ECS 279 - Computer Animation

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1 Homework 1

I chose the practical route for the Homework 1 and modeled a 3D character in Blender using the following YouTube tutorials:
https://www.youtube.com/watch?v=4OUYOKGl7x0. I think the most challenging tasks there was setting up the reference image to follow, after that it was pretty straight forward to build a low-poly character using meshes.

I think chose to rig the built model, added bones to major part of the humanoid and named them accordingly. The most challenging thing with rigging the character was in-fact implementing Inverse Kinematics (IK) to the bones. I soon realized while attempting this that I needed more than just the bones of the skeleton and added up implementing IK to target and controller bones *outside* the mesh of the humanoid. With that, I added IK to arms, legs and torso, with copy rotation constraints on the head and hands matching the controller. This made for an interesting structure which I could then manipulate for animation.

For animation, I implemented a 24 FPS walking sequence. I used yet another reference image for this and keyed frames for different walking poses. And manually added the key frames for each of the steps. My model's movement was 4 frames a part and made for a semi-realistic walking simulation.

I managed to successfully import the model into Unreal Engine 4, but whenever I tried working on it my UE4 crashed with an error of Illegal Memory Access at index 0 for Array core file, which turned out to be a bug in UE4. I had a scene set up in UE4 where I have a top-down 3D environment and I can click a button to spawn trees, therefore, constructing an "ecosystem". But due to the crash, right now, I am only able to use the existing model and not the new animated one I created. (I have included both projects in the submission).