

CSE 470 Introduction to Computer Graphics

Instructor: D. Hansford ★ Spring Semester 2019

HW 4 Meet My Avatar

Due: Wednesday 24 April

Big Picture Create a WebGL program that animates your 3D avatar on a planar ground surface. The avatar and/or the ground plane incorporate(s) a texture map. The avatar's movement is controlled by a hierarchical model as done in the “figure” program from class.

Objectives

- Learn how to apply a texture map.
- Learn how to create and animate a hierarchical model.

Specifications

1. Build your program based on the “figure” and “texture-Cubev{1,2}” programs from class.
2. Create an avatar as an hierarchical model.
 - You may use the cube as the prototype object as done in the figure program.
 - Your avatar must have a minimum of 6 parts.
 - The tree defining the hierarchy must be at least height two (like the figure program).
 - Your avatar cannot look like the robot or figure program models.
 - In the definition of the avatar, if you use a linear map other than a rotation or uniform scale, you might need a “normal matrix” for the Phong vertex shader.
3. Create and display a ground plane mesh for your avatar to “walk” on. Tip: use an instance of the cube.

4. Animate your avatar.

- Create a path for your avatar to traverse. A line is too simple and your avatar cannot remain at the origin.
- The avatar will repeat the path until the animate on/off toggle is selected.
- All joints must be articulated at sometime during traversal of the path.

5. Apply a texture to the avatar or plane.

- You may create your own texture or read an image file.
- Do not use the checkerboard or sine function from the demo programs.

6. Use the Phong illumination vertex shader from HW3.

7. Set up the LookAt and perspective projection parameters as you like.

Program Organization

1. Your file names must begin with lastName.

2. Any buttons or controls must be descriptive.

3. Next to the canvas, display

- Your name
- Date
- Program description
- Resources you used

Additional Documentation Along with your program, turn in a tree diagram that describes the hierarchy of your avatar. This may be neatly hand-written. Submit a pdf document, lastName_tree.pdf.

General Guidelines

1. Add your name to the top of each file.
2. Name your zip file: lastName_HW4.zip.
3. Do not add the Common Folder in the zip file.
4. File and Common folder references must be done as in the class examples.
5. Turn in your assignment on Canvas.

Extra Credit These are ordered in increasing difficulty. Points earned will reflect this. Create a section in the html page describing what extra credit you have done.

1. Add sound
2. Use a SOR from HW3 as part of your avatar.
3. Add bump mapping