

Introduction to 3D Computer Animation
 Fall 2009
 Ball Animation

Date	What should be done	Handin name	Files to handin
Nov 9 10 am	Animation and camera tutorials	anim_tut1	<ul style="list-style-type: none"> ○ <login>_keyframing.pb ○ <login>_keyframing.mb ○ <login>_door.pb ○ <login>_door.mb ○ <login>_plane.pb ○ <login>_plane.mb ○ REPORT.txt
Nov 9 10 am	More animation tutorials	anim_tut2	<ul style="list-style-type: none"> ○ <login>_ball_tut.pb ○ <login>_ball_tut.mb ○ <login>_2node_cam.mb ○ <login>_3node_cam.mb ○ REPORT.txt
Nov 11 10am	final	ball_final	<ul style="list-style-type: none"> ○ <login>_ball_movie.[mov,avi] ○ <login>_ball.mb ○ REPORT.txt

Goals and introduction

In this assignment you will learn to use the choreography tools in Maya to animate a bouncing ball. You will learn to how to animate using key frames, “set driven key,” and following a path. You will also learn basic camera manipulation.

Tutorials and Reading – first set

The source files for all tutorials can be found /course/cs125/asgn/anim_tut. For tutorials that require a playblast file (.pb) make it like this:

First turn **Smooth Shade All** on (in the shading menu of your scene view). Then select **Window>Playblast>option**. The **Viewer** option should have **Movieplayer** checked. Under **Display Size**, choose **Custom** and enter 320 x 240. Set **Scale** to 1.0. Click the **Save to File** checkbox and enter a file name in the space provided.

1. Read Birn, Chapters 6 and 7. Chapter 7 is the more important one.
2. Do Getting Started with Maya->Animation->Lesson 1, 2, and 3.

Tutorials and Reading – second set

1. Read **Principles of Traditional Animation Applied to 3D Computer Animation** found here:
http://www.siggraph.org/education/materials/HyperGraph/animation/character_animation/principles/prin_trad_anim.htm
2. Do Bouncing Ball tutorial on Google website.
3. Do Camera tutorial on Google website.

The last two tutorials are not lots of busy work, but they have a lot of concepts to digest, so make sure you spend the time to read everything between Maya steps.

Ball Animation

In this part, you will undertake the classic animation exercise of animating a bouncing ball. Choose some kind of ball (e.g. golf, bowling, squash, playground red rubber, superball) and create an animation that mimics the behavior of this ball.

Animate the ball bouncing along a straight path using keyframe animation. It has to have some forward momentum; it shouldn't just bounce in place. Start with the ball up in the air. Provide a simple surface for the ball to bounce on. Apply a checkerboard shader to the ball and something plain for the surface. Choose a camera angle that best shows off your motion, but don't be so tricky that we can't see what is happening. The ball should stop when gravity overrides the bouncing. This animation should be as physically accurate as possible. Consider weight, timing, and squash-and-stretch. The animation should unmistakably convey the type of ball you are mimicking. Try to figure out what distinguishes your ball from other kinds of balls.

Add any lighting that is necessary for us to see your ball. The goal is to see the animation, not have a dramatic moment. Render a movie of your bouncing ball at a 320x240 resolution. Hand in the movie and the maya file. Do not hand in a playblast!!

What we are looking for – design criteria

We are looking for physical accuracy in the ball bouncing, rotating, and possible rolling.

Tips

This task is fairly straightforward technically. In addition to positioning the ball, you may want to rotate and scale it. If your ball rolls, be sure it doesn't slide (move without rotating) or spin too fast (rotate faster than it is translating). Also be sure your ball doesn't rotate during the moment when it hits the surface. If you use squash and stretch, don't go overboard or your ball will look goopy. Preserve volume if you squash and stretch.