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Assignment on Virtual Reality and Physically-Based Simulation - Sheet 2

Due Date 18. 11. 2015

For the exercises, take a look at the Unreal Engine 4 Documentation and in case of problems also the UE4 AnswerHub:

Unreal Engine 4 Documentation `https://docs.unrealengine.com/latest/INT/`

UE4 AnswerHub `https://answers.unrealengine.com/`

Figure 1: Possible result of this assignment.

Exercise 1 (Unreal editor, *4 Credits*)

Make yourself familiar with the Unreal Engine 4 (UE4) and it's editor. In this exercise the goal is to create an actor constructed from different parts which are arranged in a scene graph.

a) Create a new UE4 project. Please start from a blank project and do not include the starter content to keep the project size small.

b) In the project, create a new actor that looks similar to the character in Figure 1. You can model the individual parts with transformed *Sphere Mesh Components* or use external 3D models.

c) Make sure that rotating the head also rotates the nose and the eyes by defining them in a hierarchy.

d) The arms and legs should have a joint at their rotation origin which rotates the respective limbs. Consider *Scene* components for this.

e) Place the actor into a level that is loaded when the game starts.

f) Draw the scene graph of your actor by hand or in a computer program.

Exercise 2 (Unreal blueprints 1, *4 Credits*)

Until now, we only have a static scene. To make it interactive we will add a user interface to control the limbs of our actor.

a) Place a camera facing the actor into the level and set up the game to use this camera after the game starts. Consider the *Event BeginPlay* event in the *Level Blueprint* for this.

b) Create a UI similar to the one in Figure 1 and show it in the game.

c) Make the actor wave and nod with the UI controls. You can use the `Get All Actors of Class` blueprint function to get a reference to the actor from within the UI.

Exercise 3 (Unreal blueprints 2, *2 Credits*)

For the ultimate Unreal experience, animate the legs with a looping run animation.