Meeting Notes for 2017-10-25
3D Painting Project

Members present: Mike Bailey, Chris Bokkam, Richard Cunard, Kirsten Winters

Action Requirements: Team Member Assigned

1. Research other VR programs and how they handle their design - Everyone
2. Determine specific requirements for the project - Everyone

Decisions Made:

1. Objects will be saved as voxels, they will be required to be legal solids at all times.
2. It is confirmed that the system will be voxel based. This decision will be reviewed at a later date, and it may be changed if:
    a. It produces art deemed by the client as being of a dissatisfactory appearance.
    b. It renders the interface unable to maintain a satisfactory level (determined by the client) of fluidity and ease of use.

Meeting Notes

1. At the start of the meeting, Bailey confirmed that recordings would be permitted for all future meetings.
2. Bailey opened the meeting by discussing the problem statement, stating that certain graphical features didn't need to be "on the fly", and pointed out that defining that all items being legal solids at all times could lead to challenging computations.
3. Chris suggested that we drop the requirement, and Braxton suggested that we revise it to that the system will *save* all objects as legal solids, but that not all objects needed to be legal solids at all times.
4. Dr. Winters went reviewed the problem statement document, and questioned if the team has determined in detail what our requirements are for the project.
5. The team explained that we have been discussing specific requirements for the past two weeks, and went on to discuss decisions that will need to be made. The team discussed the debate of using Unreal or Unity.
6. The team began discussing the advantages and faults. Richard and Braxton discussed their findings from preliminary research on the two. Braxton brought up the superior performance and functionality of Unreal, stating that Unity does not have the same level of library support. Chris and Richard brought up Unreal's superior documentation for VR development. Chris and Braxton pointed out that Unity, however, has superior build time.
7. Richard discussed a conversation he had with Dr. Cindy Grimm, who suggested that if both engines are capable of building the system to use Unity, but otherwise use Unreal.
8. Chris then suggested we discuss interface design. He brought up the question of what the team should list as interface requirements. Dr. Winters suggested we focus on research, and not give too specific a list of interface requirements.

9. The group then began discussing features for user interface, bringing up the idea of using inverse kinematic systems to create a simulation of the user's body.
10. The group discussed how such a system would be built. Braxton suggested using a kinect, while Richard suggested using a MoCap system. Chris stated that he had acquired access from his employers to use MoCap equipment, and Richard stated that he will be meeting with Todd Kesterson about possibly involving the New Media Communication school (as they have a full VR and MoCap lab.)
11. Chris suggested that the team develop some specific requirements for Dr. Winters and Dr. Bailey to review.
12. Dr. Winters stated that because she does not have technical expertise, the team has some latitude with decision making with regards to features and technical matters.
13. Braxton brought up the idea of storing Voxels in a storage tree format, allowing a more efficient lookup for coordinates when rendering for the user.
14. The team discussed the method of saving, and discussed different methods of saving the program scene, and how voxels might be stored.
15. Richard raised the point that the team hadn't made an official decision had not been made as to whether the program would employ voxels, discrete geometry, or both. He suggested that based on how much the team had been making decisions based on voxels, that the team make the decision to use voxels. This was agreed upon by the team.
16. The team determined a criteria to change the decision to use voxels, should they not work out.
17. Dr. Bailey specified that the team may refer to him as 'Mike'.
18. Dr. Bailey asked what would be a satisfactory frame rate would be. Richard explained that the Vive's display refreshes at a rate of 90 hertz, and that most developers consider 60 frames per second to be a general minimum spec, and suggested that we make it a specific requirement.