The George Washington University
Department of Computer Science

CS6555 Computer Animation, Fall 2019

Assignment 2
Due: 10/10 by class time
Hierarchical Object Motion Control System

Description: Implement a system to generate the motion of an articulated figure. The figure should consist minimally of a torso and two legs. The motion generated should be a simple walking motion along trajectory given by control points. The procedures to generate the leg motion can be sinusoidal or by simple linear interpolation. This can be done by simple forward-kinematics or by inverse-kinematics for the more adventurous. Extensions include more complex tree of links and coupling between various DOF such as shifting of weight with gait. Try to couple the motion of the legs with the motion of the torso so that the poor guy does not end up doing the "moon walk."

Input: a) Geometric data for an articulated object from one or more files (e.g. a data file for torso, a data file for the right and left legs)
b) Set of control points, the type (Catmull-Rom **or** B), and the spacing (dt) to be used to define the trajectory of the walking figure.

Output: Animated view of the head-less/arm-less figure wandering aimlessly across the barren and desolate 3-d virtual world.

Upload (blackboard):
a) A description of your system (short documentation) that will make it easier to understand your code.
b) Source code.

Upload (blackboard forum): Movie of your animation

Format of the source code: It is important that the grader understand your code. Put enough comments to make it clear what you are doing.

Extensions: For those of you who have had advanced graphics or for those who feel less than challenged by the project, you might want to consider extending the lab. Some suggestions:
Have the figure be facing/leaning in the correct direction while walking.
Frequency and the gait synchronized to the velocity of the body (i.e. no "moon walking")
A more sophisticated structure (head, moving arm, legs composed of a 1 DOF joint)
More functions: jumping, flipping, etc.
Inverse kinematics