

Mocap to Massive

The workflow to integrate mocap data into a massive simulation is simple enough: it just requires much planning before beginning. Many things have to be taken into consideration. These considerations range from making sure your model's body proportions match those of the data captured to making sure that you have all of your UV's laid out in a 0-1 space to keeping your rendering engine in mind. All of these elements will cause problems if not considered

Preliminary Setup

1. Use Linux

- a. Windows licensing is erratic and has issues for Massive
- b. Linux has bash scripting capabilities which makes folder creation easier
- c. DO NOT USE UNDERSCORES IN YOUR FILENAMES OR PATHS

2. Set up your project directories

- a. Use Maya to generate standard project directories
 - i. File>Project Window>New>Accept
- b. Inside of the Maya project "assets" folder, manually create your Massive project folders. You can alternatively use a script to generate them. At the most, you will need:
 - i. act
 - ii. cdl
 - iii. draft
 - iv. geo
 - v. maps
 - vi. mas
 - vii. Particle
 - viii. Pic
 - ix. Rib
 - x. Sim
 - xi. skins
 - xii. tree

Gathering Assets

3. Model and texture your character

- a. Renderman does not do well with dense geometry, so model low-poly to follow this tutorial.
- b. Use a single mesh for the geometry
 - i. There can only be one shader applied to the entire object or Massive will get confused. Multiple meshes must all have the same shader.
- c. Use a standard T-Pose to position your character
- d. Character must be facing positive Z axis
- e. Make sure all transformations are frozen to 0 in Maya

- f. Unwrapped UVs fit on the single positive 0-1 tile
- 4. Check proportions**
 - a. Change Maya preferences to be centimeters. Massive uses centimeters, this will simplify the process. Be sure to change your preferences back afterwards to avoid later confusion in Maya.
 - b. Scale your character relative to the other geometry that will be imported into massive.
- 5. Now that all of the necessary scaling checks have been completed go to Maya and export your character model in FBX format 2009. (I have found that this causes the least amount of issues with massive.)

Motion Capture

- 6. Find an actor who roughly matches the proportions of your character
 - a. This will reduce the cleanup you have to do later on
- 7. Capture all of the actions that you will need for your scene. Export your data from the capture software as fbx.

Massive

- 8. Open massive from the terminal in the location that you have chosen for your Massive project (inside of the “assets” folder).
- 9. Check the units in massive, make sure they match the units coming from Maya.
 - a. If the units are different, it will cause major issues and you will have to restart.
- 10. Go back to Massive and use the import fbx option to import your geometry, make sure that only geometry is checked and that you have specified an output path for massive to create objs.
 - a. Output geometry to “Geo” folder in the Massive root
 - b. Place texture maps in the “maps” folder in tif format
 - i. The file MUST be .tif, not .tiff!
- 11. Build your skeleton using the massive naming convention for bones. Typically “L_” and “R_” for symmetric bones. Bear in mind that you will be retargeting this later so create the same bones as what you generated out of Blade.
- 12. Export your bones as a Maya ASCII file out of Massive back to your original scene in Maya containing your character in t-pose.

Maya Rigging

- 13. Skin your character, or find someone that can do it well. It’s important that the weighting is done correctly or the character will not look right when the mocap data is applied.
- 14. Export your character along with its newly skinned bones to Motionbuilder.

Motionbuilder

- 15. Characterize your character.
- 16. Import your mocap skeleton, characterize it.

17. Set your Agent character to use the Mocap skeleton as a character target.
18. Clean up any animation issues
19. Plot the motion to your AgentSkeleton
20. Use the send to feature to send this to Maya
 - a. If this doesn't work, just export from Motionbuilder as an fbx and import into Maya

Maya

21. In Maya, select the root joint and then expand the selection of the hierarchy. Export this selection as a Maya ASCII.

Massive

22. Go back to massive. Import Maya ASCII that you just created, importing only the motion.
23. Open the Action editor (Edit>Action). Uncheck IK and check solo. Hit spacebar to see if your animation transferred properly. If it did then continue; if not edit the ASCII file in a text editor to an older version of Maya.
24. Follow the documentation for the Massive setup on how to create actions and transitions
 - a. MayaToMassiveTutorialV2 documentation from Deborah Fowler's spider exercise
25. Set up the Sim and Rib paths – **THIS IS NOT WORKING PROPERLY. All the files are in one rib file and are not rendering with separate textures.**
26. Set up the render settings following Deborah Fowler's MassiveUsersGuideV4.
27. Sim and render.

Massive to Renderman

1. Follow all of the steps in *Mocap to Massive*.
2. Set all the rib paths to relative paths
 - a. Use attached script and follow that documentation
3. Open Maya
4. Import your terrain
 - a. This will allow you to get an idea of what size your scene bounding box should be.
5. Create a cube to fit the scene. Freeze its transformations.
 - a. This cube is the size of the world's bounding box.
6. In the attributes dropdown of your cube, go to Renderman and insert a Subdiv scheme and a RiReadArchive.
7. Input the path to the agent ribs.
8. Have it read the sequence.
9. In the advanced tab of the RMS Globals, add the following to the Default RIOptions section:
RiOption "searchpath" "string procedural" "/usr/local/massive/bin/";
10. Now you need to call the DSO. Open one of the scene.x.rib files and look at the bottom for the procedural call. This line you need to put in the Default RiAttributes section.

- a. It will look something like: RiProcedural "DynamicLoad" "massive.so" -2250.06 2249.94 -262.813 365.038 -2250.36 2249.64 "options motion_blur off render_pass beauty prman"
 - b. In this example I have the bounding box information moved around from the rib. If you are using an earlier version of Renderman than Renderman 18, leave the bounding box numbers where they are in the rib. If you are using Renderman 18, move the numbers to where they are above.
11. Now set up and light the scene how you want it in the Maya scene. You can do shading development here as well and not deal with the shading coming out of massive.

SCAD Renderfarm

12. Save your file as a Maya ASCII
13. Open the ASCII in a text editor
14. Search for your SCAD username directing you towards the rib and change it to a relative path
 - a. /home/[username]/[mayaProjectDirectory]/assets/rib
 - b. Change the above to:
 - c. assets/rib
15. Save the ASCII out of the text editor
16. Submit the Maya project directory to the farm

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