

AAC: Accessible Avatar Customizer for Social Virtual Reality

Enabling users to create accessible designed avatars

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Abstract

Process:

Problem Identification

Design Thinking

Paper Prototype

Bodystorming

Playtesting

Feedback Analysis

Final Iteration

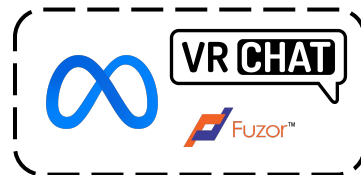
Introduction

- VR advancing and becoming more commercially successful
 - Need for accessibility
 - Current gap in representation for people with disabilities
- We wanted to make an Accessible Character

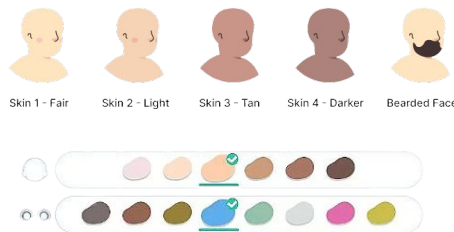
Customizer

- address the issue of inaccessible design
- assistive device representation,
- body customization,
- diverse skin tone settings.

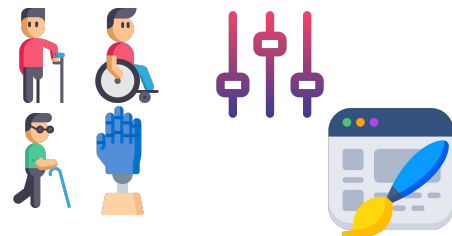
Current Development in Field:



Current Customization:



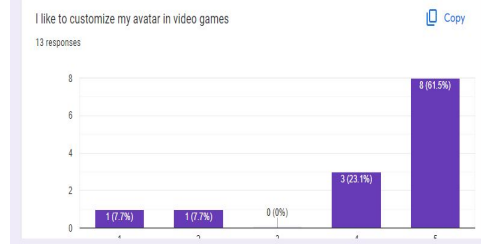
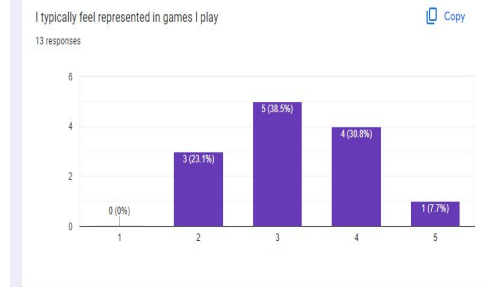
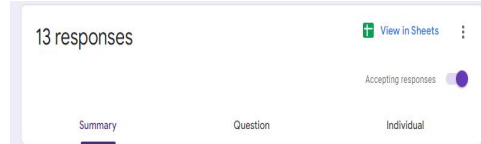
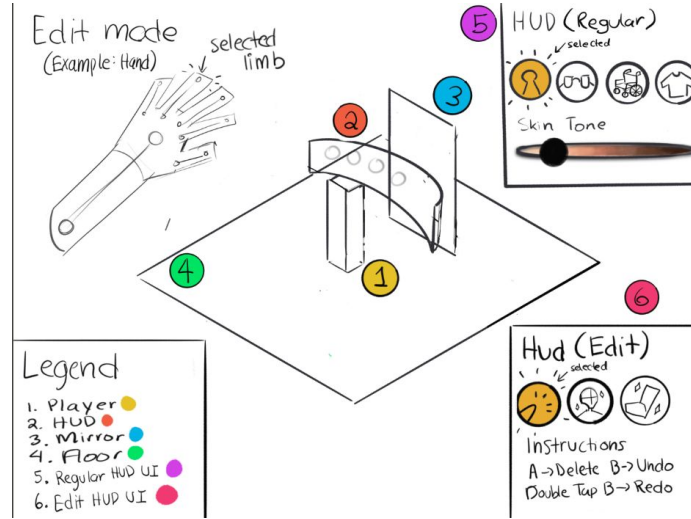
Accessibility Considerations:



Methods

Ideation:

- Design Thinking
 - Survey
 - Paper Prototype
 - Gantt Chart




INFR 4460U: Special Topics in Game Dev: Emerging Technologies

| Course Project | | | | | | | | | | 1/9/2023 | | | | | | | | | | 4/3/2023 | | | | | | | | | | 4/2/2023 | | | | | | | | | |
|----------------|------------------------|------------|-----------|-------------|----------|-----------|-----------|-----------|----------|------------|-----------|-----------|----------|-----------|-----------|-----------|----------|--|--|----------|--|--|--|--|--|--|--|--|--|------------------|--|--|--|--|--|--|--|--|--|
| PROJECT NAME | | | | | | | | | | START DATE | | | | | | | | | | END DATE | | | | | | | | | | LAST UPDATE DATE | | | | | | | | | |
| Task ID | Task Name | Start Date | End Date | % Completed | 1/9/2023 | 1/16/2023 | 1/23/2023 | 1/30/2023 | 2/6/2023 | 2/13/2023 | 2/20/2023 | 2/27/2023 | 3/6/2023 | 3/13/2023 | 3/20/2023 | 3/27/2023 | 4/3/2023 | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Project Proposal | 1/9/2023 | 1/29/2023 | 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Project Bodystorming | 1/30/2023 | 2/19/2023 | 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Project Progression | 2/20/2023 | 2/26/2023 | 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Custom-made interfaces | 2/27/2023 | 3/12/2023 | 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Final Project | 3/13/2023 | 4/3/2023 | 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Notes: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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Methods

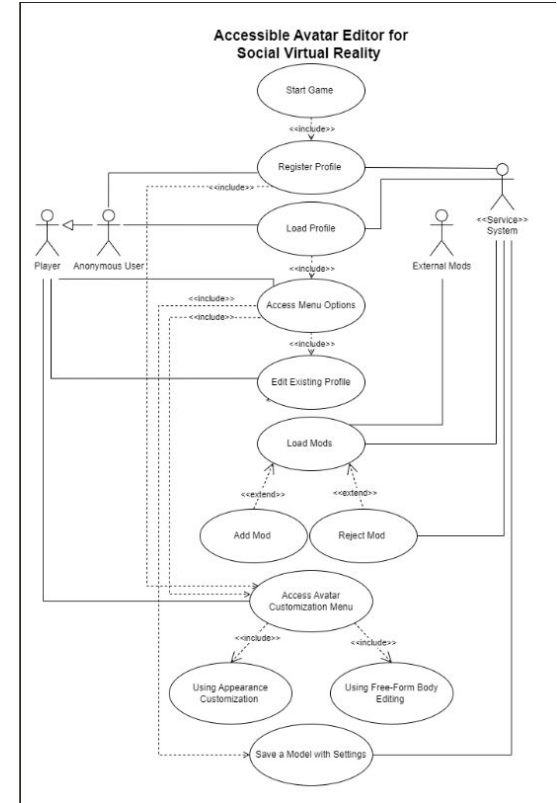
Bodystorm

- Persona
- Use Case

| 3D Persona - Template | | |
|---|---|---|
|  | <p>Presence goal: <i>Feel connected within space</i></p> <p>User goals: <i>Communicate to others in custom Avatar</i></p> <p>User tasks: <i>Change the character physical traits and accessories:</i><ul style="list-style-type: none">- Skin tone, Eye color, Hair color- Sculpt Limbs and Facial features- Clothing, Necklaces</p> <p>Story arc: <i>N/A</i></p> | <p>Agency: <i>Everywhere</i></p> <p>Diegetic events: <i>Allows you to look in mirror and see the changes occur in real time</i></p> <p>Sound events: <i>Swapping Traits, Touching Mirror</i></p> <p>Movement events: <i>Hands and Head Movement</i></p> |
| <p>Role: Disabled Social VR Passionate</p> <p>User type: <i>Consumer</i></p> <p>Familiarity with VR/AR: <i>Experienced</i></p> <p>Emotional sensitivity: <i>Wants to have something customizable and usable to allow them to easily modify a character avatar</i></p> <p>Emotion target: <i>Feel a sense of embodiment</i></p> <p>Mood goal: <i>Feel Comfort and Confirmation of Identity</i></p> | | |

INTERACTION DESIGN FOUNDATION INTERACTION-DESIGN.ORG AND FRANK SPILLERS (EXPERIENCEDYNAMICS.COM)

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Methods

Playtesting

- SUS, TLX, PQ
- User feedback

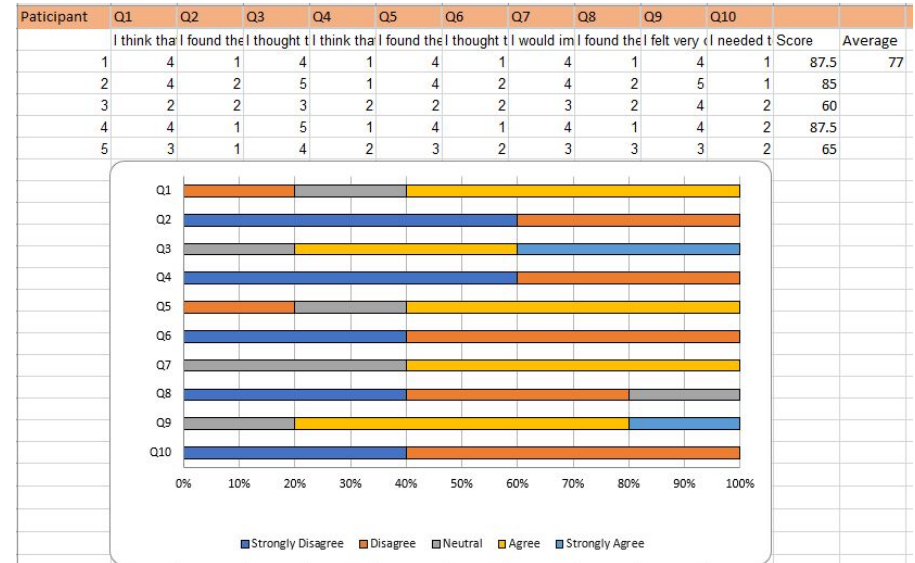
Our Prototype:



Results - SUS

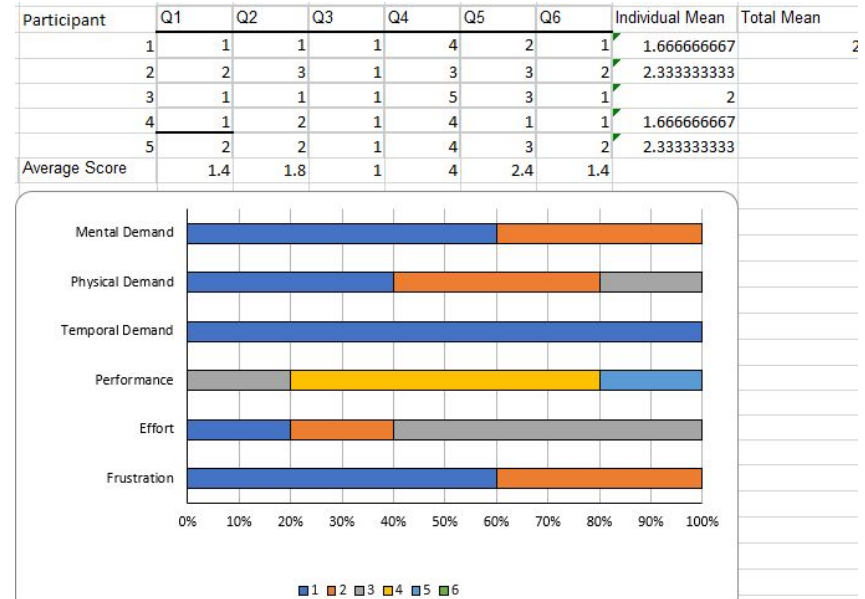
System Usability Scale (SUS)

- Average score was 77%
- Odd number question
 - High general score indicating that the system was easy to use and navigate
- Even number questions
 - Low general score indicating that it wasn't cumbersome or overwhelming



Results TLX

- Most participants produced an low average score
- Average score from our 5 participants: 2
- Average score for performance showing that participants aren't as satisfied as we would have liked



Results- Presence Questionnaire

- Above average score for all categories
- Low standard deviation which means most participants felt this way
- Total Average Score: 103.8

| Realism | Average | Possibility to act | Average | Quality of interface | Possibility to examine | Average | Self-evaluation of performance | Average | |
|--------------------|-------------|--------------------|-------------|----------------------|------------------------|--------------------|--------------------------------|--------------------|----|
| Q3 | 5.4 | Q1 | 5.8 | Q14 | 1.2 | Q11 | 6.2 | Q15 | 5 |
| Q4 | 5.4 | Q2 | 6.2 | Q17 | 2 | Q12 | 6.2 | Q16 | 5 |
| Q5 | 4.6 | Q8 | 6.4 | Q18 | 1.6 | Q19 | 5.8 | | |
| Q6 | 4.8 | Q9 | 6.4 | Total | 4.8 | | Total | | 10 |
| Q7 | 5.2 | | Inverse | | 16.2 | Total | 18.2 | Standard Deviation | 0 |
| Q10 | 3.8 | Total | 24.8 | Standard Deviation | 0.4 | Standard Deviation | 0.230940108 | | |
| Q13 | 5.4 | Standard Deviation | 0.282842712 | | | | | | |
| | | | | | | | | | |
| Total | 34.6 | | | | | | | | |
| Standard Deviation | 0.596816954 | | | | | | | | |
| | | | | | | | | | |
| Total | 103.8 | | | | | | | | |

Discussion/Conclusion

- Managing Scope
- Prioritizing user's needs
- Ideation and Iteration
- Filtering and focusing on the most important and relevant feedback

Thanks for watching