

Project Design Document

The Project Design Document should provide a basic description of your project, why it is interesting, and why you have chosen to implement it in a particular way. Below is an outline for the document to be used as a guideline, but as long as you answer these basic issues, you can organize the report whichever way makes sense to you. The project design is a tool for you to identify and reduce project risk, and secondly to explain enough of your thinking that we can inject helpful hints.

Title of Project

with Names of group members

3D Music Visualizer

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Project abstract

A one paragraph description of the project and why it is should be useful to someone.

The application provides a new way to experience music that adds vision to the equation. The application is on the Oculus, a virtual reality apparatus. Using the Oculus the user will be placed in a virtual reality where the surroundings respond and change with the music that the user chooses. The change in the surroundings could respond to movement of particles, color change of objects, or an overall deformation of the environment.

Project scenario and goals

A scenario that highlights how the project will actually be used by and end-user. You might include a sketch of the UI, if there is one. Describe any special constraints (e.g., speed, size, storage, scale, robustness) your design needs to satisfy.

The user would wear the Oculus and be taken to a menu where they can choose music from their device and also choose an environment. Then they'll be put into that environment where the surroundings will change and adapt to the music. The environments could vary anywhere between a city or an abstract sphere of colors.

To use the application the user needs to have a capable computer and the Oculus. Unlike other VR applications that require the user to have a large play area, this application could be used in place while sitting on a chair or lying down.

Design strategy

Provide a description of the overall design, its major components, and their purpose. Include an architectural diagram (showing how the components interact) if appropriate.

The application is meant to immerse the user in a new reality that enhances the experience of listening to music by adding visuals to it. Because the visuals can range from a simple particle moving around to a whole city pulsing and deforming, we decided to give the user the option to choose the environment thus we can experiment with different environments and leave the choice to the user.

Components:

- Menu UI: how should the user chooses an environment or moves from one to the other.
- Music: how can we read the music so that we can play it in the application and also how to translate the music to numbers that we can later use in changing the environment.
- Environments: should each environment be a cohesive whole or made of different parts that can be repurposed to make different environments.

Design unknowns/risks

Describe the features of your design that your group is least familiar with and with which there is no prior experience. These are the issues to tackle first!

- Music to numbers: What's the best way to turn the music into numbers that truly embody what the music sounds like.
- Numbers to visuals: what are the visuals that will enhance the experience of the music and how should they change and adapt to the change in music.
- Creating the UI for the hands
- Moving objects in Oculus

Implementation plan and schedule

Outline a plan for implementing your project. Break the project into smaller pieces, with a short (eg, one sentence) description of each piece, any inter-dependency with other pieces, along how each piece will be tested and integrated. Try to come up with a rough timeline for your work and a rough division of labor between group members. As a suggestion, try for a granularity of two-week chunks of effort per team member.

| | Overall Work |
|------------------------------------|--------------------|
| Week 1/2 Sep 27 - Oct 6 | Choosing a project |

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| Week 3/4 Oct 9 - Oct 20 | Learning about the Oculus, how to use, and experiencing applications similar to our own. |
| Week 5/6 Oct 23 - Nov 3 | Looking for different ways to turn music into numbers and what they represent in terms of the music. Creating some objects that can be visualized, e.g. 8 bar, spinning particles. Learn about different backgrounds, how to create them and how to change them. |
| Week 7/8 Nov 6 - Nov 17 | Learn about the controller. Create a simple UI. Experiment with the possibility of the user moving objects while using the application. |
| Week 9/10 Nov 20 - Dec 1 | Start designing different environments integrating the music numbers with the objects created. Each team member can experiment with a different idea. |
| Week 11/12 Dec 4 - Dec 15 | Stretch goal: see if the user can design their own environments using our objects, changing color, or shapes. |

Evaluation

Explain how you will evaluate success -- what will you measure and how will you display it in the final report? What tradeoffs will you evaluate?

Success will be measured through how immersed people feel inside the music visualizer and how much work we get done with our plan. If everything in the plan is executed and works properly, then there is some success with how we managed our time with the project. There will be a tradeoff between how much we accomplished as a group and how well the total project makes people immersed in their music.

Related work

Search for related research papers, articles, project URLs that are relevant to your project. Write one or two sentences summarizing the similarity and/or difference with what you are proposing.

VR Audio Visualizer - Oculus Store

Audio Visualizer allows someone to be fully immersed in music through the Oculus Rift. It does not let someone interact with his/her music to any degree.