CSI 4103 - Research Topics in Computer Science

Main Topic of Study: 3D Processing and Hierarchical Modeling of the Human Skeleton.

Professor: Dr. WonSook Lee

Students Involved:

1. Michael Sault - 8459820

Course Description:

The student will explore 3D Image processing and hierarchical modeling concepts as they concern human modeling, specifically the human skeletal system. The student will be expected to complete a number of proof of concept deliverables during the bi-weely meetings, culminating in a final project depicting a 3D hierarchical model of the human skeleton. The student will need to research the concepts behind 3D processing and hierarchical modeling as they pertain to the modeling of the human skeleton with the goal of creating a fully manipulatable human skeleton.

The student will be expected to research and understand core concepts of 3D processing such as 3D shapes, textures, lighting, perspective, camera angles/scenes, and physics as well as core Hierarchical Modeling concepts. Hierarchical modeling imposes connectivity constraints among multiple objects, or nodes, in a tree like structure. The student will explore concepts including nodes, arcs, tree representation, kinematic modeling, specifically as it concerns modeling the human skeleton.

Grading Scheme:

Component:	Description:	Percentage:
Meetings with the supervisor	Bi-weekly meetings with the supervisor to both evaluate progress and determine the next steps.	20%
Final Report	The final report should contain a report in Springer style, presentation slides and a video demonstrating the final result.	30%
Final Project	This project will focus on applying the above concepts in order to create an interactive and manipulatable human skeleton. It must contain the system, installation guide and a user manual.	50%

Deliverables:

- A report, presentation slides and a video depicting the result. The report must be in Springer style, and presentation is to be demonstrated with powerpoint. The movie must be used to demo for the code (recorded by student).
- System, installation instructions and Manual. (A readme file will be created in github Repository to instruct how to install and run the project code).
- The final project will be due on **April 7th, 2020**.