Weekly Report 5

November 2nd – November 19th, 2019

Group 33 | VIRA (Virtual Insight into Real Athletics)

General Information

Advisor

Dr. Diane Rover

Team Members

Katie Perkins – Team Lead
Nate Irmiter – Stakeholder Communicator
Bailey Righi – Product Manager
Willem Paul – Standardization Manager
Caroline Rankin – Meeting Facilitator

Weekly Summary

This week we worked on creating screen sketches of the app, made a database schema, and started refining our goals regarding modules and testing. We have also started experimenting with Unity and the Oculus regarding making models and interacting with the models.

Past Week Accomplishments

Katie

I created the schema for our database and started doing research on how to move the arm of a humanoid model in Unity (and only the arm). I discovered an asset in the Unity Store called Inverse Kinematics that allows the kind of "grab and move" movement that we want. We're hoping this will be something we can use in our project. I also started finding tutorials for making UI menus for an Oculus Quest.

Nate

I spent some time working on the model we were using for VR. There was an issue with the way that it was rendering so I redid the model and re-rigged it so that the mesh was structured properly with the musculature of our model. Additionally, I worked with Unity and developed the mechanics that we will need to use on our model a little bit more. This included fixing some of the issues with gravity and the way objects interacted, as well as incorporating grabbing into our module (can grab blocks as well as grab and move the models).

Bailey

I delved into how Unity projects work, mostly through tutorials. I also helped work out some screen sketches that we did and contributed to the creation of our database schema.

Willem

I finished getting Unity set up for Oculus development and was able to load a test application to the headset. I also began messing around with Unity and learning more about how to create user interfaces in VR, using things such as the Oculus gaze tracker and the player controller.

Caroline

I helped give feedback on the database schema. I also helped work on screen sketches of the app and discussed how the code behind the sketches would work.

Pending Issues

In testing, we were running into a lot of issues with grabbing objects and getting the animation done properly for the hands which is something to work on. Another issue was that upon being grabbed, models would start enlarging and eventually become giant, which needs to be changed. Sometimes objects will start falling through the floor, so we will need to mess around with some of the settings and get a better understanding of how objects interact in 3D space so our model doesn't disappear. Additionally, we need to figure out how to modulate and change the mesh in Unity so that the user is able to move the model around in partitions as opposed to as a whole person.

Individual Contributions

Name	Hours This Week	Cumulative Hours
Katie	6.5	30.5
Nate	9	38
Bailey	6.5	27
Willem	8	28.5
Caroline	5	26.5

Plans for the Upcoming Week

Katie

I plan to catch up on the basics of working in Unity with the Oculus Quest and then work on figuring out if we can use the Inverse Kinematics asset to grab an arm and move it.

Nate

I'm going to work further on developing some of the VR mechanics in Unity including trying to get the hands to function properly, and trying to figure out how to get the people to stay

the same size as they are after you grab and move them around the screen. From there I'll work on trying to modulate the grabbable mesh in a different way and try to divide it up into different body parts on the person since that's part of our goal for the end of the semester.

Bailey

I will keep working with Unity and code that can go in it, as well as update some things in GitLab.

Willem

I plan to continue working with user interfaces and implement some of our screens.

Caroline

My goal is to work more on creating drafts of the screen sketches on the headset using Unity.

Summary of Our Weekly Advisor Meeting

We talked about what our realistic goal for the end of the semester is, which is to get the basic mechanics and functionality working in isolated instances so that we can use those in context next semester. Our ultimate goal would be the ability to move a humanoid model's arm with the Oculus Quest controllers. We also showed her a demo on the Quest of what we have so far, which is two humanoid models that you could collide with and a table. She also mentioned possibly looking into whether or not multiple Oculus Quest users could work together in the same "scene". Finally, we discussed our progress on our goals for last week and what we're planning to work on next week.