

Smell HCI From a Thousand Miles Away: A Tasting Menu of Human-Computer Interaction

ALICE SEMINAR @ShanghaiTech



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AR/VR User Interface • Immersive Experience • Spatial Computing



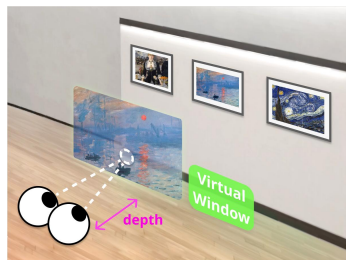
IVI.Lab



Empowering everyone to create, share, and shape their own immersive experiences.

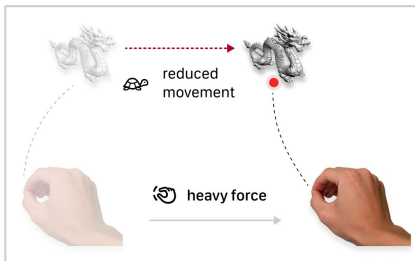


Low-Level Interaction Techniques



Gaze

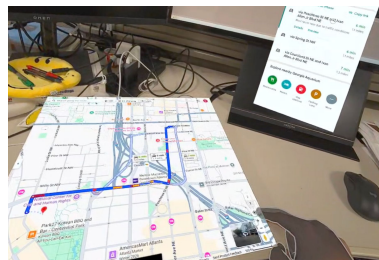
FocusFlow: 3D Gaze
Depth Interaction



Gesture

ForcePinch: Force-Responsive
Spatial Interaction

High-Level Interaction Applications



Productivity

Blending virtual elements with
the physical environment



Sharing

Telepresence, Communication,
and Collaboration in 3D Space

What is Human-Computer Interaction (HCI)?

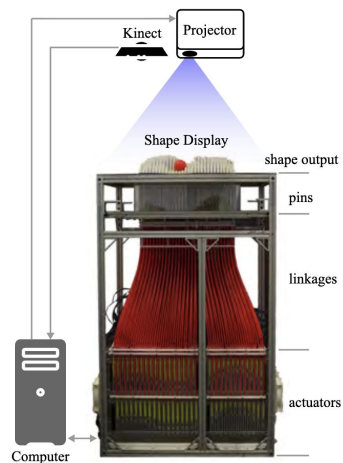
→ A surprisingly hard question :((

→ So let's look at a few examples to get a sense :)))





Figure 1: inFORM enables new interaction techniques for shape-changing UIs. *Left to right*: On-demand UI elements through *Dynamic Affordances*; Guiding interaction with *Dynamic Constraints*; Object actuation; Physical rendering of content and UI.



Dynamic & Programmable Physical Affordances

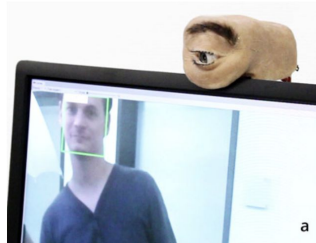
Embodied Interaction & Tactile Cognition

Interface Agency



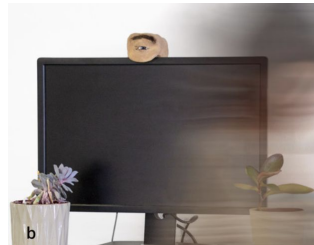


Figure 1: a) *Eyecam* is an alternative anthropomorphic design of conventional webcams, b) which draws inspiration from the human eye morphology to c) exaggerate the sensing capacities of webcams like face detection, and d) foster affective relationships.



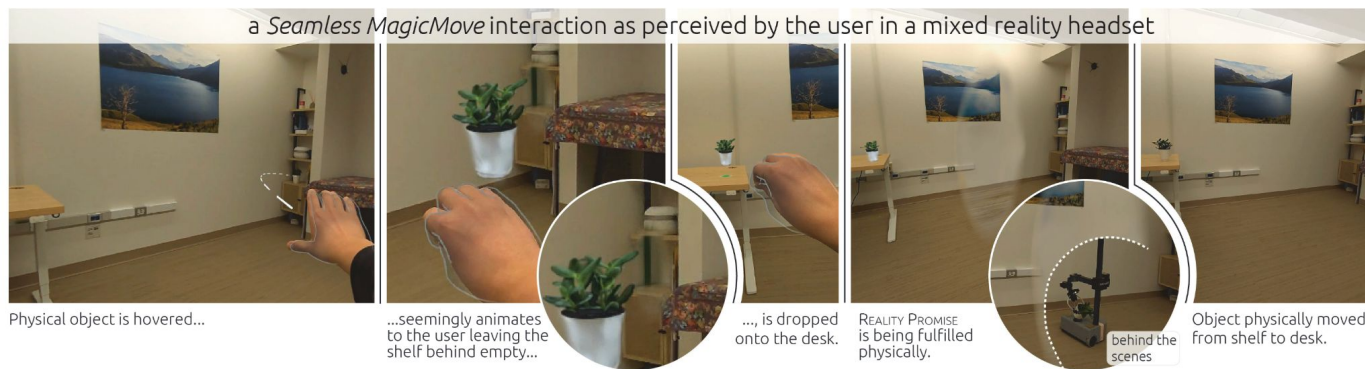
Critical & Speculative Design

Anthropomorphic Affordances



Sensor Visibility & Privacy Awareness



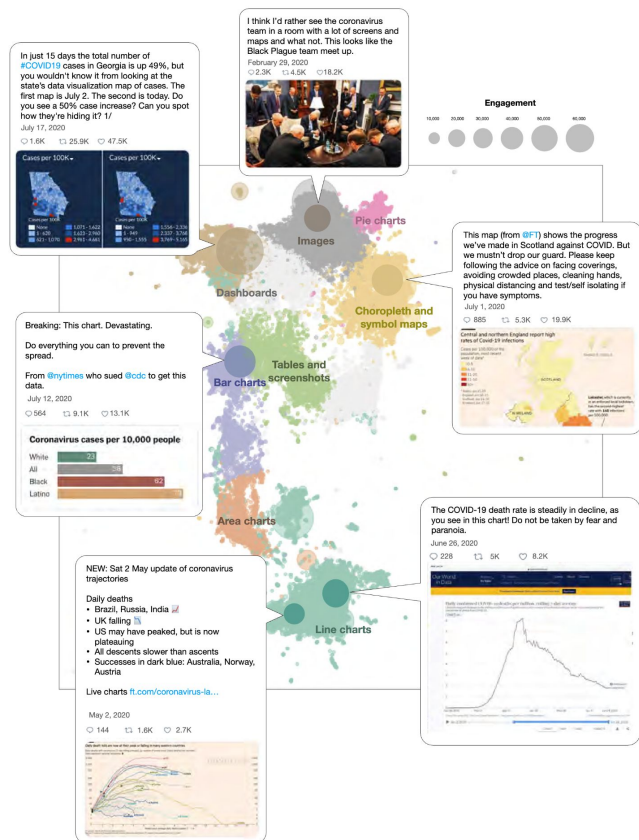


Virtual-Physical Decoupling Illusions

Invisible Robot Infrastructure

Mixed Reality with Physical Consequences





Visualization as Social Practice

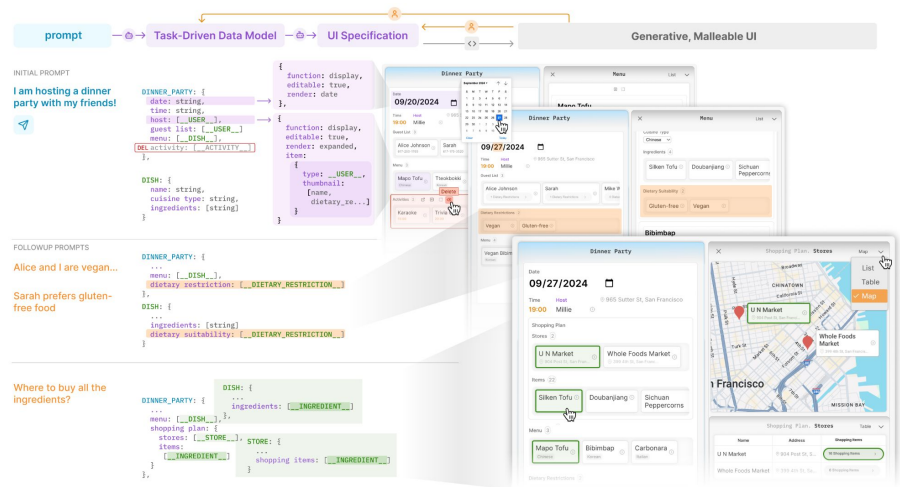
Data Literacy vs. Misinformation

Participatory Misuse of Data

Power, Persuasion, and Visual Evidence

Figure 1: A UMAP visualization of feature embeddings of media found in our Twitter corpus. Color encodes labeled clusters, and size encodes the amount of engagement the media received (i.e., the sum of replies, favorites, retweets, and quote tweets).





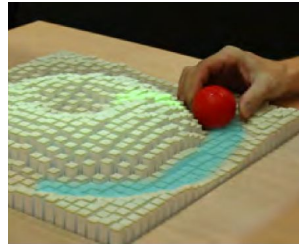
AI-Generated User Interfaces

Task-Driven Evolving Models

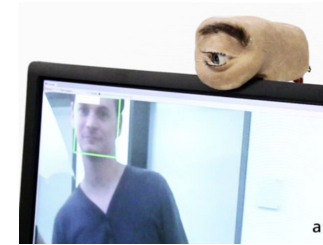
Malleable & Co-Created Interaction

Interface as a Living System

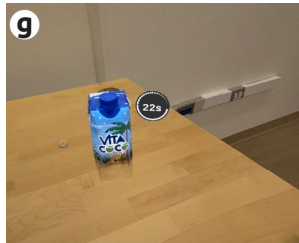
HCI is about ...



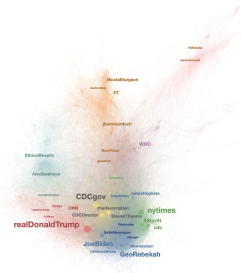
creating new possibilities
for interaction.



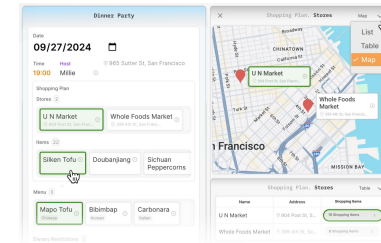
questioning technology
through design.



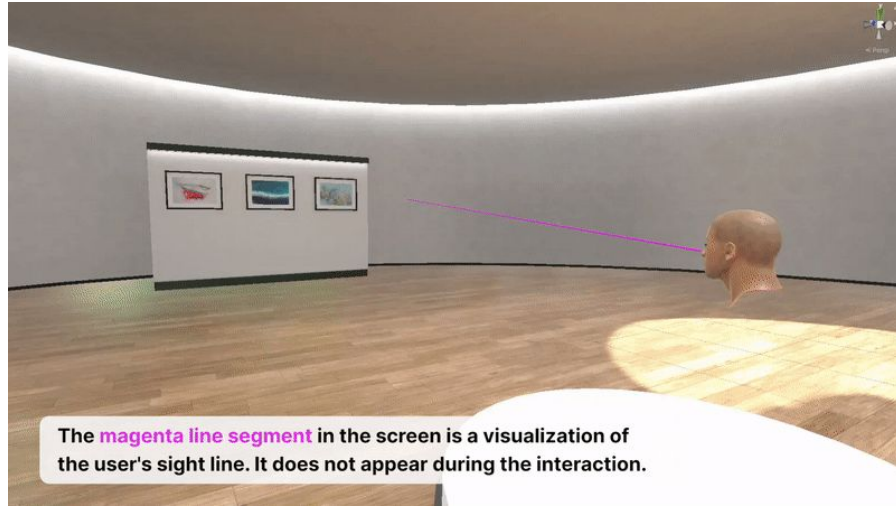
blending the virtual and
physical to reshape experience.



understanding technology
as a social practice.



rethinking interfaces in
the age of AI.



FocusFlow: Gaze Interaction



ForcePinch: Gesture Interaction

