance; computer vision reads its logo or QR code, fetches pairing instructions from SmartThings, and lasers the default voice commands onto your palm. One tap pairs the device via BLE/Wi-Fi.



Rapid prototyping architecture

To iterate quickly we use Wizard-of-Oz hacks combined with off-the-shelf models. Data flows from sensors on the wearable to a nearby laptop running Python/Node for ML inference. Cloud APIs handle heavy lifting, and outputs are simulated via a palm projector and haptic motors.



Setup requirements & tools

Category	Details
Hardware	Laptop/edge device with GPU; Humane Pin dev kit or substitute (Raspberry Pi + sensors); External battery & BLE haptic motor; Palm projection rig (smartphone or mini-projector)
Software	Python, Node.js; PyTorch/Whisper/YOLO libraries; Unity/Unreal for Laser UI; Figma & Adobe CC for design; Git & VS Code for collaboration
APIs & services	OpenAI Whisper & LLM endpoints; YOLOv8 object detection; Voice emotion recognition models; Samsung SmartThings & DeX APIs; Tidal (music) & Microsoft cloud storage

Sprint planning & throughput

2-week sprints allow a rhythm of discovery, prototyping and iteration. Each sprint delivers a functional Wizard-of-Oz prototype and user feedback, while keeping enough slack for design changes.

	Sprint 0	Sprint 1	Sprint 2
Duration	Week 0	Weeks 1–2	Weeks 3–4
Focus	Set up dev kits, define stories & storyboards	Build Mood-Mirror & Safety Bubble prototypes	Build Palm-Prompter & SmartThings Assist
Deliverables	Persona & journey maps; hardware rig	Functional PoC videos; user testing reports	Integrated demos; developer handoff docs
Fidelity & support	Low-mid fidelity; requires 1 designer	Mid-fidelity; occasional ML engineer for tuning	Mid-high fidelity; integrator to link with SmartThings

Communication & presentation strategy

- Share storyboards and flows in Figma for quick alignment
- Hold daily check-ins on Slack to react to design changes
- Capture Wizard-of-Oz demos in Loom videos for async review
- Document prototypes in GitHub w/ README & code
- Present working demos & highlight user journey in final talk

Early and frequent communication keeps interaction designers in the loop and reduces rework. Combining live demos with annotated code and recordings ensures stakeholders can explore prototypes on their own time.

Conclusion & next steps

By harnessing the AI Pin's sensors and Samsung's ecosystem, we can extend the device beyond translation and calorie counting into safety, wellbeing, productivity and smart-home domains. The proposed architecture enables rapid iteration, while two-week sprints and clear communication keep the team aligned.

Next steps:

- Kick off Sprint 0 and build the hardware rig
- Collaborate with designers on detailed flows and micro-interactions
- Validate prototypes with users and refine based on feedback
- Explore deeper integrations with Galaxy Watch, Buds and SmartThings

Assignment Overview

Creative Technologist

Brief

Imagine that you're working on the User Experience re-envisioning project for Humane AI Pin (<https://humane.com/>). Your goal is to support the team in defining new use cases and creating rapid prototypes of envisioned experiences to exemplify interaction mechanics as well as added value opportunities to the stakeholders.

Given your knowledge of modern AI-enabled systems and UX expertise, propose a prototyping approach and visualize the setup's architecture (Hardware, Software, APIs, Dev environment). Provide reasoning for your choices where relevant.

Consider that you're working with a team of Interaction Designers and will have to rapidly respond (and contribute) to design changes and additions. Assuming 2-week sprints, estimate your throughput based on assumed prototype complexity (What fidelity can be achieved? What kind of support would you need? How many use cases can be developed?). What would be your approach to present the prototypes? (What would be your communication modality and focus?)

Objectives

- Define new use cases for the Humane AI Pin (for the sake of example).
- Create rapid prototypes to demonstrate interaction mechanics and added value opportunities (or sketch how you would go about it).
- Identify requirements for efficient communication with Interaction Designers to adapt quickly to design changes.

Expected effort: 3-4 hours

Deliverables

1. Architecture Diagrams

- Diagrams showing the setup's architecture, including hardware, software, APIs, and the development environment.
- Explanation of how each component interacts within the system.

2. Setup Requirements

- List of hardware and software requirements.
- Development tools and environments needed for prototyping.
- APIs and third-party services to be integrated.

3. Presentation

- A 15-20 minute presentation summarizing your approach, architecture, and prototyping process.
- Highlight key decisions and their impact on the project.
- Showcase examples of envisioned experiences and interaction mechanics.