

Preliminary Research

Designing Digital → Physical Interactions

Revisions to Assignment 2,3,4

Our BUILD Framework

- **Bold:** Bring forward new ways that people perceive digital processes through physical objects + artifacts
- **Upbeat:** Playful interactions that connect you with the built world and technology that is increasingly introduced into our environment
- **Intermingles:** Brings people outside of the mindset of static and mundane interactions (ex. iPhone touchscreen). Combines physical objects and digital media to create novel interactions.
- **Local:** Start with available technology and familiar fabrication techniques to create a more analog and informative experience
- **Design:** Playful, well-crafted, and convincing prototype

Problems and Opportunities

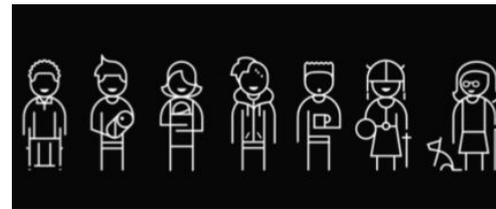
- **Problem:** How can we seamlessly integrate technology in our environments (home, workspace, etc.) in ways that make it more human and tangible?
- **Opportunity:** We will explore connecting and translating digital interactions through physical materials. By using physical computation we can communicate the intent and movement of the interaction.

Possible Scope from Last Class

1. Helping people find more clarity in normally mysterious/black box interactions like CUIs. To make these interfaces more accessible, more transparent, and have more feedback so they become usable by a wide range of stakeholder groups
2. Kristin: A series of experiences, prototype concepts, different interface experiences
 - What point are you making?
 - Is it about functionality or emotion?
3. People to look into:
 - Camille Moussette
 - Anish Kapoor
 - Niki Kittur

Problems

1. **Lack of feedback** - Currently there is minimal non-verbal feedback from non-GUI devices (ex. Light ring on alexa)
2. **Not being inclusive** - Overlooking disabled and elderly stakeholders and not looking into their mental model
3. **# of IoT devices** - There are many types of devices and different ways to interact with all of them, can there be cohesion?
4. **Designing for no GUI** - Design without a screen
5. **Teaching the user how to interact without a GUI**



ON YOUR PHONE ON YOUR SPEAKER ON YOUR WATCH ON YOUR LAPTOP



ON YOUR TV IN YOUR CAR ON YOUR SMART DISPLAY

Zero UI

1. People are increasingly downloading apps less

65% of US smartphone users download zero new apps per month

2. <https://medium.com/conversational-interfaces/starting-the-conversation-13b860b8f094>

What if the world was like this? 5 experimental studies

Instead of this is the problem and this is a great solution we came up with.

Take black box technology and make it understandable for people who didn't grow up using it?

1 app, 1 interaction, 5 tangible interaction

1 app, 5 interactions, 1 tangible interaction for each

CUI Fails

<https://www.youtube.com/watch?v=e2R0NSKtVA0>

https://www.youtube.com/watch?v=YvT_gqs5ETk

https://www.youtube.com/watch?v=YvT_gqs5ETk

<https://www.youtube.com/watch?v=epyWW2e43UU>

3 Objects

Artistic ways of
Interacting with
Phone /
Visualizing info



Project Soli

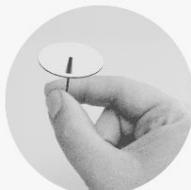
Gesture based interactions

Virtual Tool Gestures

Imagine an invisible button between your thumb and index fingers – you can press it by tapping your fingers together. Or a Virtual Dial that you turn by rubbing thumb against index finger. Imagine grabbing and pulling a Virtual Slider in thin air. These are the kinds of interactions we are developing and imagining.



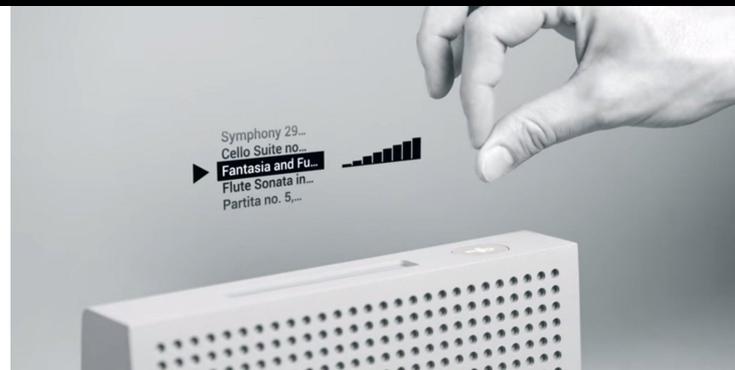
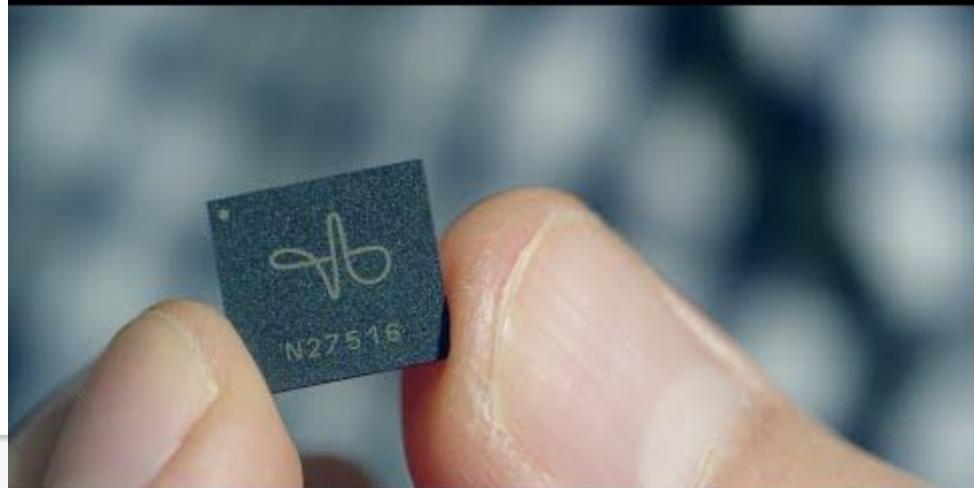
Button



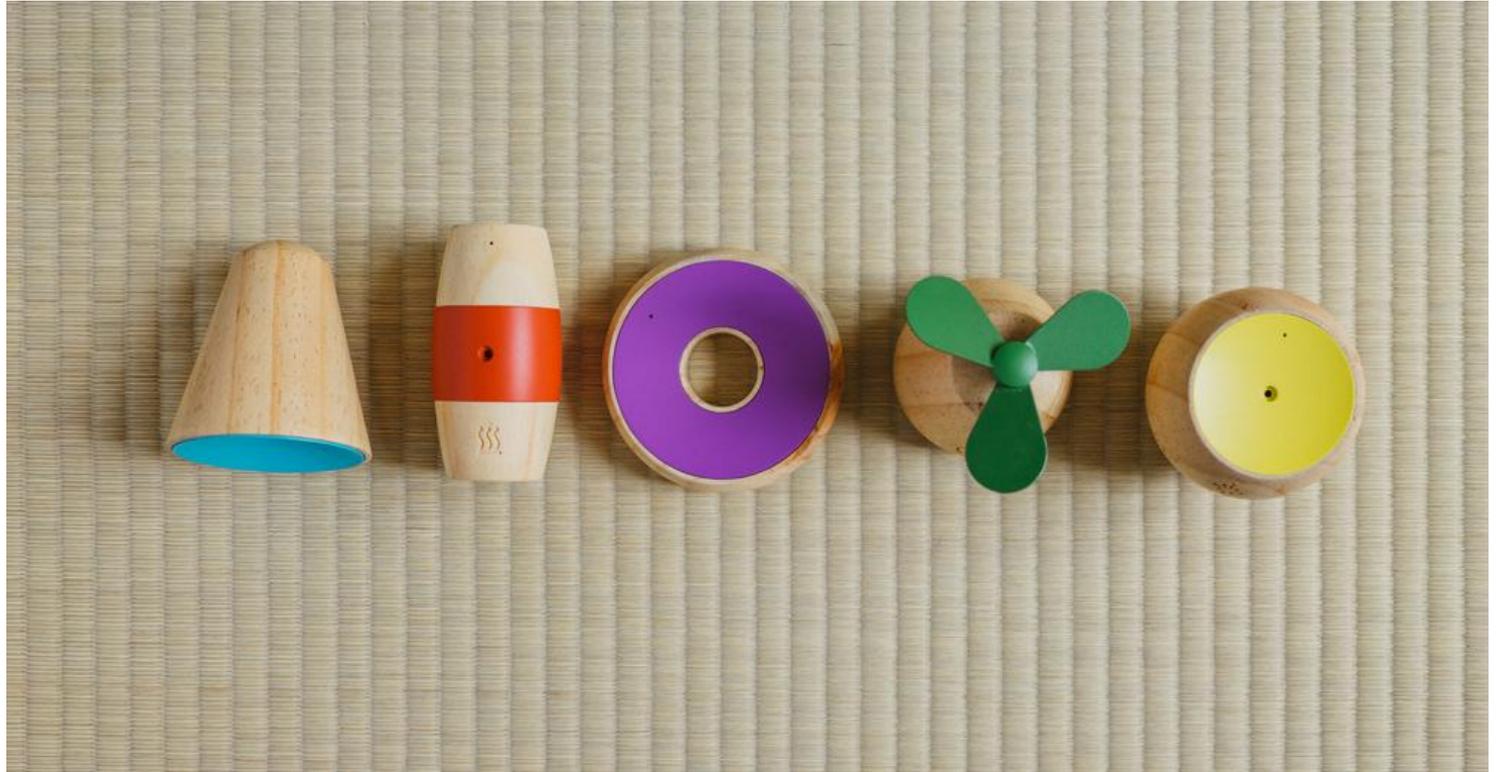
Dial



Slider



Yibu - Frog Design



Memo Wall



Tits Me



Eva Rielland's “Visualize differently”



Filo

<http://f3-h.de/>



Nelson

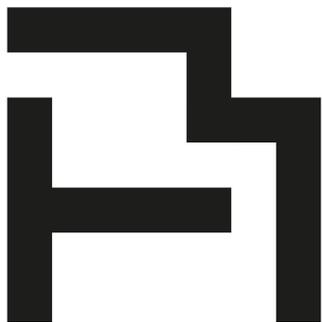
App controlled servos



Objects Dreaming



MIT Tangible Media Lab



**tangible
media**



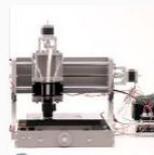
bioLogic Media Lab...



inFORM at Cooper Hewitt



Physical Telepresence



bioPrint



TRANSFORM



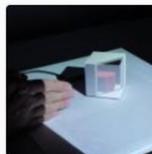
jamSheets



Weight/Volume Changing UI



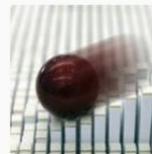
Andante



inSide



THAW



inFORM



PneuUI



synchroLight



Sublimate



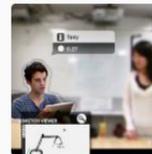
MirrorFugue



Perpetual Canon



Tangible CityScope



FocalSpace



Radical Atoms



Jamming User Interfaces



T(ether)



Kinected Conference



MirrorFugue II



Recompose

Resources

- <https://space10.io/labs/>
- <https://medium.com/swlh/no-ui-is-the-new-ui-ab3f7ecec6b3>
- <https://medium.com/conversational-interfaces>
- <https://chatbotsmagazine.com/the-future-of-ui-bots-conversation-voice-zero-ui-and-the-end-of-the-mobile-apps-defa5dcc09f5>
- <https://medium.com/conversational-interfaces/conversational-interfaces-arent-new-but-they-re-changing-the-game-67578e37ac3>
- <https://medium.com/conversational-interfaces/starting-the-conversation-13b860b8f094>
- <https://medium.com/the-layer/the-future-of-conversational-ui-belongs-to-hybrid-interfaces-8a228de0bdb5>