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# Introduction to Computer Graphics: Final project

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Report: Creating Heidi inspired world

## **Author**

Weronika Zawadzka 12244068

Klagenfurt University  
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## Introduction

This project is the final project for the Introduction to Computer Graphics Summer Semester 2023 course. The aim was to create a scene in Blender and render it. The topic of the scene could be arbitrary. What I chose to model is Heidi's world, inspired by the fact that I started watching it not too long ago after discovering it (in my home country, Poland, it was not known). Therefore the focus of my project is as follows: firstly, I created a Heidi character and rigged it, then I created the landscape and finally, created a grandfather's house.

## Step 1: Modelling Heidi

Looking back, I should start by creating the landscape as it was the easiest part. However, I started by modelling a character, which given my zero experience with computer graphics and blender, turned out to be quite a challenge. I used a Youtube tutorial,<sup>1</sup> which made the process a bit easier. I changed the tutorial's girl model to fit my vision for Heidi – from clothes, through hair, to height and body shape. The big obstacle I faced here was the problem of using symmetry modifiers. I could not make it work without it giving me displaced and strange results and so I just did both sides without it. I was satisfied with the result visible below.



Figure 1: Heidi model

Next, I started the process of rigging Heidi. I followed multiple tutorials to do so, created all the bones, and fitted the weights but it did not work or if it did, the results were not natural at all. This is the part that took me the most time and I did not succeed in the end, despite my numerous attempts and hours spent. I think it was because of the way I modelled my Heidi – which was not perfect. What I ended up doing was using Mixamo<sup>2</sup> and uploading my .obj Heidi model there, and have it automatically rigged with animation. The animation I chose was a running character. Mixamo tool was very easy to use and the results were quick and satisfactory.

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1. PIXXO3D, "Blender MODELLING For Absolute Beginners | Low Poly Girl," Youtube, 2022, <https://www.youtube.com/watch?v=sbCW0Cs7aI8>.

2. Adobe, "Mixamo," accessed June 11, 2023, <https://www.mixamo.com/#/>.

However, the animation was very short. I followed a tutorial<sup>3</sup> to extend it so that my character would run for a longer period of time (and further in distance).

## Step 2: Landscape

This step was the easiest one. I created a plane and shaped it to form valleys. Added some trees after learning to do so on the course's Blender Workshop. I also found a mountain object in Blender and used it in my scene. I did not face any difficulties at this stage. After creating the model of Heidi, the process of creating all the shapes here was more fluid and intuitional. I used vertex paint to make the textures more interesting.

## Step 3: Grandfather's house

Here I created a house object that resembles the one from the TV show. I kept it simple. When it comes to texture, I followed a tutorial<sup>4</sup> for obtaining wood texture. I think the geometry correctness is not the best, and I would not call it clean work, but it serves the role in my scene as I imagined. I think it could be done much better, but as I am just a beginner it showed it the final product.

## Finishing steps

I gathered objects from precious steps together and added a camera on a curved path and a sunny sky that I found in the shader options giving the impression of the sunset. I rendered my short animation using Eevee as instructed in the project rules.

## Evaluation and lessons learned

This project may look very simplistic, but overall it was a great challenge for me that I spent a lot of time working on. Having no experience in Blender before, I succeeded in creating my first scene and animation. I probably will not use it in the future, given that I am in a different field of study. However, the experience I gained I perceive as valuable and interesting. What I learned is definitely an insight into how it is all done from scratch – and how much need the designers to remember and learn to feel completely comfortable in working with such tools as Blender. I needed to stop very often to search how the things I want to do can be achieved, how to change something in settings and so on. My workflow was definitely full of stops and confusion. But at the end of it, I could see a big difference compared to the start of my project. Another aspect that I learned is not to omit or simplify some steps (like I did in Heidi and the symmetry problem), because it will show later on and problems will add up, like my problems when it comes to rigging and animation further on in the project.

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3. AnimazaStudios, "Extend a Walk Cycle from Mixamo in Blender and 3ds Max," Youtube, 2022, <https://www.youtube.com/watch?v=Mye4s2ABPEo>.

4. GArtist, "Blender Tutorial of Procedural wood grain texture," Youtube, 2021, [https://www.youtube.com/watch?v=Kry\\_9dq3M4Y](https://www.youtube.com/watch?v=Kry_9dq3M4Y).

## References

- Adobe. “Mixamo.” Accessed June 11, 2023. <https://www.mixamo.com/#/>.
- AnimazaStudios. “Extend a Walk Cycle from Mixamo in Blender and 3ds Max.” Youtube, 2022. <https://www.youtube.com/watch?v=Mye4s2ABPEo>.
- GArtist. “Blender Tutorial of Procedural wood grain texture.” Youtube, 2021. [https://www.youtube.com/watch?v=Kry\\_\\_9dq3M4Y](https://www.youtube.com/watch?v=Kry__9dq3M4Y).
- PIXXO3D. “Blender MODELLING For Absolute Beginners | Low Poly Girl.” Youtube, 2022. <https://www.youtube.com/watch?v=sbCW0Cs7aI8>.