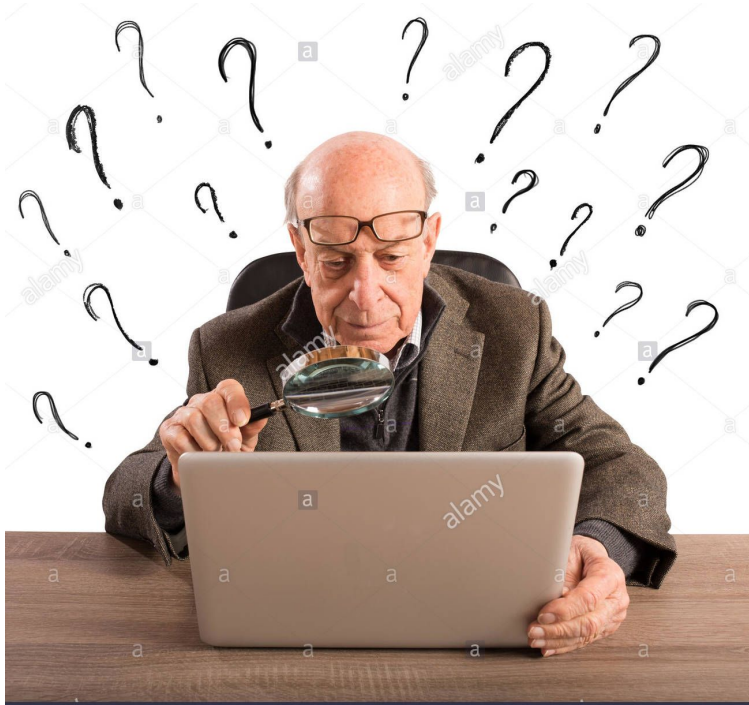



HandsUp

Integrating real-world gestures into digital meetings

Sri, Rayan, Linnea
Group 7

Do videoconferencing tools make you feel like this?



 alamy stock photo

GDRGKN
www.alamy.com



Download from
Dreamstime.com

This is a watermark image for the previewing process only.



4704127

Vladimir Mucobabic | Dreamstime.com

Illustrating the Problem

Main menu options

1. Click here to change the participants view to Speaker or Gallery view.

2. Click here to enter or exit the full screen mode.

3. Click here to raise hand or request permission.

4. Type inside the text box and press Enter to send a text to everyone.

5. Click the To field and select a participant to send a private message to that participant.

6. Leave the meeting

7. Click Chat to view the Chat window and text your tutor or other participants.

8. Click to share your screen with others

9. Click Participants to view the participants list and the Raise Hand option.

10. Click the Start/Stop Video button to transmit/hide your

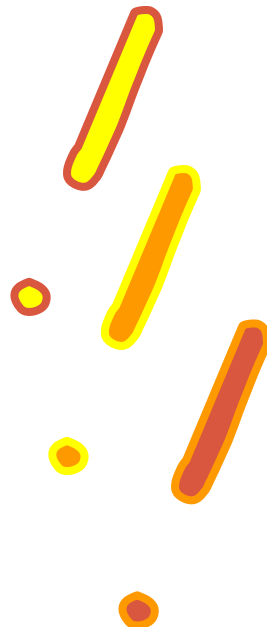
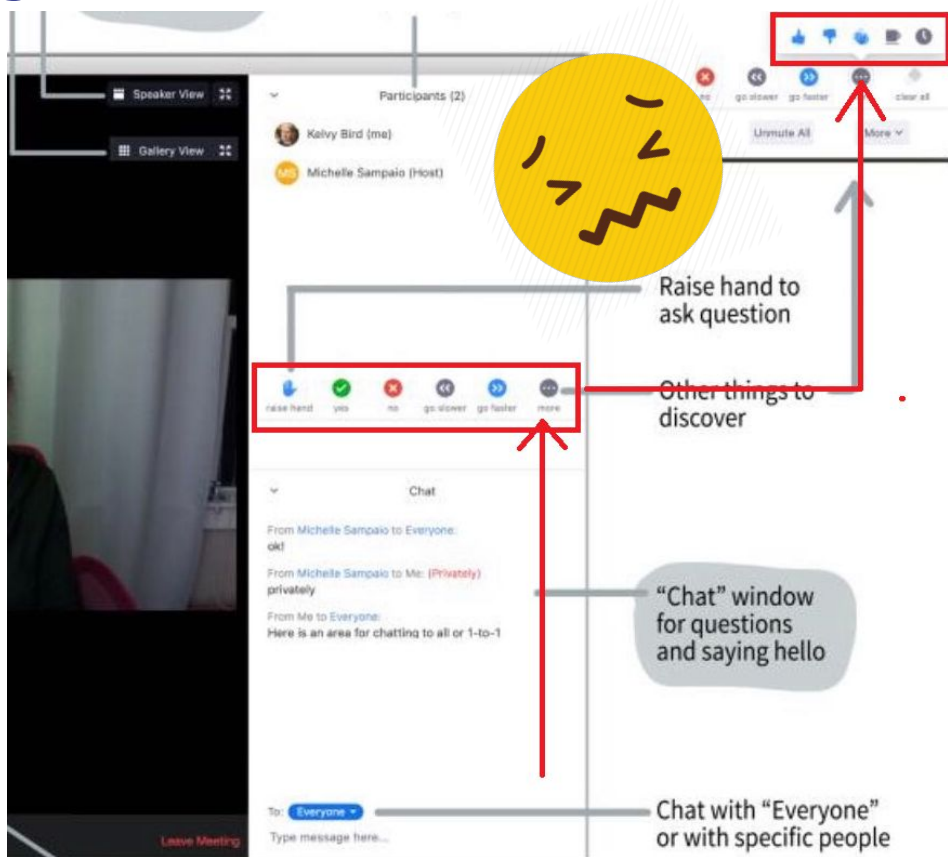
11. Click the Mute/Unmute button to mute or use your microphone.

???

???

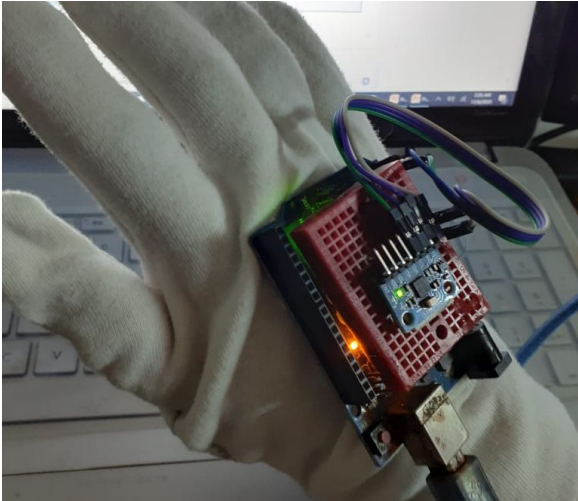
viv

Illustrating the Problem

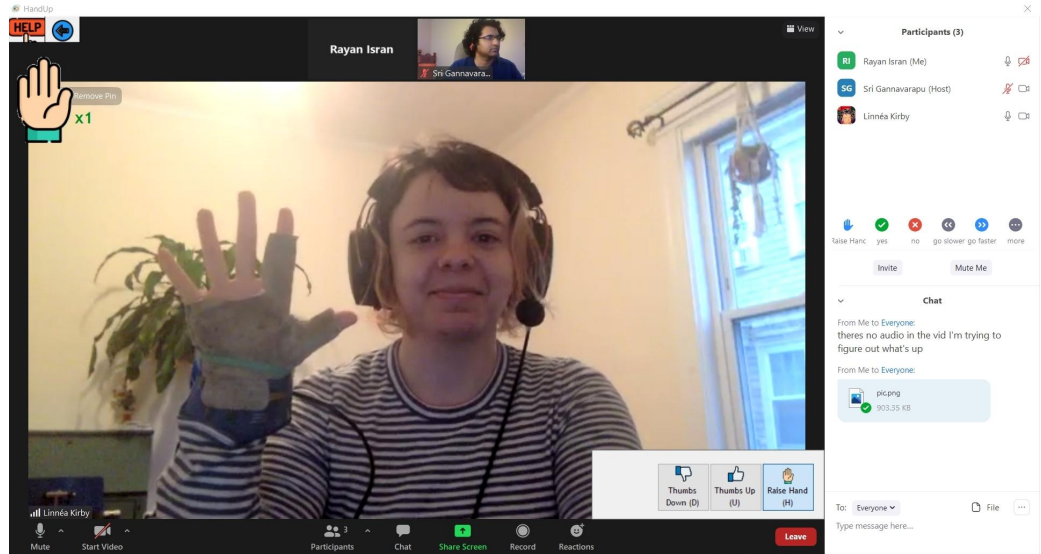


Our proposed solution: HandsUp

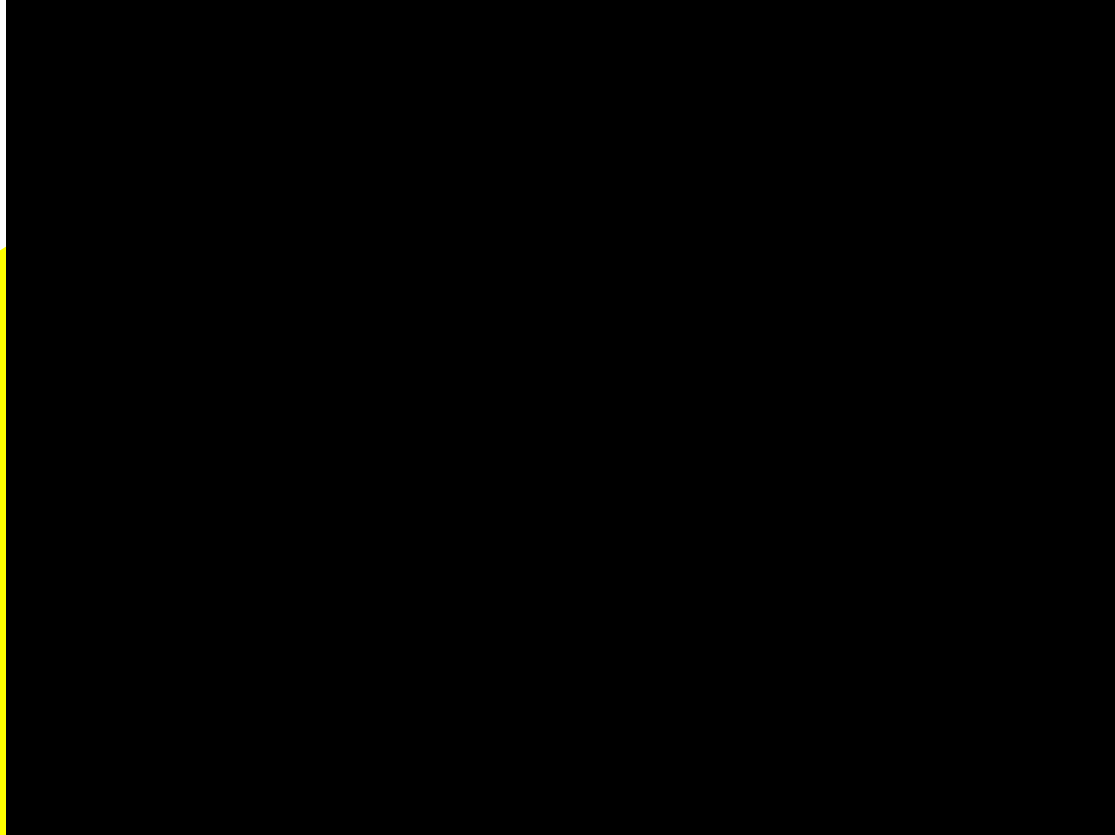
Wearable



Simplified UI



DEMO VIDEO





Target Audience

Why will people use this product?

- The Active Participant



Why might people not use this product?

- The Passive Watcher



Download from
Dreamstime.com
This watermarked comp image is for previewing purposes only.

ID 22084940
© Bowie15 | Dreamstime.com



Active Participant



Passive Watcher



Evolution

Goals of HandsUp: Nielsen Heuristics

Heuristic #2:

Match between system and the real world



vs



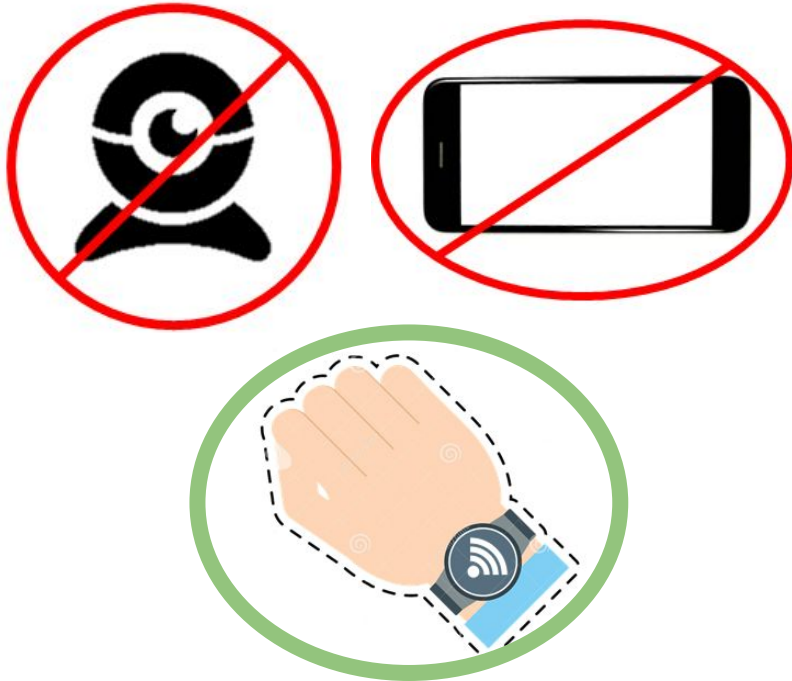
Heuristic #6:

Recognition rather than recall



www.shutterstock.com • 73143208

Goals of HandsUp: Accessibility

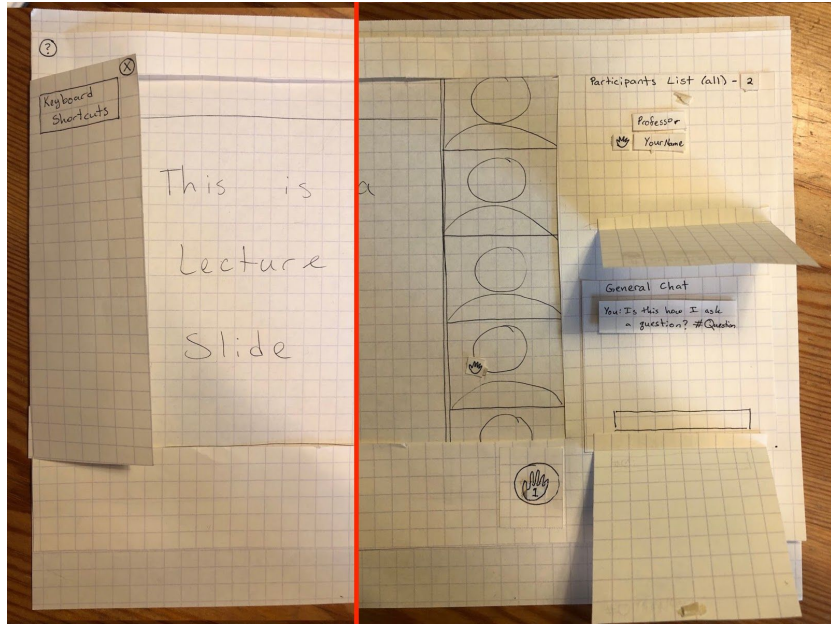


👉 Considerations during ideation:

- 👉 Privacy
- 👉 Security
- 👉 Social Anxiety

👉 Follow system goals

Early Development



- ☞ Sketching
- ☞ Paper prototyping
- ☞ Shortcuts & Filtering
- ☞ Feedback:
 - 👤 Options for users without wearable
 - 👤 Investigate other non-verbal feedback

Computer Prototype

The screenshot shows a Zoom meeting in progress. The main video window displays a man with glasses, identified as Anssam Ghezala, presenting a computer prototype. The interface includes a top bar with participant thumbnails (Rayan Isran, Jonah Model, Jazlyn Hellman, Sri Gannavarapu) and a 'HELP' button. A bottom toolbar contains various controls: 'End Meet (ALT+Q)', 'Toggle Chat (C)', 'Participants (P)', 'Record (R)', 'Sharescreen (S)', 'Draw/Capture (D)', 'Video (V)', 'Unmute (M)', 'Raise Hand (H)', and 'Filter Questions (F)'. On the right, a sidebar shows the 'Participants (19)' list and a 'Chat' window with a series of questions from Jonah Model to the group.

Participants (19)

Find a participant

- Rayan Isran (Me)
- Jeremy Cooperstock, Prof. (Host)
- JM Jonah Model (Co-host)

raise Hand yes no go slower go faster more

Invite Unmute Me

Chat

From Jonah Model to Everyone:

Question 1: What is your proposed design solution?

Question 2: How might this benefit your user?

Question 3: How did you arrive at this solution?

Question 4: Why will people use this product?

Question 5: Why might people not use this product?

To: Everyone File ...

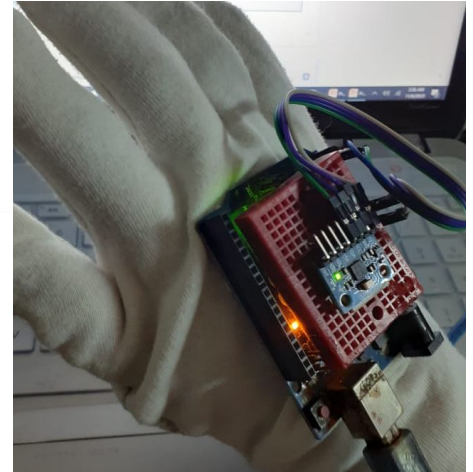
Type message here...

Bottom Toolbar:

- End Meet (ALT+Q)
- Toggle Chat (C)
- Participants (P)
- Record (R)
- Sharescreen (S)
- Draw/Capture (D)
- Video (V)
- Unmute (M)
- Raise Hand (H)
- Filter Questions (F)

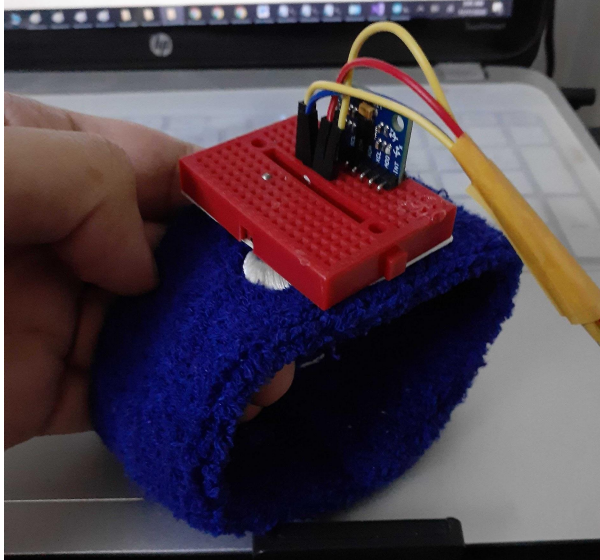
Alpha System

The screenshot shows a Zoom video call in progress. The main video feed displays a person with short brown hair wearing a headset and a striped shirt, holding up a grey and blue hand-tracking glove. In the top left corner, there is a 'HandUp' icon and a 'HELP' button. Below the main video feed, a smaller thumbnail shows another participant, 'Sri Gannavara...'. The bottom of the screen features a toolbar with icons for Mute, Start Video, Participants (3), Chat, Share Screen, Record, Reactions, and a red 'Leave' button. On the right side, a sidebar shows the 'Participants (3)' list: Rayan Isran (Me), Sri Gannavarapu (Host), and Linnéa Kirby. Below this is a 'Chat' section with a message from 'Me to Everyone' stating 'there's no audio in the vid I'm trying to figure out what's up' and an attached file 'pic.png' (903.35 KB). At the bottom of the sidebar, there is a 'Type message here...' input field and a 'Leave' button.



Beta System

Armband



Minimal Glove





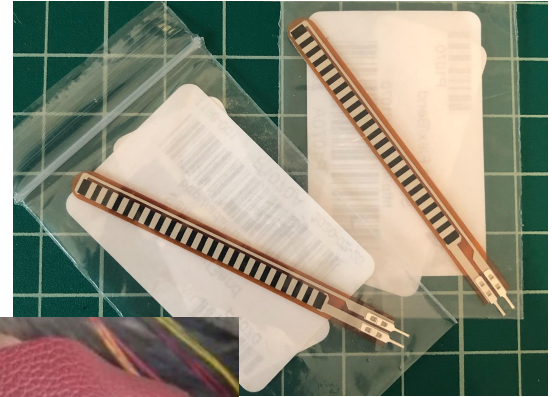
Next Steps

Usability and Robustness

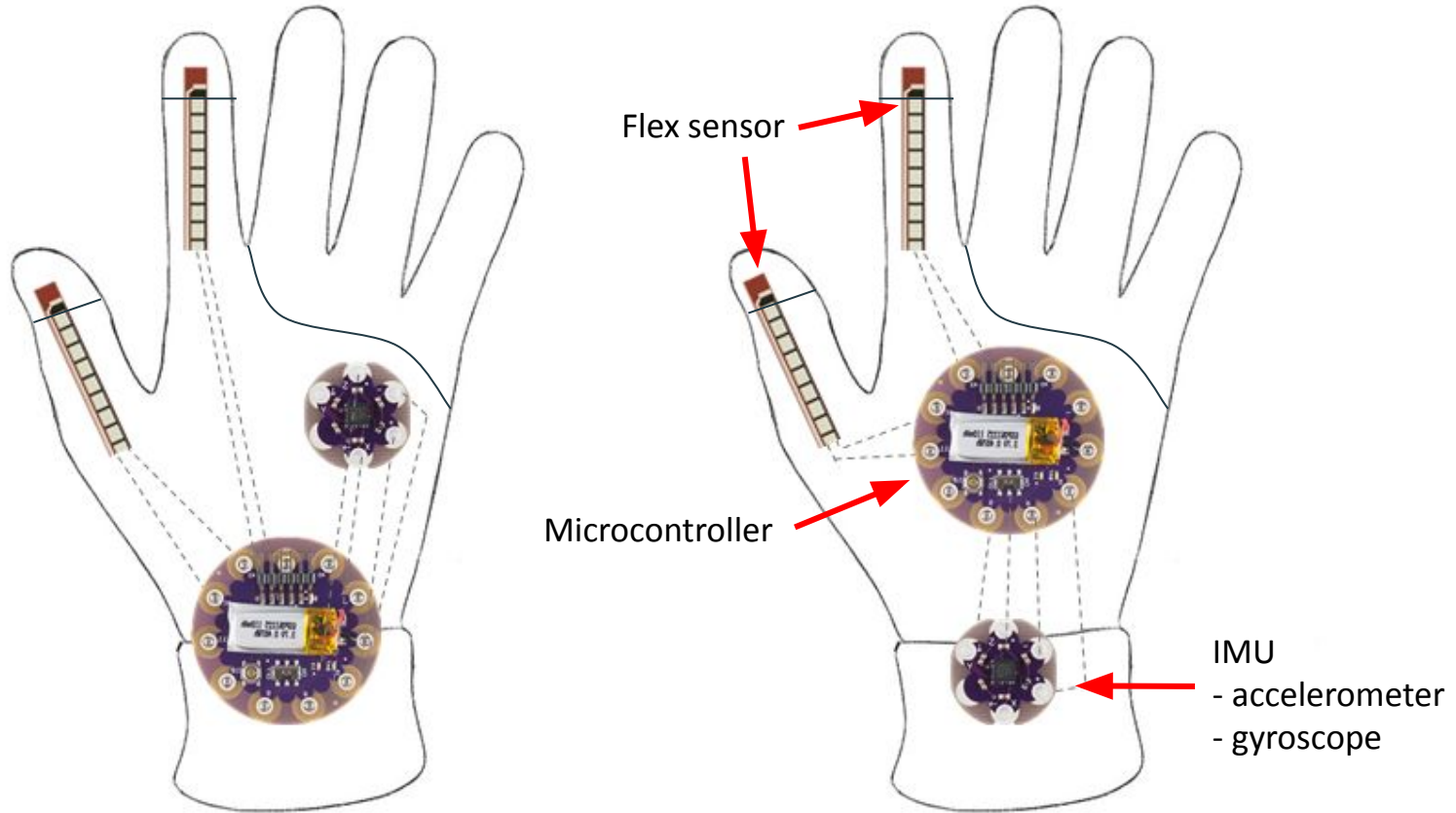


Long term goals:

- 👂 Increasing # of gestures
- 👂 Refining gesture algorithm
- 👂 Miniaturize hardware
- 👂 Wireless



Minimizing the Hardware



Further Accessibility

- ☞ Focus on streamlining chat options
 - 🔊 Filtering
- ☞ Interaction without wearable device
 - 🔊 Phone/smartwatch app
- ☞ Decaying signifiers for shortcuts



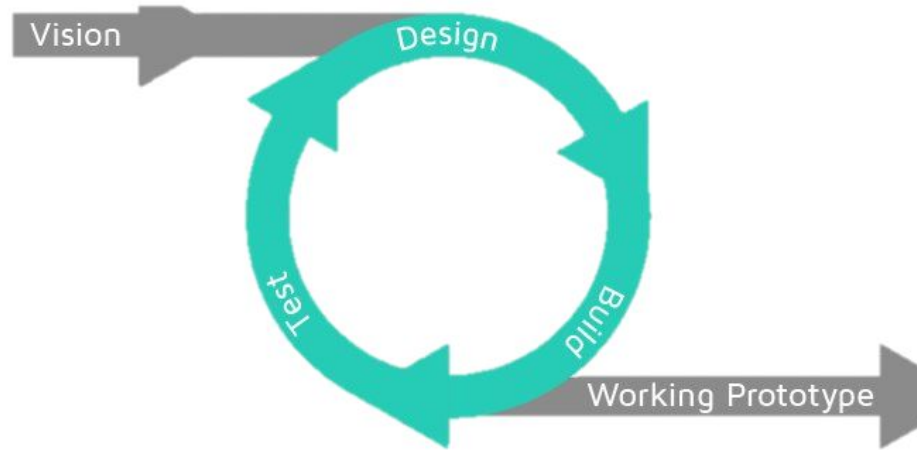


Questions?

DEMO VIDEO

The image is a screenshot of a Zoom video call interface. The main window shows a man with dark, curly hair and glasses, wearing a blue shirt, speaking. In the top left corner, there is a 'HandUp' button and a 'HELP' button. In the top right corner, there are three small video thumbnails of other participants: Rayan Isran, Sri Gannavarapu, and Linnéa Kirby. On the left side of the main video, there is a blue thumbs-down icon with a green 'x2' next to it. At the bottom of the main video, there is a 'Sri Gannavarapu' label. Below the main video, there is a toolbar with buttons for 'Mute', 'Stop Video', 'Participants', 'Chat', 'Share Screen', 'Record', and 'Reactions'. On the right side of the interface, there is a 'Chat' window. It has 'Invite' and 'Mute Me' buttons at the top. The chat message says: 'From Me to Everyone: theres no audio in the vid I'm trying to figure out what's up'. At the bottom of the chat window, there is a 'To: Everyone' dropdown, a 'Type message here...' input field, and a 'Leave' button. In the top right corner of the interface, there is an inset video showing a hand holding a blue device with a red light, connected to a laptop displaying the same Zoom call.

Iterative Design



Project Outline

- Introduction with story
- Problem definition
- Target User Population
- Proposed idea
- First iteration (computer)
- Second iteration (alpha) -> discuss change points and rationale
- Current Work (Beta)
- Future steps

Invite

Unmute Me

Chat

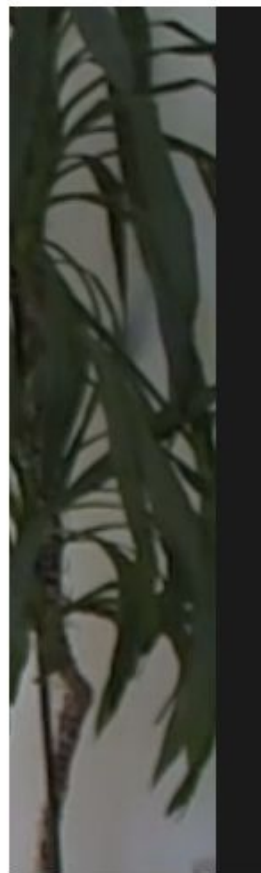
Question 6: What are the next steps?
Question 7: What questions do you have for reviewers?

From Jonah Model to Everyone:
<https://www.youtube.com/watch?v=Unzc731iCUY>

From Me to Sri Gannavarapu: (Privately)
hey, do you want to meet tomorrow at 9am for the project meeting? #q

To: Sri Gannava... (Privately) File ...

Type message here...



Hand

Filter



Jeremy Cooperstock, Prof. (Host) /



Jonah Model (Co-host) /

Questions

Clear All Questions

Sri Gannavarapu: hey, do you want to meet tomorrow at 9am for the project meeting? #q

To: Sri Gannava... ▾

File

Type message here...

Feedback - Usability Testing & Evaluation

Task #	Task	Time Taken	Intended Outcome	Actual Outcome	Observations		
1	Open application & calibrate device	2m	Download the application and calibrate the phone successfully	2	Indicate "Raise Hand" using zoom	1s	ation quickly and started the r, the user did not open his ation process.
2	Indicate "Raise Hand" using zoom	1s	Raise hand	3	Indicate "Raise Hand" using simulated gesture	20s	raise hand button and performed nce
3	Indicate "Raise Hand" using simulated gesture	20s	Raise hand	4	Indicate "Raise Hand" using "Raise Hand" button in application	2s	tried raising the hand multiple observed from the computer application from phone and re- the same results.
4	Indicate "Raise Hand" using "Raise Hand" button in application	2s	Raise hand	5	Indicate "Raise Hand" using keyboard shortcut	1s	on and clicked on the button. y and successfully
5	Indicate "Raise Hand" using keyboard shortcut	1s	Raise hand	6	Indicate "Raise Hand" using global shortcut key while focused on the Zoom chat window	10s	tter key as indicated in the he task is performed quickly
6	Indicate "Raise Hand" using global shortcut key while focused on the Zoom chat window	10s	Raise hand	7	Ask a question	5s	Ask a question in the chat

What are the next steps

- Feedback: **clarify shortcuts**
- Incorporate shortcuts for other buttons (thumbs up, etc)

sible as

+1):

(1)

(2)

for

The screenshot shows a Zoom meeting interface. On the left, there is a vertical toolbar with icons for Video, Unmute, Raise Hand, and Filter Questions. A red arrow points from the 'Raise Hand' icon in this toolbar to the 'Raise Hand' icon in the main toolbar. The main toolbar also includes icons for Like, yes, no, go slower, go faster, and more. A red arrow points to the 'more' icon. Below the main toolbar, there are buttons for 'Invite' and 'Unmute Me'. The chat window shows a message history with several messages, including 'Is it not present yet?' and 'Ohk I will do it.' The bottom status bar shows the time as 02:14 PM and the language as ENG.

Like

Raise Hand yes no go slower go faster more

Invite Unmute Me

Chat

Is it not present yet?

From Me to Everyone: not yet

No I do not see it yet

Ohk I will do it.

From Me to Everyone: I had no issue with it

To: Everyone

Type message here...

Video (V) Unmute (M) Raise Hand (H) Filter Questions (F)

02:14 PM ENG



Rayan Isran



Jonah Model

Anssam Ghezala



Jazlyn Hellman

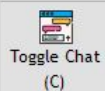
Sri Gannavarapu

View

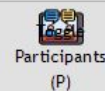


You have 0
unanswered
questions.

End Meet
(ALT+Q)



Toggle Chat
(C)



Participants
(P)



Record
(R)



Screenshare
(S)



Draw/Capture
(D)



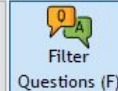
Video
(V)



Unmute
(M)



Raise Hand
(H)



Filter
Questions (F)

Participants (19)



Rayan Isran (Me)



Jeremy Cooperstock, Prof. (Host)



Jonah Model (Co-host)



Questions

[Clear All Questions](#)

To: Everyone

File



Decaying signifiers



Participants (3)

Panelists (1)



1

Attendees (2)

Grant MacLaren



Carly Shannon

Lower All Hands

Zoom Meeting

Participants (19)

Search

Linnea Kirby

Jeremy Cooperstock, Prof.

Jonah Model

Anssam Ghez...

View

raise hand

yes

no

go slower

go faster

more

Invite

Unmute Me

Chat

Question 2: How might this benefit your user?

Question 3: How did you arrive at this solution?

Question 4: Why will people use this product?

Question 5: Why might people not use this product?

Question 6: What are the next steps?

From Jonah Model to Everyone:

Question 7: What questions do you have for reviewers?

From Jonah Model to Everyone:

<https://www.youtube.com/watch?v=Unzc731iCUY>

To: Everyone

Type message here...

Unmute

Start Video

Participants 19

Chat

Share Screen

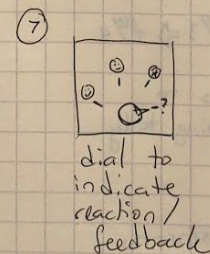
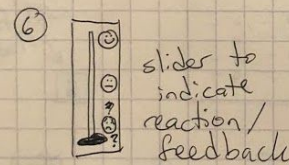
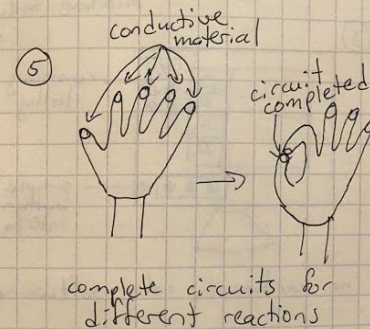
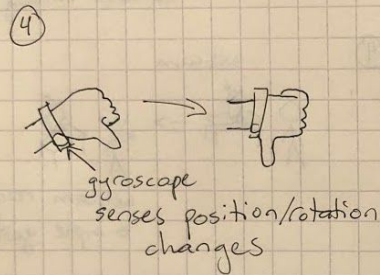
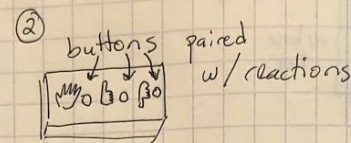
Record

Reactions

Leave

How did you arrive at this solution?

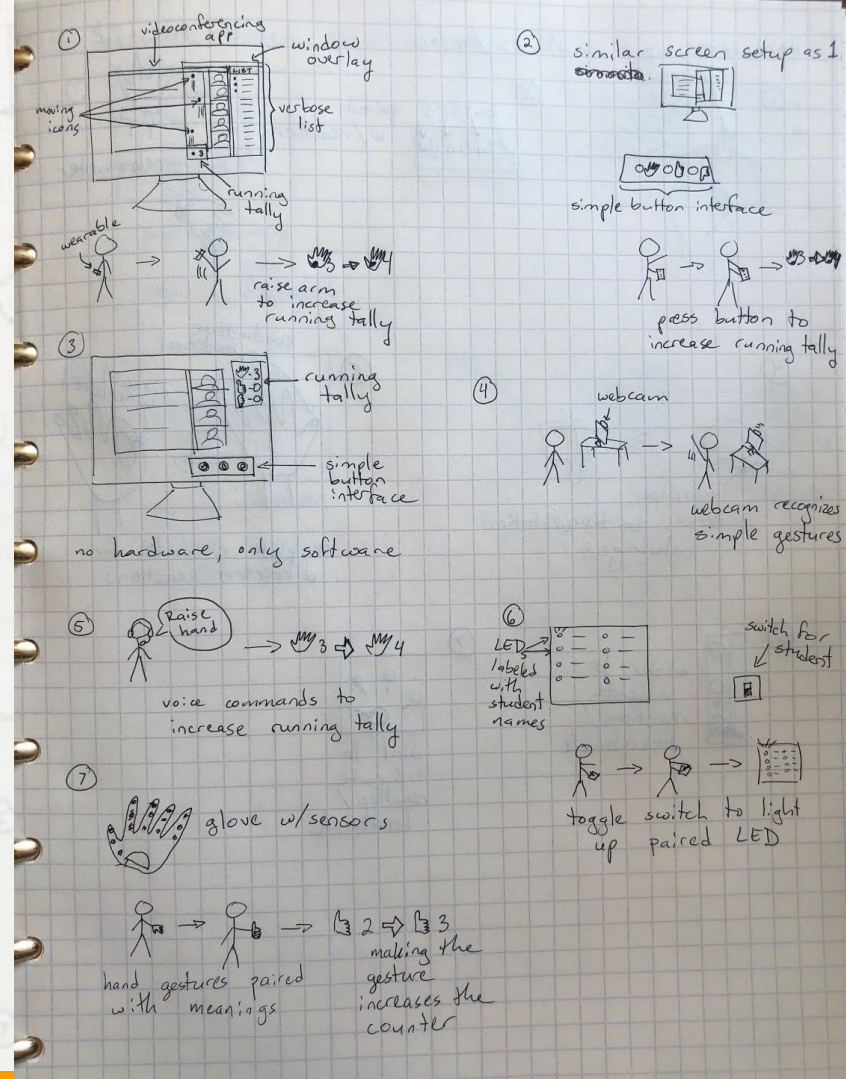
Hardware input methods / sensors



How did you arrive at this solution?

Considerations:

- Natural as possible
- Accessibility
- Different user groups
- Minimalistic



How did you arrive at this solution?

Methodology:

- Observations
- 10 + 10 design method
- Iterative design

