Empathy through Virtual Reality

Project Title:
Stanford Ocean Experience (SOE)

Participants and Roles (Summer 2019):
I. Virtual Human Interaction Lab (VHIL) Staff
   A. Jeremy Bailenson- Director
   B. Talia Weiss- Lab Manager
   C. Tobin Asher - Associate Director
II. Researchers and Scholars
   A. Anna Carolina Muller Queiroz- PhD Candidate
   B. Geraldine Fauville- Postdoctoral Scholar
   C. Linda Hambrick- Teacher Fellow
III. Interns
   A. Andrew Pollack- Intern Programmer
   B. David Cante- Intern Programmer

Important Notes:
The Stanford Ocean Virtual Reality Experience has been in development for several years and as such has cycled through the hands of many people (staff, researchers, and student interns). Therefore, it is difficult to find and name each person and their contribution. Listed above are the contributors to the project that I have worked alongside with and were active in summer 2019.

Furthermore, as an intern programmer I was tasked with focusing on the technical implementations and coding aspects of the project. To elaborate, I developed skills in 3D modeling, working with virtual reality software (Vizard and Unity), and learned about proper project management and goal-oriented work. This is to say that my internship dealt little with the actual research (background, methodology, results, etc.) and as such the remainder of this report will be summarizing the technical milestones and work I’ve done with SOE.

Context:
The Stanford Ocean Experience was created for the purpose to promote ocean literacy and empathy for oceanic problems. To elaborate, with technological advances in virtual reality, virtual reality has opened the door for more immersive educational experiences concerning the
world’s most pressing issues. This technology and its potential intrigued the researchers and scholars (listed above) to study how effective this new medium can be.

The research team consulted marine scholars and teaching experts to construct a comprehensive experience that allows for a person to see how carbon dioxide emissions are affecting the ocean’s health. Furthermore, there were a total of 16 conditions which examined how certain variables could affect people’s empathy toward the ocean. The following variables are as follows: gendered narration (male or female voice), framing (climate change problem vs carbon dioxide emissions), and activity (sitting vs standing). Armed with credible information and a storyboard, the research team now needed programmers to literally build the virtual reality experience. Over the years they’ve had several programmers work on this, each set of interns bringing the project closer to completion.

**Personal Role:**
My coworker and I managed to finish the final version of SOE this summer. To do so, many technical milestones and learning curves had to be overcome.

Firstly we had to make sure all interactable parts of the experience were functional. For example there is a section where you are tasked to find as many sea snails as you can within a time limit in order to see how ocean acidification can affect these numbers. This was a bit difficult for participants to accomplish since the snails were so small that only people with very precise aim could do this. This accessibility problem extended into the pre and post questionnaire scene as well; some answer buttons in the simulation were so close together that they would accidently select the wrong button without having the opportunity to go back. To resolve this issue, we carefully examined the code built by previous programmers in order to create an effective solution to make things have more space and give more leeway to object detection.

A second task we were given was to create a constantly updating database containing each participant’s data (questionnaire answers, snails found, head movements, etc). To accomplish this we had to think of how and where we could store all the necessary data. This was very crucial to the project because this data holds people’s personal beliefs and physical responses to the simulation and can reveal how impactful VR can be. Finally we managed to learn how to connect the code to a secure Google Drive where every time a participant would finish the simulation, their data would be uploaded in the form of a Google Spreadsheet and stored for later analysis.

Throughout the summer there were also many small “hiccups” where my coworker and I had to fix a sudden “bug” that appeared or implement a small feature that the research team felt was necessary. And with great time management, goal construction, and communication, we
managed to build the final version of SOE. It is now in the process of being distributed to museums and schools all over America.

Graphics: