

# AR HCI

Tue, August 11 (Week 8)

# HCI

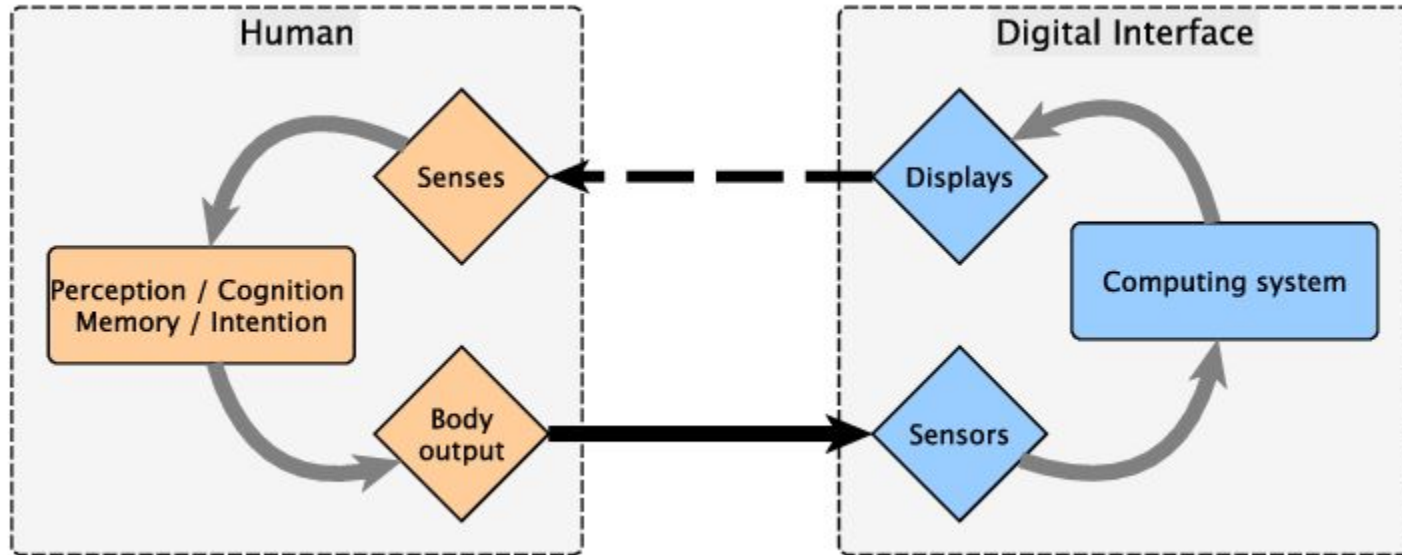
Human-computer interaction

When you think about solving problems, people become important since,

People are the ones who want to solve those problems.

People are often inside the loop of solving the problem with the computers.

# Human-in-the-Loop



# Rekimoto & Nagao (1995)

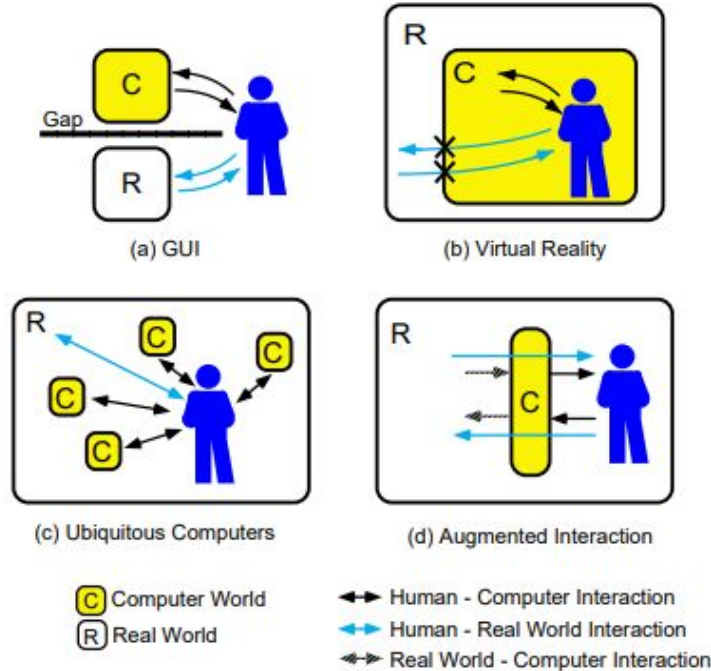


Figure 1: A comparison of HCI styles

# HCI Prototypes

People don't know what they want until they see what they want. (Is this true...?)  
Seeing and knowing you want it is different from imagining a thing you will want.

Conclusion: building prototypes

These prototypes tend to be very experimental.

# Holodesk (Hilliges et al., 2012)

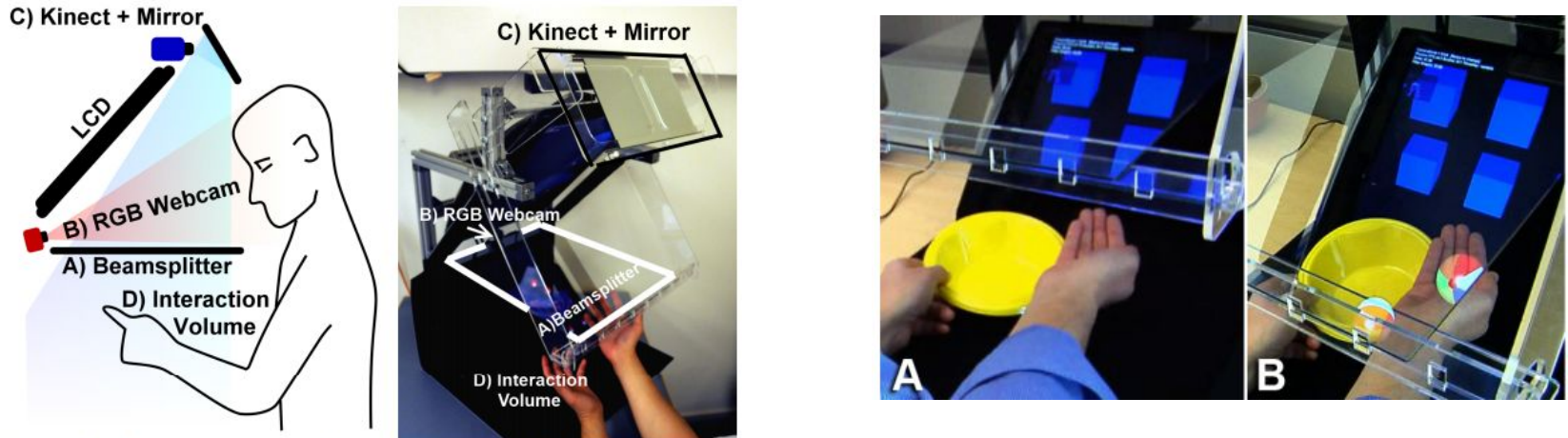


Figure 2: Physical setup of our current HoloDesk prototype with main components labeled.

# IllumiRoom (Jones et al., 2013)

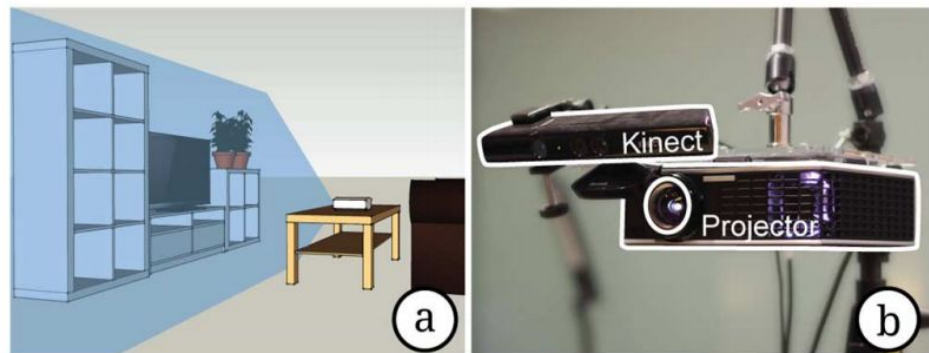
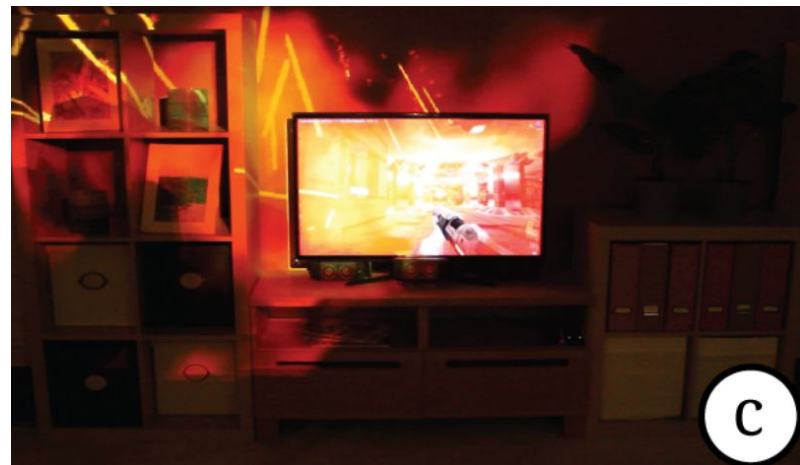


Figure 2. (a) Our vision for a productized *IllumiRoom* system includes an ultra-wide field of view device that sits on a coffee table and projects content in the area surrounding the television. (b) Our current proof-of-concept prototype uses an off-the-shelf projector and a Kinect sensor.

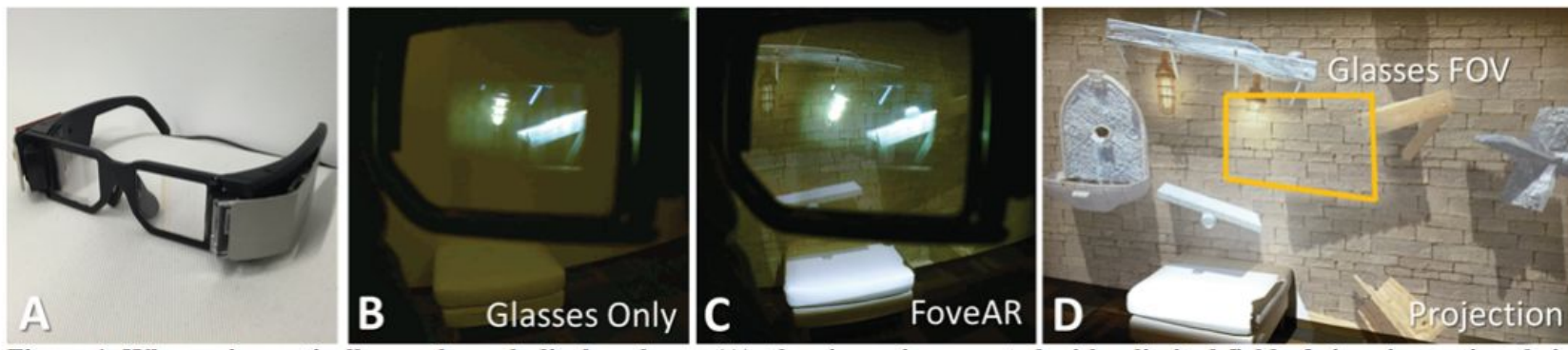




<https://youtu.be/re1EatGRV0w>



# FoveAR (Benko et al., 2015)



# GhostAR (Cao et al., 2019)

Edit the tasks for robots to do using AR.



**Figure 1: GhostAR workflow.** To author HRC tasks that achieve time-space coordination, (1) user first authors a human ghost by recording his body movement, (2) then using the ghost as a visual reference, (3) author collaborative robot actions. (4) When acting the task, our system's collaborative model captures the body movement as input, maps it with the authored human motion, and outputs the corresponding collaborative robot motion.

# Another Example (Lindlbauer et al., 2019)

## Context-Aware Online Adaptation of Mixed Reality Interfaces

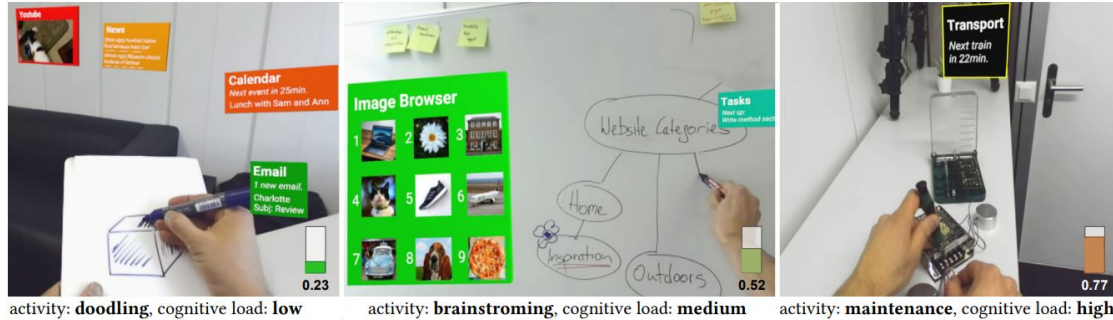
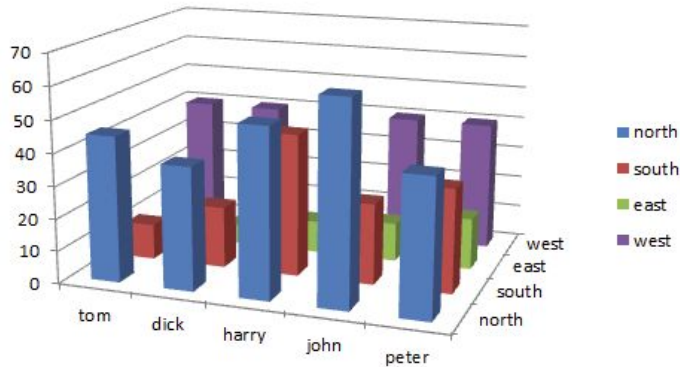


Figure 3. We used a prototypical implementation of our approach to

# AR for Visualization

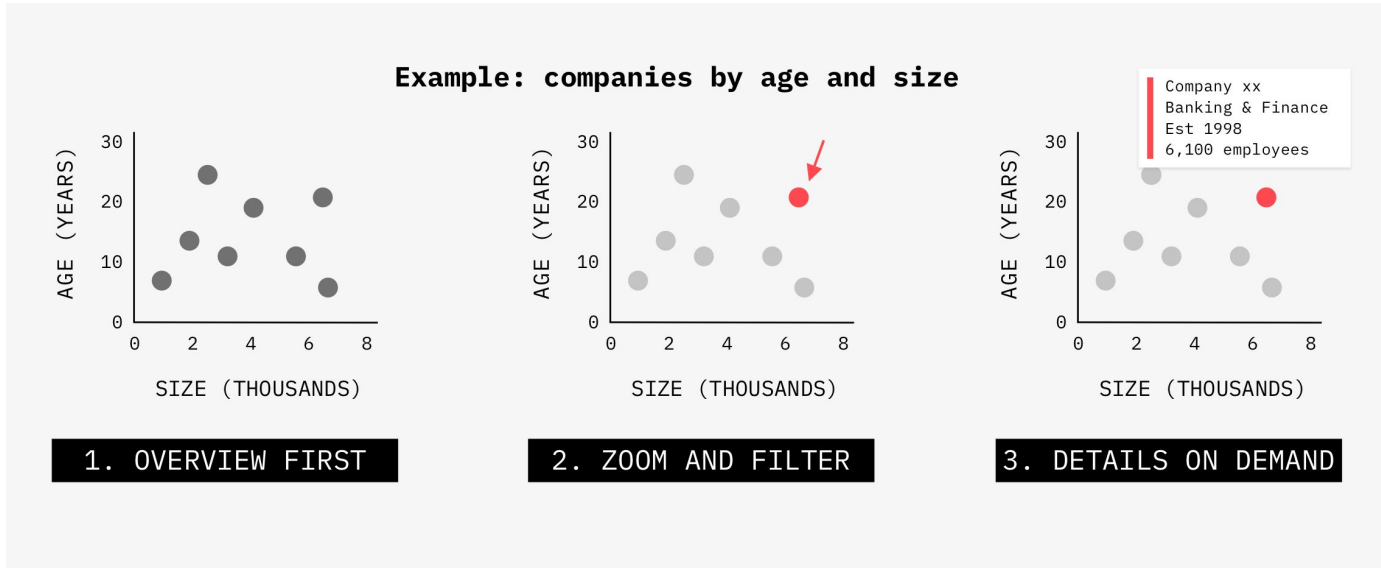
A well-known saying from the information visualization community:

Do not use 3D visualization (except for 3D data).



# Shneiderman's Mantra

Overview first, zoom and filter, then details-on-demand



# AR as a Visualization Tool

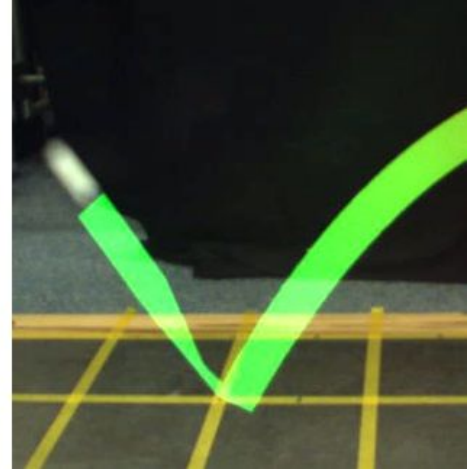
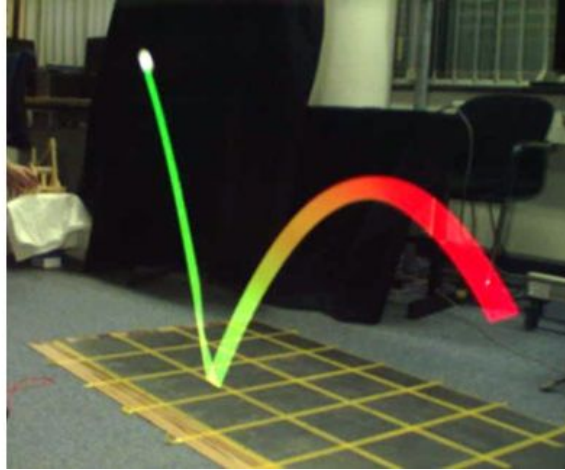
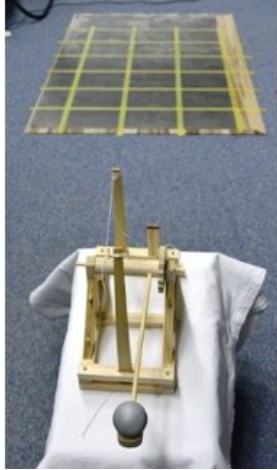
Will AR ever become a visualization tool better than PCs and phones?

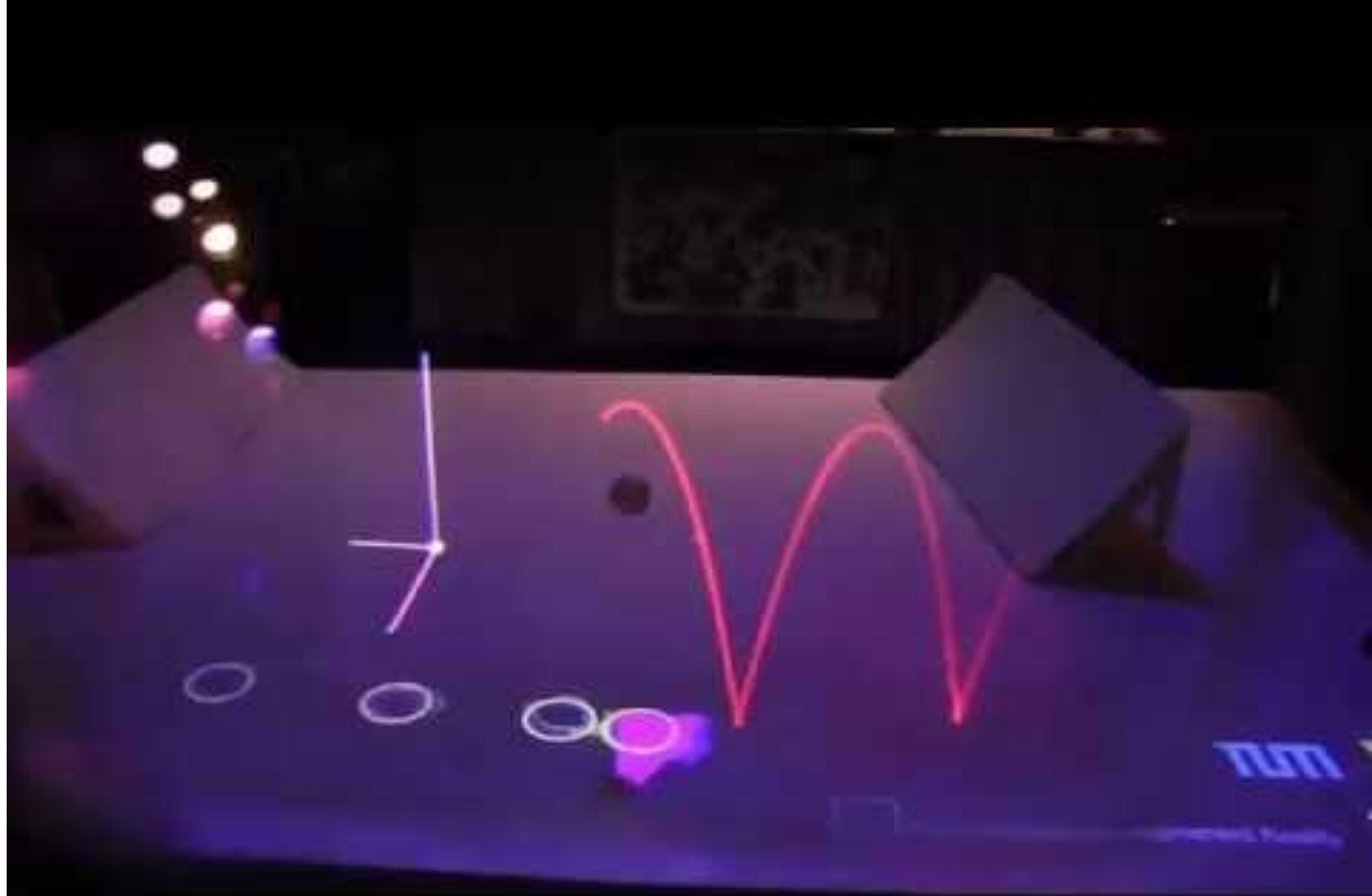
Can you even conveniently zoom using an AR device, and will it become even better than using a phone, while becoming better than PCs is not imaginable yet?



# An AR Visualization Example

Allow users to see what will happen in the future.





<https://youtu.be/NNLeIFnU0nw>