VR Planetarium - Public Facing Report: January 14, 2022

Members: Taylor Anderson, Michelle Bobilev, Zoe Caggiano, Andrea DePaula

Progress Report

The bulk of the Fall Semester was used for project planning as well as working on the prototype of the three levels of the VR Planetarium Model. The Spring Semester will be focused on assembling a finished product with all planned art, text, and coding involved. In the first week back, we were invited to professor Mardini's 3D Design class to pitch the project in order to get possible collaborators on the art side of things. We also decided on a weekly meeting time of Tuesday at 5-7pm going forward and will be contacting our advisors to start scheduling meetings in February.

The focus for the rest of January will be to wrap up key documents (Requirements and Visual Reference) for our art collaborators, begin scheduling advisor meetings, and continue working on the individual aspects of the project.

Table of Contents

1. Progress Report

Goals

- Display a scientifically accurate star map
    - Geographic location
    - Time and day
- Incorporate at least 3 levels
    - Forest - Northern Hemisphere
    - Desert - Southern Hemisphere
    - Planetarium
- Star and Constellation Information
    - Names of constellations
    - Stories that connect to constellations
    - Voice over + video + captioning

Completed

- Base levels for the Northern and Southern hemisphere
- Several music loops for three areas in the Planetarium and a default song for zooming in on constellations
- Star map generator base code

In progress

- Acquiring assets for the planetarium
- Music
- Accurate star map
- Levels: Planetarium, northern and southern perspectives
    - each with binocular, naked eye and moon toggle mode

To do

- Voice over text describing stars
- Accurate star map with constellation and star information for 88 constellations and the most notable stars
- First person model, rigged with textures
- 3D diegetic menu

2. Project Proposal

Problem statement

In our world today, not everyone has access to clear stargazing conditions due to light pollution, cloud cover or inadequate viewing areas. Additionally, not many have access to educational museums teaching about space and the history of humankind's efforts to study the stars. The VR Planetarium project creates a virtual reality space designed to allow users to explore the skies and learn about astronomy even without access to adequate stargazing conditions and traditional museums. The goal of the project is to create a Virtual Reality Planetarium, a publicly accessible educational tool that will promote user learning in a fun and interactive way as they navigate through the virtual environment.

Background and justification

Last year, DHSS Capstone saw a team of students create the VR Planetarium, a virtual reality model of a planetarium which allows the users to move from various settings within the model to get a clear and personal view of the night sky. That project can be found here:
https://vrplanetarium.cad.rit.edu/
The team experienced challenges due to the limitations forced by the Covid-19 Pandemic, and were unable to fulfill all original goals. Despite these challenges, the 2020-2021 team were able to create a base for the VR Planetarium with various user locations and the ability to stargaze from a set location in the world. The goal for this year's project iteration of the VR Planetarium is to carry forth the work of the previous team while enhancing and adding more features to create an improved interactive educational experience.

Project Description

The VR Planetarium is a virtual reality model of a planetarium designed in Unreal Engine with 3D assets created with Blender modeling software. With the use of VR headsets and controllers, users navigate the virtual space and can choose from a variety of locations to explore such as within a planetarium or outside in the dedicated stargazing area. The target audience for this project is anyone interested in astronomy or learning about space. In the same way that museums are open for all ages, the VR Planetarium target demographic is all inclusive, open to minds curious to learn and explore using the clear and engaging VR educational materials. Individuals of all ages can enjoy the sounds and visuals of the virtual 3D space with the option to learn more through reading the supplementary text or enabling a voice over of the same text.

Possible outcomes

Minimum deliverables

Stretch goals

1. Project description
   - Project management
   - Project sustainability
   - Project promotion
2. Specializations
   - Per member

3. Timeline

[Visualization](#)

Fall semester

The bulk of the fall semester was focused on project planning and preparation for the spring semester. We contacted three advisors throughout the semester; Ihab Mardini for 3D Design, Jason Nordhaus for Astronomy, and Joe Giegal for VR Technology. In addition, we collaborated with music student, _____, who composed the background music as part of their final project. We also prepared for a possible future collaboration with Professor Mardini 3D Collaboration Class.

Spring semester

Week 1: We met with Mardini's class to pitch the project to potential collaborators.

Week 2:

-PFR Due

-Meeting times with advisors

Mardini - twice a month meetings

Nordhaus - weekly meetings

Giegel - weekly meetings

Week 3:

-Research doc

Entering February

-meeting with advisors

Week 4:

-Research Doc

3. Bibliography
4. Related documents and links

4. Memorandums of Understanding

[Joe Geigel - Virtual Reality, User Function, Unreal Engine](#)

[Ihab Mardini - 3D assets and textures](#)

[Jason Nordhaus - Astronomy and Educator Perspective](#)