Project Report

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Computer Graphics DH2323

Note: There are a couple of playblast movies available in the zip-file hand-in. They are located in the movies folder. Also note that the water is not properly rendered there since it is just a playblast.

Abstract

We chose to create a model of the area surrounding the Dome of Visions and the nearby fountain at KTH using Maya. At first it was our intention to also create a very simple character and animate it but we chose to focus on improving our model instead since there were so many tools and new things to learn when using Maya.

Introduction

With the ever increasing expanse of the gaming market, the demand for digital modelling goes along with it.

As beginners in this area, we wanted to use a program that was fit for our level of skill while still being relevant for possible future work. We found that Maya suited our needs quite well. In addition to being easy to set up and get started with, we also found out that it's used extensively at Blizzard for many of their titles which made it all the more attractive to us.

Once we were familiar with some of the functions in Maya, we started modelling the fountain. Since we had not really learned a way to approach the modelling of more defined and complex shapes present on not just the fountain, but many parts of the surrounding environment, we had to learn as we went along.

What we did

To learn the basics of Maya we followed a tutorial and created a room with simple objects and played with lighting of the room. After that we began working on our own model. The first thing we did was to take pictures of the fountain, the dome and all possible structures surrounding them to get an idea of what everything looked like and to collect textures to use when modelling.
We started by working with the basic shapes, such as creating a bowl shape for the fountain and big cubes for the houses. Later we moved on to working with details such as faucets for the fountains and windows for the houses. The last thing we did was to add textures to everything and working with adding water to the fountain.

What we have learned

Implementations of models does not always have to be created the way that they are perceived. For instance, the still water in the fountain is simply made from polygon planes

with an attached ocean shader. Thus, there are many ways we can model things so that it looks fairly real when it in reality is created using shortcuts and illusions to trick the human eye.

How we solved challenging problems

We had to keep learning about new tools in order to improve work efficiency and to create a more realistic model since some some parts were not simple cubes or cylinders. Things that might seem trivial such as bending objects or moving flags is not as easy as it sounds. It requires some sort of understanding of all variables that can be manipulated and what tools are available in order to get the result you desire. To solve most problems we had to watch a lot of videos in order to see what different approaches existed and choose the ones that suited our needs best.

One of the more challenging problems was to get a somewhat realistic water simulation and collision for the fountain which in the end did not work quite as well as we would like. We ended up using shaders on polygon planes for the still water in the fountain. Then we created bifrost animations from the top of the fountain and created colliders for the still water and the fountain.

How the project could be improved

While we feel like most of the model turned out pretty well there are definitely some parts of it that can be improved, more specifically the houses and the water collision in the fountain. We feel like the water collision is fairly unrealistic and could be improved but we are not sure how to modify all the parameters to get the right feel.
Since most of the previous projects modelling KTH were made from the simple objects such as cubes or polygons we wanted to use a bit of animation and modify objects to be a little more “fun”. Thus, we had to learn new techniques and some of the ways we chose to solve things are probably not the best ways.
Nevertheless, it was fun to be able to learn what tools are available for graphical designers and how objects are made for games.
Obviously, it would have been a more fun project if we would have managed to create and animate a character in addition to what we have done. However, as we are only aiming to get a passing grade in this course, we felt like the work we have done so far is on the same level as previous modelling projects.

Now that we have spent quite a lot of time learning about modeling and improving our skills in Maya it would have been interesting to combine the model with a bit more coding and perhaps integrating characters in Unity aswell.

External sources and collaboration

The work was split as follows:
Jacob created the Dome of Visions and the contents of it. Adrian created the foundation to the Dome and worked on details with handrails and the objects that they are attached to. Jacob created the houses and the details/textures related to them. Adrian created the fountain and added the textures for it. Both of us worked on the water for the fountain.

Appendix A (Project specification, old version)

Background

After having dealt with the Rendering labtrack we felt like we wanted to look into animation and modelling. Something more in the vein of a game, where you can move around and interact with the environment.

We are by no means experienced in this line of work, which is why we hope to gain a lot of knowledge from following a content creation guide[1] on the Mixamo site and also a blog from a previous year's course participant[2].

Problem

Creating an enviroment based on reality (KTH campus fountain) and a character with some expressive features that is able to move around said environment.

Implementation

The plan is to create a 3D model of the fountain outside of the KTH entrance in Maya. To further extend the project, the idea is to find a free character on the internet and tweak it in Fuse and later import this character and animations together with our 3D model into Unity.

Contingency Plan

If the different tasks of the project takes too much time to complete for the amount of time we have we will focus on the modelling part of the project and perhaps leave out the character entirely or not focus as much on the modification of it. Ideally, we would like to touch upon a few different areas and try out some basic animations for a character since the rendering track for the labs did not cover that.
As it stands now, we are not sure how much work it takes to perform the different tasks since we do not have prior experience so modifications are likely to occur.

Appendix B (Link to blog)

https://jacadproject.wordpress.com/