

HandsUp

Integrating real-world gestures into digital meetings

Sri, Rayan, Linnea
Group 7

Do videoconferencing tools make you feel like this?



a alamy stock photo

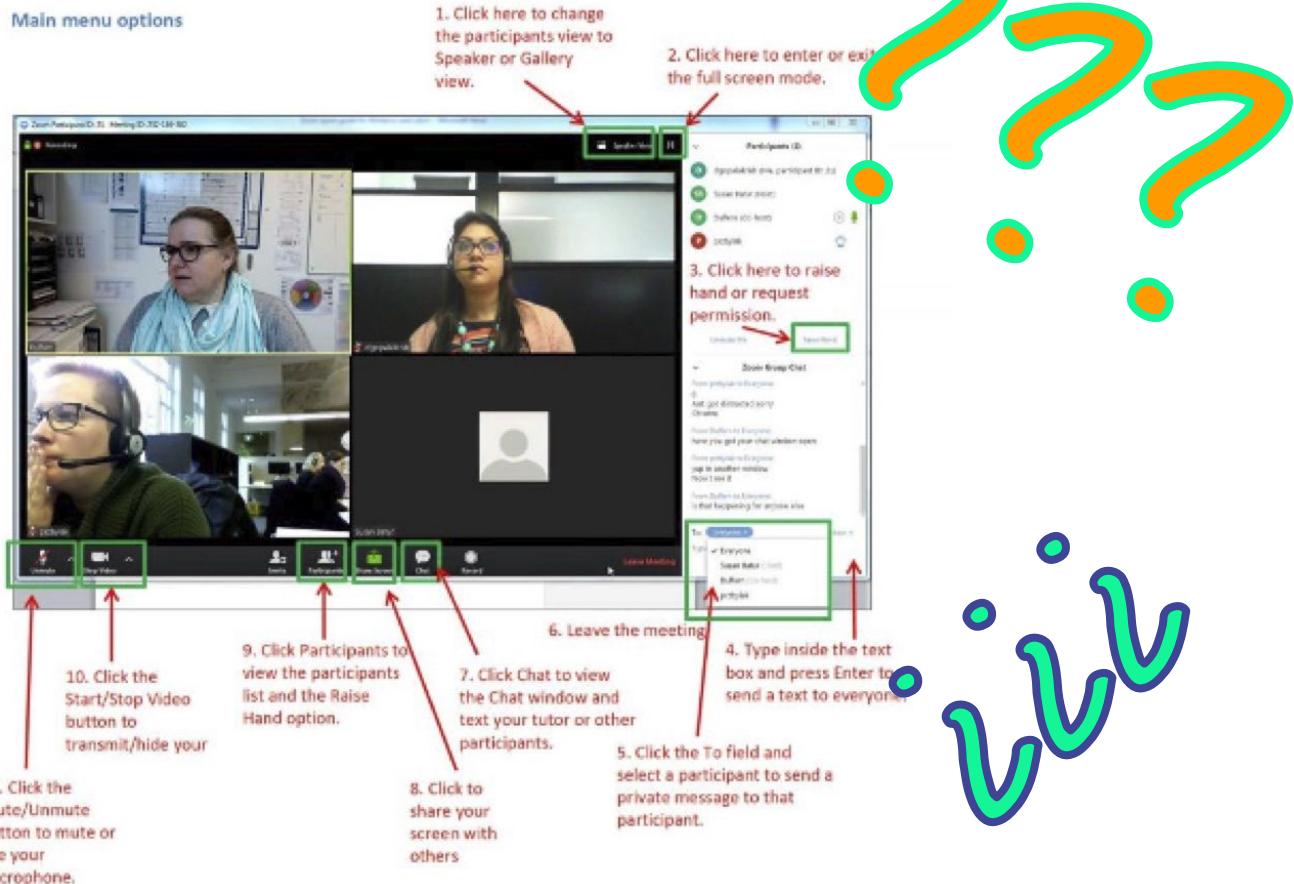
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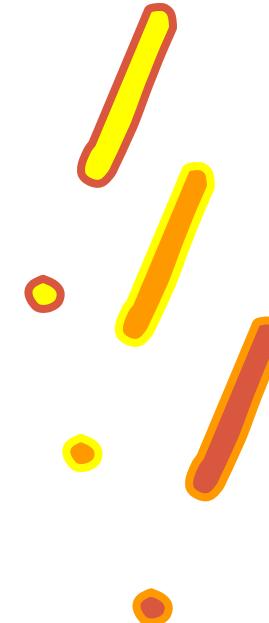
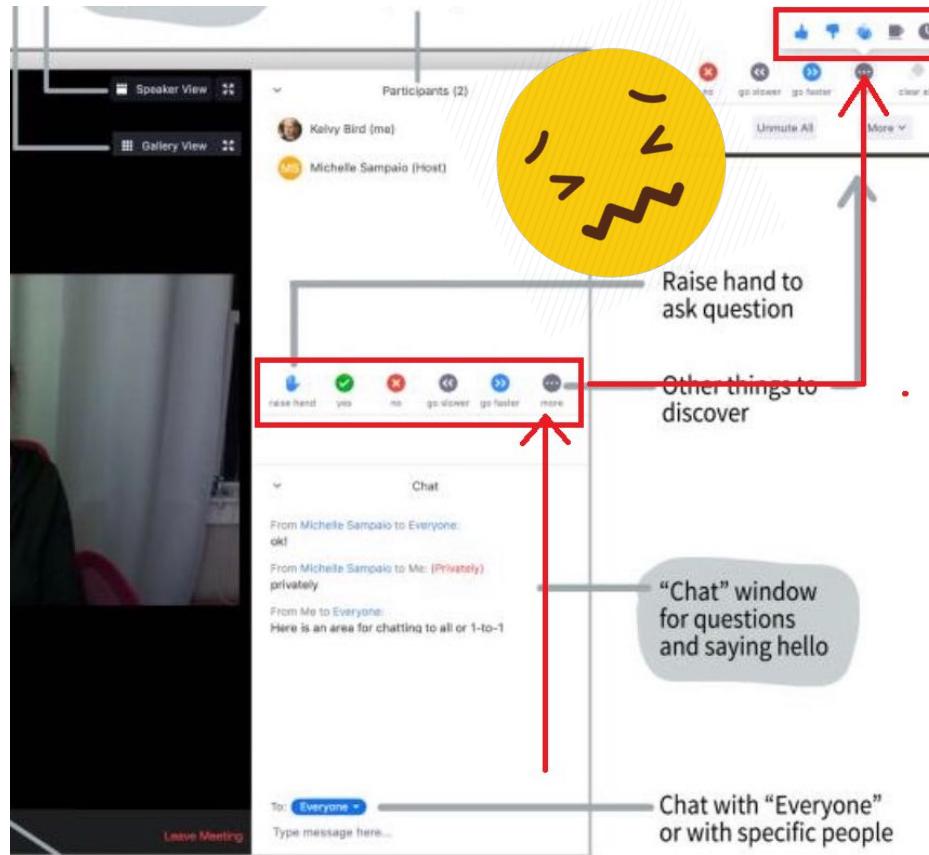
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Vladimir Masicbic | Dreamstime.com

Illustrating the Problem

Main menu options

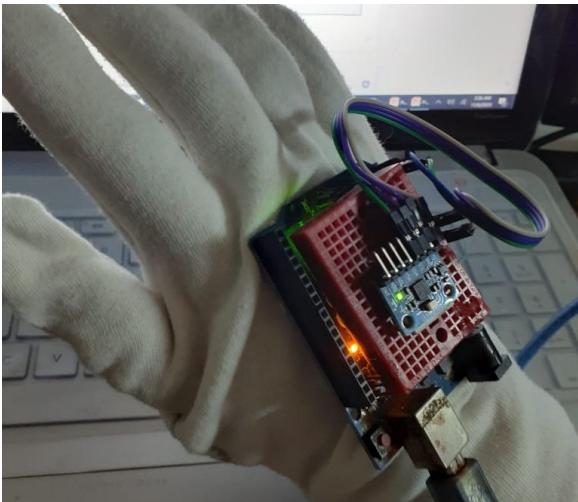


Illustrating the Problem



Our proposed solution: HandsUp

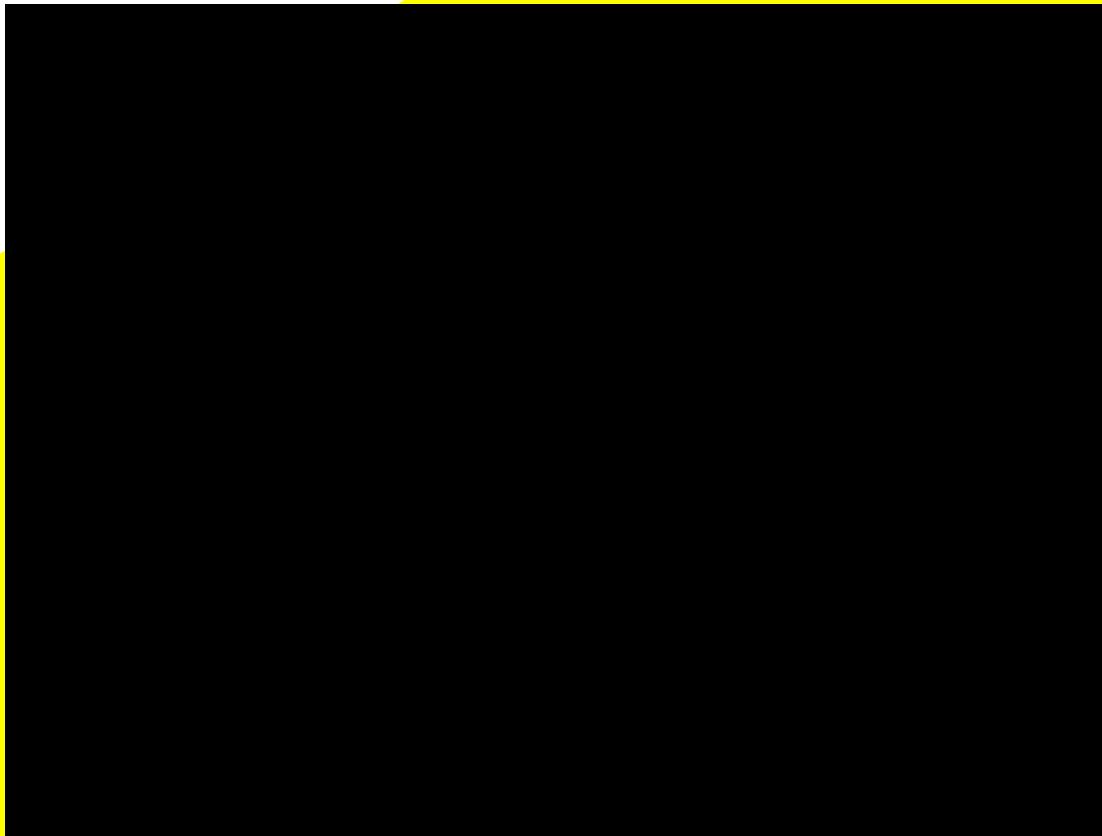
Wearable



Simplified UI

A screenshot of a video conference interface showing three participants. The central participant, Rayan Isran, is wearing headphones and has their right hand raised. A large green button labeled "Raise Hand" is overlaid on the video. The interface includes a sidebar with participant names and a reactions panel with options like "Thumbs Up" and "Raise Hand".

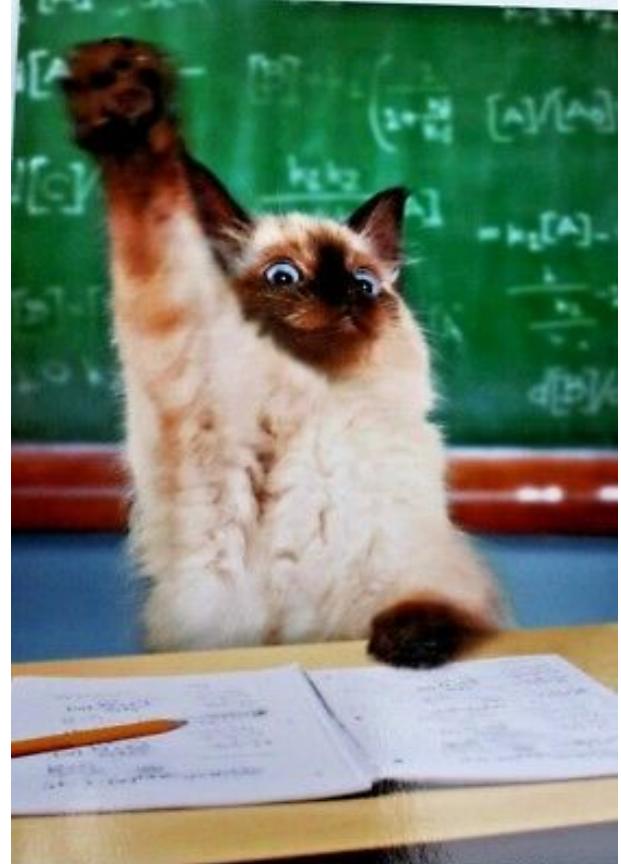
DEMO VIDEO



Target Audience

Why will people use this product?

– The Active Participant



Why might people not use this product? – The Passive Watcher



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Active Participant

Passive Watcher





Evolution

Goals of HandsUp: Nielsen Heuristics

Heuristic #2:

Match between system and the real world



vs



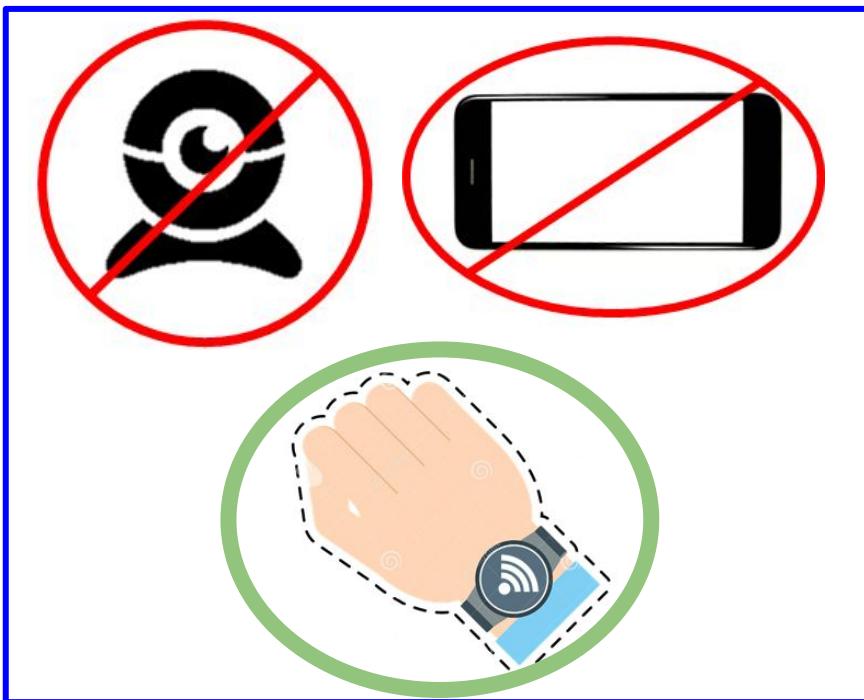
Heuristic #6:

Recognition rather than recall



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Goals of HandsUp: Accessibility



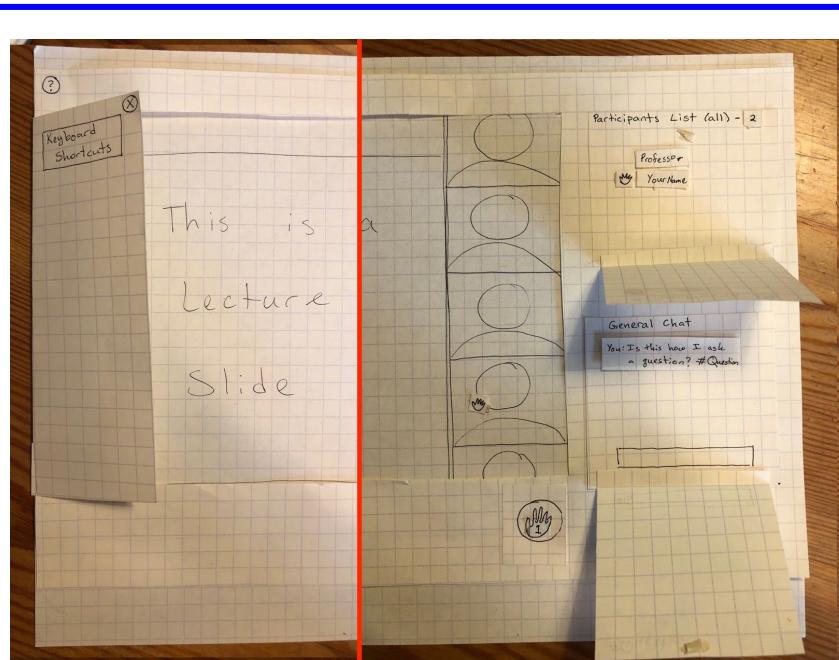
Considerations during ideation:

- ❖ 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 video conference interface with the following elements:

- Top Bar:** Includes a "HandsUp" icon, a "HELP" button with a hand icon, and participant thumbnails for Rayan Isran, Jonah Model, Anssam Ghezala, Jazlyn Hellman, and Sri Gannavarapu.
- Central Video View:** A large video frame showing a man with glasses and a blue shirt sitting in a chair, looking towards the right. A potted plant is visible to his right.
- Bottom Left:** A message: "You have 0 unanswered questions."
- Bottom Navigation Bar:** Contains icons for "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)".
- Right Sidebar - Participants:** Shows a list of 19 participants with their status (e.g., Rayan Isran (Me), Jeremy Cooperstock, Prof. (Host), Jonah Model (Co-host)).
 - Control buttons: raise Hand (green checkmark), no (red X), go slower, go faster, more.
 - Buttons: Invite, Unmute Me.
- Right Sidebar - Chat:** Displays a conversation log:
 - 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?
- Bottom Right:** Buttons for "File" and a message input field: "Type message here..."

Alpha System

A screenshot of a video conferencing interface. A participant named Linnéa Kirby is shown in the center, wearing headphones and a striped shirt, with their right hand raised. A green "HandUp" reaction icon with a count of "x1" is displayed on the left. The interface includes standard video controls like Mute, Start Video, Participants (3), Chat, Share Screen, Record, Reactions, and Leave.

Participants (3)

- RI Rayan Isran (Me)
- SG Sri Gannavarapu (Host)
- Linnéa Kirby

Raise Hand yes no go slower go faster more

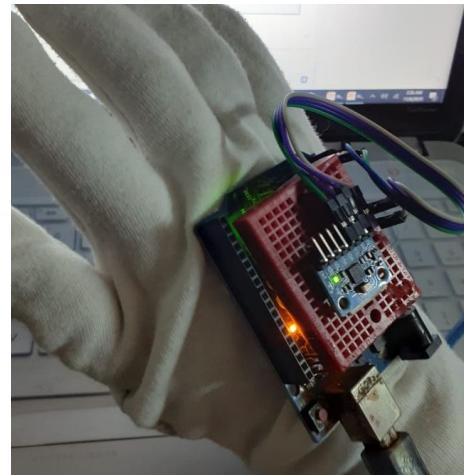
Invite Mute Me

Chat

From Me to Everyone:
theres no audio in the vid I'm trying to figure out what's up

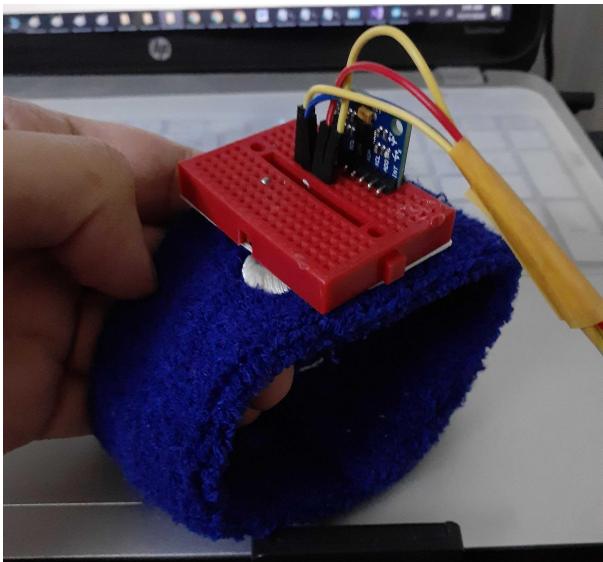
From Me to Everyone:
picpng 903.35 KB

To: Everyone File ...
Type message here...



Beta System

Armband



Minimal Glove



Next Steps

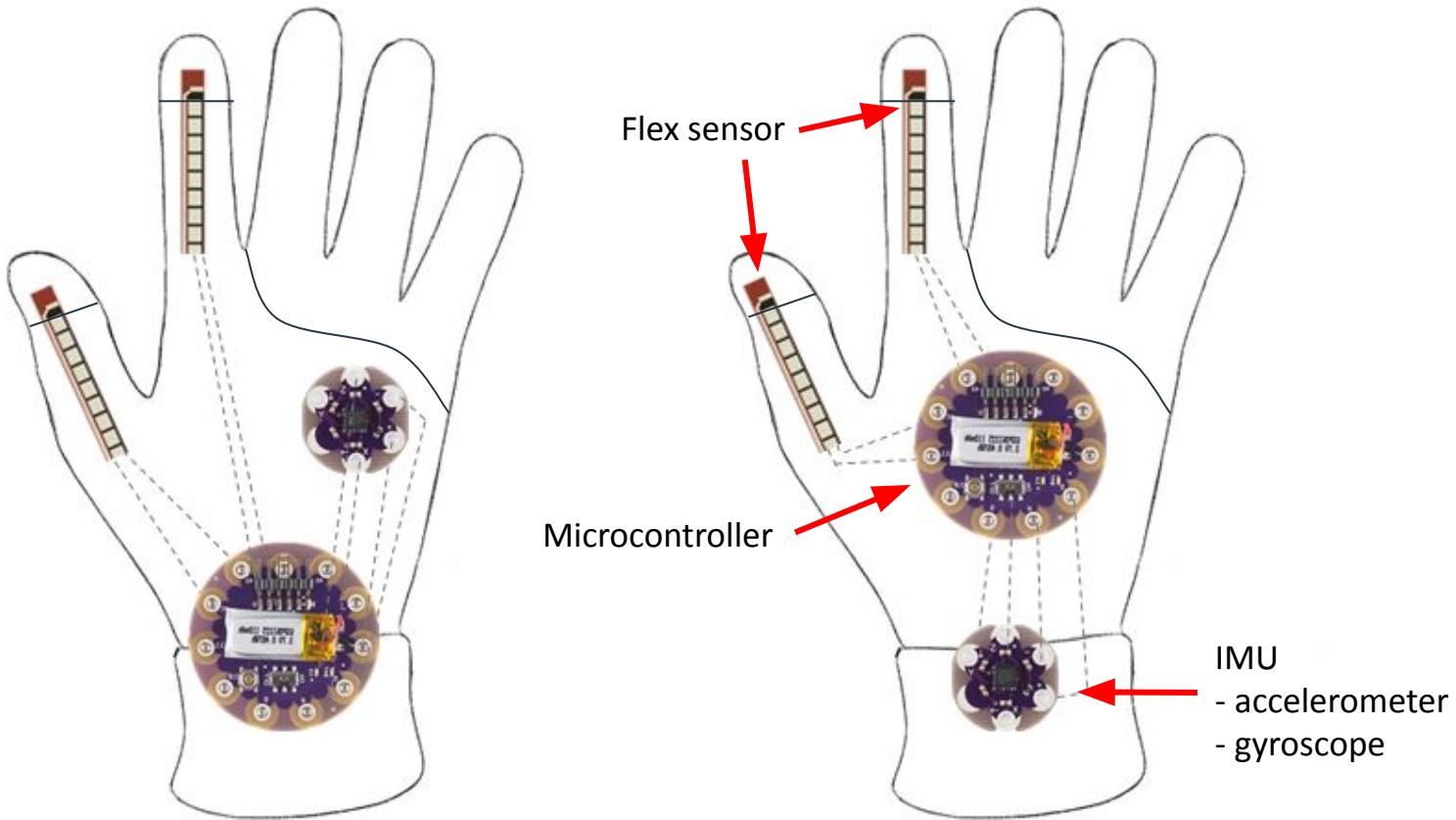
Usability and Robustness

👉 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 displays a video conferencing interface from HandUp, featuring a large main video feed of a man with dark hair and glasses, and a smaller grid of three other participants: Rayan Isran, Sri Gannavarapu, and Linnéa Kirby.

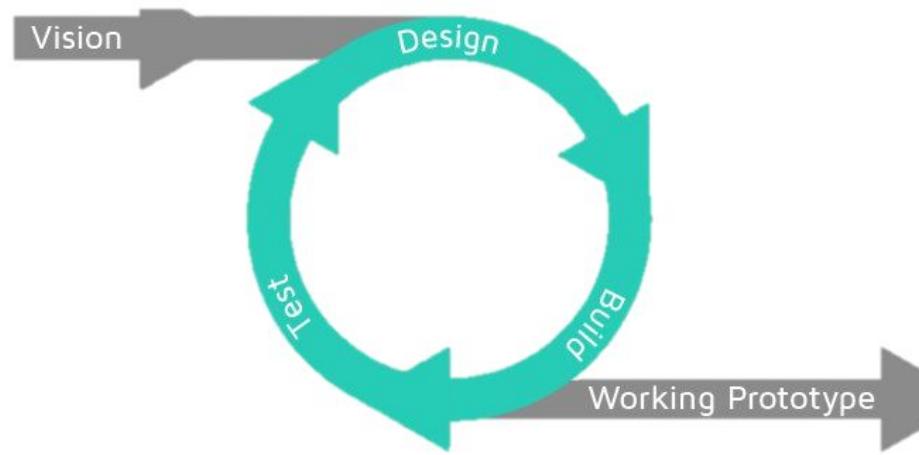
Left Side (Video Feed):

- Top Bar:** HandUp logo, HELP button, and a circular icon.
- Reactions:** A large thumbs-down icon with "X2" next to it.
- Bottom Bar:** Participants (Sri Gannavarapu), Mute, Stop Video, Participants (3), Chat, Share Screen, Record, Reactions, Leave.

Right Side (Physical Setup):

- Monitor:** Shows the video call interface.
- Hand:** A person's hand wearing a blue glove with a red light on it, positioned near the monitor.
- Bottom Panel:** Chat window with messages: "From Me to Everyone: theres no audio in the vid I'm trying to figure out what's up".

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?

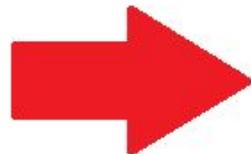
Question 7: What questions do you have for reviewers?

From Jonah Model to Everyone:

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

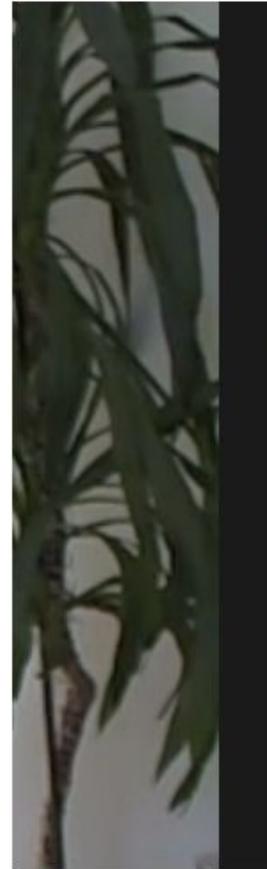
From Me to Sri Gannavarapu: (Privately)

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



To: Sri Gannava... (Privately)

Type message here...



Jeremy Cooperstock, Prof. (Host)



Jonah Model (Co-host)

Questions

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

To: Sri Gannava...

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 tion quickly and started the process, the user did not open his application.
2	Indicate "Raise Hand" using zoom	1s	Raise hand	3 Indicate "Raise Hand" using simulated gesture	20s raise hand button and performed the same action.
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 times. Observed from the computer application from phone and resulted in the same results.
4	Indicate "Raise Hand" using "Raise Hand" button in application	2s	Raise hand	5 Indicate "Raise Hand" using keyboard shortcut	1s icon and clicked on the button. User successfully completed the task.
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	1s User pressed the F11 key as indicated in the instructions. The task is performed quickly.
6	Indicate "Raise Hand" using the global shortcut key while focused on the Zoom chat window	10s	Raise hand	7 Ask a question	10s User was able to raise his hand while in the Zoom chat window. And he did not figure out how to raise the hand while in the Zoom chat window. He figured it out until the end of the test.
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)

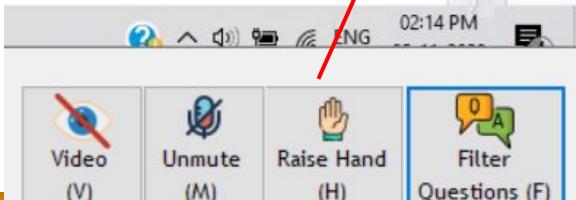
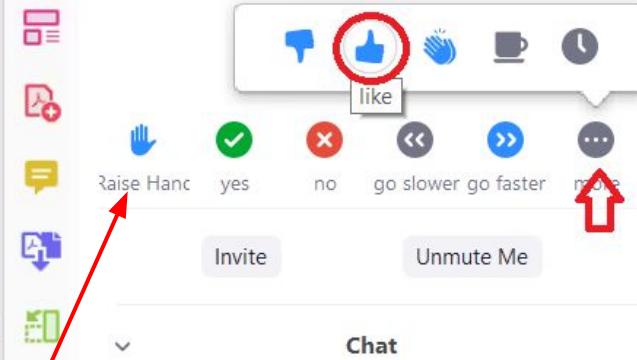
sible as

+1):

(1)

(2)

for



HandsUp



Rayan Isran

Jonah Model

Anssam Ghezala

Jazlyn Hellman

Sri Gannavarapu



You have 0
unanswered
questions.

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)

To: Everyone

File

Type message here...

Participants (19)

Find a participant

Rayan Isran (Me)



Jeremy Cooperstock, Prof. (Host)



Jonah Model (Co-host)



Questions

Clear All Questions

Decaying signifiers



Participants (3)

Panelists (1)

 1 Attendees (2)

Grant MacLaren



Carly Shannon

Lower All Hands

Zoom Meeting

Participants (19)

Linnea Kirby

Jeremy Cooperst...

Jonah Model

Anssam Ghez...

View

Participants (19)

Search

Jeremy Cooperstock, Prof. (Host)

Jonah Model (Co-host)

Cecilia Jiang

Douglas So

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 File ...

Type message here...

Participants 19

Unmute Start Video Chat Share Screen Record Reactions Leave

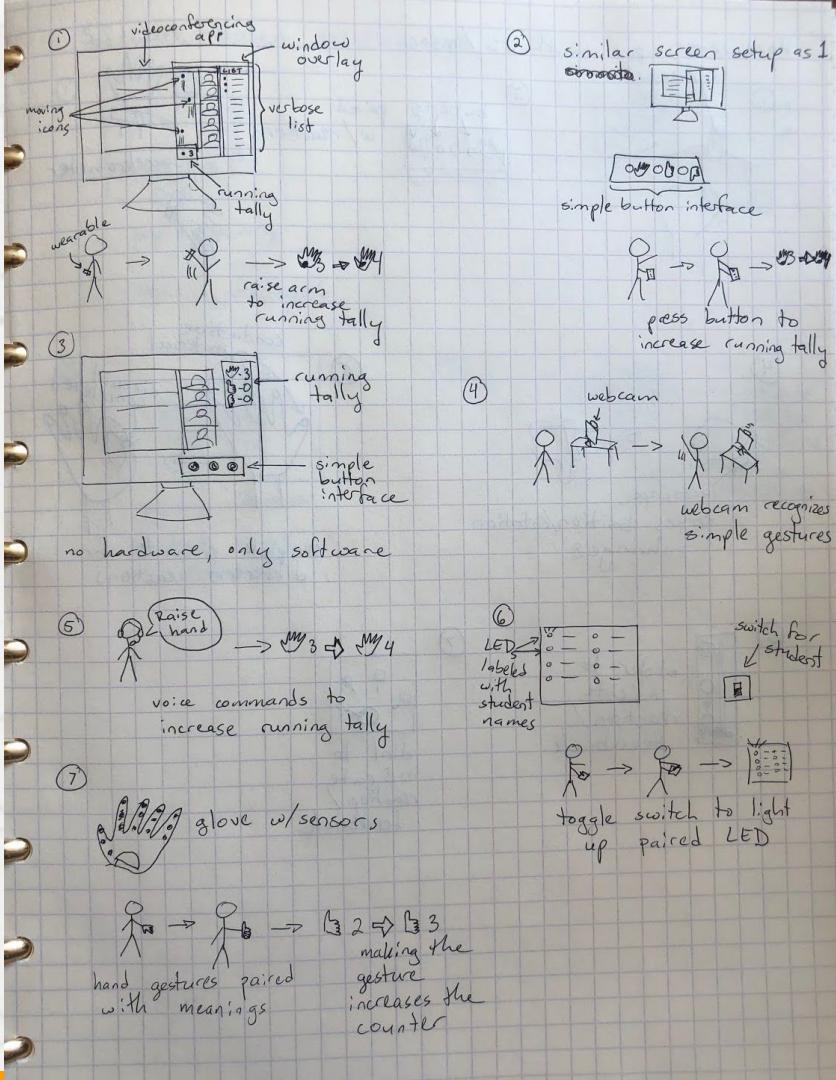
How did you arrive at this solution?

- Hardware input methods / sensors
- ① light sensor
 - ② buttons paired w/ reactions
 - ③ accelerometer
 - ④ gyroscope
senses position/rotation changes
 - ⑤ conductive material
circuit completed
complete circuits for different reactions
 - ⑥ slider to indicate reaction/ feedback
 - ⑦ dial to indicate reaction/ feedback

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

