ECSE 4961/6961: Computer Vision and Graphics for Digital Arts

DVDs for October 22

Michael Jackson Video Greatest Hits

Select “Black or White” (Chapter 5). The famous morphing sequence is between 23:15 and 24:15. The Beier and Neely paper was directly used to create this effect (although you should discuss what parts of the video seem like they must have needed some separate processing/manual intervention).

Terminator 2: Judgment Day (Disc 1)

First, select “Sensory Control” and then “Interactive Mode”. This will enable on-screen text throughout the movie indicating shooting/camera location(s) as well as details about each shot and scene. Press Enter and then Main Menu (on the T-1000’s forehead).

Then select “Jump Into Timeline” and Chapter 34 (1:01:45). There are two points here where you see a triangle logo in the upper right corner (1:01:45 and 1:02:34); at these points press Enter to see some making-of slideshows that discuss some details of the effects (including an interesting discussion of what was CG and what wasn’t). You can stop around 1:03 (when Arnold starts shooting in the elevator).

Skip to Chapter 38 (1:10), a scene not in the original cut. At around 1:10:22 there’s a triangle with a short description of how a complex mirror shot (that you might assume was a CG effect) was done. You can stop around 1:11.

Skip to Chapter 63 (2:01:02). At 2:01:38 there is a quick triangle during the iconic scene that leads to a couple minutes of discussion of how Robert Patrick was digitized with a Cyberware laser scanner to create several of the effects.

Chapter 76 at 2:23:04 has an interesting triangle that shows how close the final effects came to Cameron’s original storyboards.

Terminator 2: Judgment Day (Disc 2)

After the goofy menu intro, choose “Information Programs”. The whole documentary “No Feat But What We Make” (24 minutes long) about the rise of computer graphics in feature films is pretty interesting. It includes clips and description of the groundbreaking water effect in “The Abyss”, which led into the look of the T-1000. In addition to the T-1000 morphing effect, it’s clear that a lot of matting, compositing, and fluid simulation was involved (as well as the early days of Photoshop and digital processing). Also, these were the days of 16 or 47 CG shots in a movie (as opposed to the hundreds of shots in today’s movies). The documentary does a good job of discussing the difficulty of integrating digital processing into the industry at the time, as well as the challenge of integrating mathematics with film theory. Cameron makes an interesting point about how the audio of a film is never treated as inviolate, so why should the video be? Everyone also makes the point that special effects should always serve the story and character—and that the latter are what make memorable movies. Unfortunately, there’s not a lot of details on the making of the effects themselves.

The One (time permitting)

Select Widescreen, and then Special Features. Select “About Face”, which is a short documentary about how some of the face replacement effects were done.

Then select “Multiverses Create The One” and watch the section from 4:30-8:10. This gives a good overview of how a typical shot that composites live action with CG is put together, which includes matting, matchmoving, and laser scanning. It also gives a feeling for what filming on a green screen set is like. The short section from 14:35-15:30 shows how full-body Cyberware scans of the actors are acquired.
DVDs for October 25

The Two Towers (Extended Edition Disc 3)
Select “Gollum”, then “The Taming of Smeagol”. Skip to Title 8, Chapter 6 (at about 18:30) on motion capture. This describes traditional motion capture- i.e. markers captured by multiple infrared cameras on a basically empty set. Here you can see that there was a tension between keyframe animation, rotoscoping, and the relatively new technology of motion capture; the combination of these two differed from scene to scene. Stop at the beginning of Chapter 9 (around 30:30). The section from 35:30-37:45 discusses the famous “schizophrenia” scene (no motion capture here; just rotoscoping and animation).

Pirates of the Caribbean: Dead Man’s Chest (Disc 2)
Select “Meet Davy Jones: Anatomy of a Legend” (12:30 long). This gives some details on state-of-the-art in-camera motion capture and shows some great comparisons between Bill Nighy in a motion-capture suit and the final Davy Jones effect (It’s pretty amazing how closely Davy Jones follows Bill Nighy’s expressive performance). This effects leverages recent algorithms for (1) motion tracking feature points, and (2) estimating 3D pose from a single 2D image captured on-set. Compare and constrast this to the Gollum motion capture.

Return of the King (Extended Edition Disc 4)
Select “Visual Effects”, then “WETA Digital”. Around 13:30-15:00 there are some examples of motion capture with horses! This was used as input to the Massive tool for rendering large numbers of horses in battle scenes. From 23:00-25:00 there are some good examples of shooting Orlando Bloom on a large blue-screen set with markers that are later used for matchmoving.