Final Project - Skeletal Animation of 3D models with OpenGL

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1. Description and goals

In this project, we aim to implement an application for loading, visualization and manipulation of rigged three-dimensional models using OpenGL. We will be exploring different methods of skinning of the model and visualizing the results, along with the usual 3D application features such as model loading and camera manipulation. The final system should allow the user to view and control the model's skeleton, as well as manipulate the articulation points in real time, viewing how the model reacts.

2. Materials

In order to rig models with skeleton information, we will be using the Blender software, available in their webpage, which can export the models in a format to be used by our application. To load these models, we will be using the open-source Assimp library, also available for download in their page.

3. Expected Results

We expect to constrtuct an application similar to a model viewer such as Blender, with interactive manipulation of the skeleton and junctions.

4. Milestones and schedule

The following milestones are to be completed, one each week, until the end of the project time.

- 17/10 - Implement a base 3D environment application with OpenGL
- 24/10 - Model the object's skeleton information
- 31/10 - Load and visualize the model with skeleton information
- 07/11 - Implement the model skinning methods
- 14/11 - Implement a system for limb animation, using a transformation matrix stack
- 21/11 - Implement real time manipulation of the model articulations