

KUNGLIGA TEKNISKA HÖGSKOLAN
SCHOOL OF COMPUTER SCIENCE AND COMMUNICATION



DH2323

A Nice Title

Project Documentation

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1 Introduction

For this project, we designed and implemented a Unity application to simulate bike traffic in a park scene. In phase 1 of the project we first created a park scene containing a road, park bench, trees and light sources. In phase 2 we started working on the bike traffic. Finally, in phase 3 we worked on shader to apply to our cyclist model.

2 Documentation

2.1 Rendering a scene in Unity

The first step in this project was to create a realistic park scene to use as a background for our application. The simplest way to do this was to use the built-in terrain feature of Unity. With the terrain object we were able to easily obtain a grassy plain with trees and hill. Next we used Jacek Jankowski's street kit[4] to setup a road for our future bike traffic. From there, since we knew we wanted to work with some shader for our bike model, we added some street lights that we got from the asset store[1] and some park bench[3]. Appropriate material for the sky were used with Unity's skybox to obtain a nice sky for the scene. For the daylight scenario, a single directionnal light is used for the sun, while the nighttime scenario uses one spotlight attached to each of the four street lights.



Figure 1: Park scene in Unity

2.2 Rendering the cyclist

Next step in our project was to find a 3d model for the bike and the cyclist. We used a 3d model from www.blendswap.com [2], as seen in figure 2. The model already had a basic animation so it was perfect for our need. Since it was a blender file, using it in Unity was not very simple. First, the animation needed to be adapted for our need. I had to change the animation slightly to make it more "loopable" in Unity. Also, the initial animation had the model moving forward, causing it to "teleport" back to its initial position at every loop, I then changed it so the animation now plays in-place. Having in-place animation is needed since we wanted to use Unity to move the bike ourselves. Once everything looked great in blender, the model was loaded into our Unity project. The bike was then scaled and rotated accordingly and was saved into what Unity call a "prefab". Having the model as a prefab allow us to easily instantiate the model during runtime.

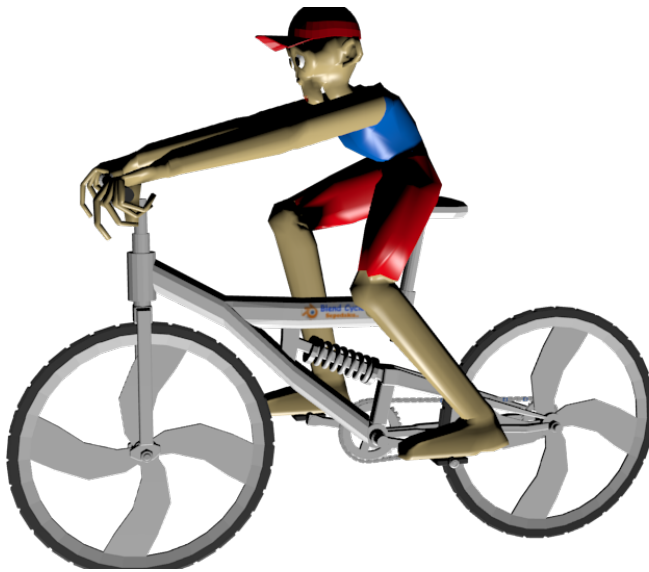


Figure 2: Bike 3d model found on [blendswap.com](http://www.blendswap.com)

2.3 Generating Traffic

References

- [1] Adam Badke. *Urban Props*. URL: <https://www.assetstore.unity3d.com/#/content/708>.
- [2] dotline11. *Bicycle Animation*. URL: <http://www.blendswap.com/blends/view/46956>.
- [3] Universal Image. *ParkChair*. URL: <https://www.assetstore.unity3d.com/#/content/850>.
- [4] Jacek Jankowski. *Simple Modular Street Kit*. URL: <https://www.assetstore.unity3d.com/#/content/13811>.