

Interaction Design History (Spring 2026)

Professor: Andrés Cuervo | **Email:** acuervo1@sva.edu

Class Website: <https://cwervo.github.io/idhs26> **Time:** Mondays, 12:00 PM - 2:50 PM

Course Goal: To understand the fundamental principles of tangible UI and spatial UX by building, analyzing, and designing physical interfaces using webcams, projectors, thermal printers, and Folk Computer.

Class Schedule

Week 1: Input & Vision

- **Core concepts:** Ubiquitous computing paradigms, remote presence, latency, the camera as an active sensor vs. passive recorder. Low-fidelity tangible UI.
- **Lecture:** Discussion on Mark Weiser's vision of invisible computing. The history of the 1991 Trojan Room Coffee Pot. How a webcam translates the 3D world into a 2D matrix, and how we can teach it to "see."
- **Reading for homework:** Mark Weiser, ["The Computer for the 21st Century"](#) (1991).
- **Assignment for homework:** Create a [Teachable Machine](#) experience with 5 states

Week 2: Paper Interfaces & The Scannable World

- **Core concepts:** Fiducial markers (AprilTags/ArUco), discrete tracking vs. fuzzy ML logic, physical affordances, low-fidelity tangible UI (folding, sliding, springing).
- **Lecture:** The jump from state-recognition to specific object identification. Case studies on Clement Zheng's *Printed Paper Markers*. We will explore how a camera identifies and tracks an AprilTag in 3D space, and how manipulating paper can act as a physical UI component.
- **Reading for homework:** Case studies of Clement Zheng's [Printed Paper Markers](#) and [DIY AR Interfaces](#).
- **Assignment for homework:** Build a functional "Paper Controller" with at least two states (e.g., a toggle or slider) that triggers a digital action (like playing a sound or changing a screen color) using a basic webcam script.

Week 3: Tangible Output — The Receipt Printer

- **Core concepts:** Persistent state, physical debug logs, tangible notification systems, ESC/POS commands.
- **Lecture:** The history of the Xerox laser printer vs. the tactile nature of receipt printers. Why physical artifacts still matter in a digital-first workflow.

Week 4: The Projected Environment & Folk OS

- **Core concepts:** "Claims" and "Wishes", reactive programming ("When/Match"), closing the hardware loop (Camera + Projector).

- **Lecture:** The "Office of the Future" (Xerox PARC). Introduction to the Folk OS architecture. Moving away from the sequential logic of apps toward a spatial, reactive environment.
- **Reading for homework:** TBD (Folk OS documentation)
- **Assignment for homework:** Think of 3 programs you'd like to make using Folk Computer, wireframe them in Figma.

Week 5: Contextual Computing & Systems

- **Core concepts:** Invisible interfaces, system integration, virtual programs interacting with physical tags.
- **Lecture:** Re-evaluating Weiser's ubiquitous computing through the lens of what we've built. How do physical programs talk to each other within the same space?
- **Assignment for homework:** Pitch and prototype the core physical/digital mechanic for your Final Project.

Week 6: The Studio Sprint

- **Core concepts:** Troubleshooting hardware loops, refining tangible interactions, debugging spatial logic.
- **Lecture:** Quick review of common Tcl syntax errors and paper mechanism failures. (Mostly dedicated studio time).
- **Assignment for homework:** Finalize the project, test the physical mechanisms, and prepare the spatial demonstration for presentation.

Week 7: Synthesis & Final Project Presentations

- **Core concepts:** Integrating tangible lessons into modern UI/UX practice.
- **Lecture:** Class discussion—what does interacting with physical tokens teach us about digital interfaces? Where does spatial computing succeed where screens fail?
- **Assignment for homework:** Final Project Presentations. Students present a fully functional spatial application utilizing paper/cardboard mechanics for input (webcam), projected UI for real-time feedback, and the receipt printer for persistent state.