

Computer Animation I

Assignment 4: 3D bouncing balls

This assignment is intended to give you experience with:

- building your own shot
- all of the animation principles we've studied so far, with particular emphasis on staging and timing.

Your goal is to animate a single shot (no more than 5 seconds) containing two *distinctly different* bouncing balls. One could be heavy like a bowling ball and the other could be squishy and bouncy, for instance. You should not animate the camera, though of course you will need to position the camera, orient it, and set its focal length appropriately for the shot you envision.

Plan out what you want your shot to look like. Make multiple sketches to help explore the infinite staging possibilities before committing to any one. Don't forget Lasseter: stage your idea so it is *completely and unmistakably clear*.

Once you have a clear idea of how you want to present your two bouncing balls, you are to build your own scene file using the two objects in the project folder ("assignment_04"). It is fine to import the same object multiple times to do this, but please do not use other objects. The idea here is for you to come up with a shot that is interesting because of the placement of the camera and the motion of the objects ONLY, not because you stuck some fancy geometry in there.

DUE Wednesday October 11th at the beginning of class

Hand in your final playblast (make sure it's the proper size -- see below) AND your final scene file. The assignment won't be considered complete without both a movie and a scene file.

Step 0: get everything you need to do the assignment, run Maya

- The project folder is called "assignment_04." COPY the whole folder to the Desktop of the machine you're working on (DO NOT work on the scene in the handouts folder).
- There is a starting scene called "assignment_04.ma" that contains the camera you are going to use. It is called "Main_Camera" and has a 16:9 aspect ratio and a special film gate to help you stage your shot. Rename YOUR COPY of assignment_04.ma to fit our naming conventions (PerryA4.ma). Run Maya and load this file.
- Make sure you're working at 24 frames per second (**Maya->Preferences...** then **Settings**. Look for **Time** and select **Film [24 fps]**).

Step 1: layout your shot

- To import objects into Maya, use **File->Import...** (or the hotkey **Apple-i**). The two other files in the scenes folder are "plank.ma" and "ball.ma" -- minimal objects from which you are to build your shot. Use duplicate copies of these objects to build more complex environments if your shot demands them (i.e., the plank can be used as a floor and a wall).
- Don't forget to look through the Main_Camera to stage your shot! From a panel window, go **Panels->Perspective->Main_Camera** to change the view.
- Move, orient, and change the focal length of Main_Camera as appropriate. You will find that to create a well-staged shot you'll be modifying not only the camera but the objects as well. *Layout* is this process of establishing the camera and dressing the set for that specific camera view. If you've forgotten about how to transform the camera, re-read the first assignment sheet.

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Step 2: animate

- This assignment is harder than your previous assignments for two reasons. First, two balls are harder than one, and second, three dimensions are harder than two. It is therefore EXTREMELY IMPORTANT that you plan your shot out on paper first and use a continual process of REFINEMENT to get your shot finished. Work your way through the transformations, starting with the translation of both balls first. Get the timing and the staging of the action right. Only when the balls move through space perfectly should you advance to rotation and scaling. You may find that those latter transformations force you back to the translation for some clean-up. That's to be expected.
- Make playblasts frequently to check your motion. You should set the playblast resolution explicitly to match the aspect ratio of the main camera by going to **Window->Playblast ...[]** (select the options box) and use **Display Size custom** with values of 640 x 360.
- Save your work frequently. Turn on incremental saves if they're not already on (see previous assignment sheets).
- Bring in folks who aren't in our class and have them look at your in-progress animation. Ask them if it's making sense, if they know where to look and when, etc.
- Continue animating until it's terrific.

Step 3: hand in the movie and the scene file

- Save your playblast with the appropriate name (PerryA4.mov).
- Drop both the movie and the scene file into the shared hand-in folder.

Helpful resources, as always:

Your classmates.

The Maya PDF manual.

Me (perry@hampshire.edu).

The "animation mailing list" (animation@lists.hampshire.edu) You can sign up by going to lists.hampshire.edu.

NOTE the ball is rigged slightly differently than the 2D ball you're used to. Its pivot is at its center, not at the bottom. This means that when you add a squash during impact, you'll have to also shift the translational keyframe to keep the ball on the ground:

