CS5245 – Vision and Graphics for Special Effects

Project Progress Report 2

"TREASURE YOUR LIFE!"

Group member:

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Special effects:

Realistic sand man running and splashing into grains of sand.

Our schedule from last report:

Week 9: Finish the sand man texturing and skeleton building. Meanwhile, continue building particle systems of splashing grains of sand.

Week 10: Build animation of sand man and composite into real scenes.

Week 11: Submit 2nd progress update report and composite the splashing of sand into real scenes.

Week 12: Finish the compositing and sound effects.

Week 13: Submit project presentation and demo.

What we have done:

1. Video re-shooting and editing:

Due to the low resolution of our previous video (320*240), we have shot a new one (720*480) with the same story. Since we already had a video as the storyboard, the new shooting took only 2 hours.

We have also finished the re-editing using Adobe Premiere Pro 1.5. Some important steps that we have done:

- Rig removal: we created the "wind effect" in which the student's shirt tail was flapping due to the wind. We used white thread to pull his shirt tail, and removed the thread in the video by applying motion blur. Below is one frame of the "wind effect" scene.

- <u>Scene warping</u>: there was a scene where we captured the student running and waited until some car passed by to capture it, so that later we composite the sand man into the scene and make the car hit him. The waiting time from the student running to the car passing by is long so we have to cut the video sequence in between. Though the camera is put on a tripod, after the cut there is still some very little change at the edges of the scene that make the movie discontinuous. Hence we used 2D image warping to create some intermediate frames and make the scene smooth. Please see the attached *scene1-low-quality.wmv* for reference.

2. Texture and animation building for the sand man:

We have created the sand texture for the model. Below is one frame of the scene when the sand man appears. We did not cast the shadow for this scene yet.

Besides, we used Maya to build some basic motions for the sand man: standing up, walking, breathing. Please see the attached *test-animation-low-quality.wmv* for reference. We are currently modifying the running sequence to make it more realistic and compositing the CG animations into real scenes.

## 3. Sand splashing simulation and rendering:

We have experimented to create an animation of the sand man splashing. We decided not to use Maya particle system for two reasons. First, the constraints for particle system in Maya are too complicated for beginners like us. This leads us to look for a simpler alternative, like Real Flow. Second, Real Flow has been used by Hollywood to produce amazing particle effects in Poseidon, X-Men 3 and Lord of the Ring. So, we thought we want to follow their foot steps.

Creating animation sequence with particle system consists of two steps: simulation and rendering. Real Flow only deals with simulation. It is possible to import Real Flow simulation result to Maya and use Maya for rendering. This is exactly what we did.

Here are several problems we met with particle effects:

- Slow Simulation Process and Lack of Computational Power: To get more realistic effects we need to use more particles. However, using more particles for simulation translates to higher demand of computational power. Certainly, we do not have such computational power or some render farm machines. We only use Pentium D (dual core) 3.2 GHz with 2 GB RAM and NVIDIA GeForce 8800 GTX with 768 MB VRAM graphics card. Furthermore, our model is very detailed and consists of 64618 triangles. We have tried to import this high resolution model to Real Flow and try to simulate the particles. We found no success since Real Flow complaint we do not have enough memory.

Hence the first step that we did is to simplify the model. Maya has a useful function to reduce the number of triangles. We used it to simplify our model from 64618 triangles to 3040 triangles (see below).
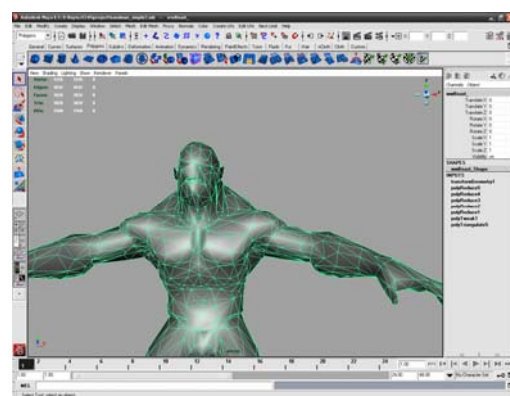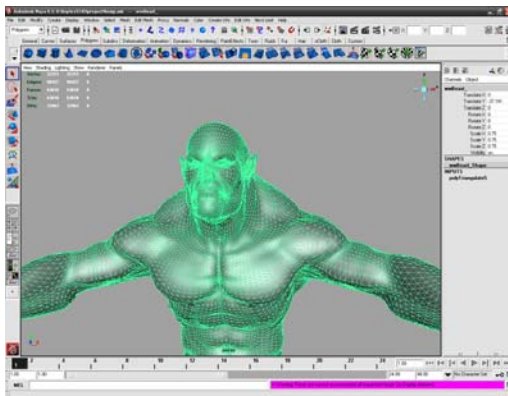
Next, we solved the slow simulation process by using less number of particles for simulation to get the simulation data. We then duplicated the particles and shaked the position of each particle a little bit. This gives the illusion of having a lot more particles than we actually have.

- Unable to Render Full Animation From Maya: We have succeeded in simulation the particle system in Real Flow. However due to unknown reason, we could not render the full animation sequence yet. We are still investigating why this happens. Below are some of the images that we have successfully rendered.
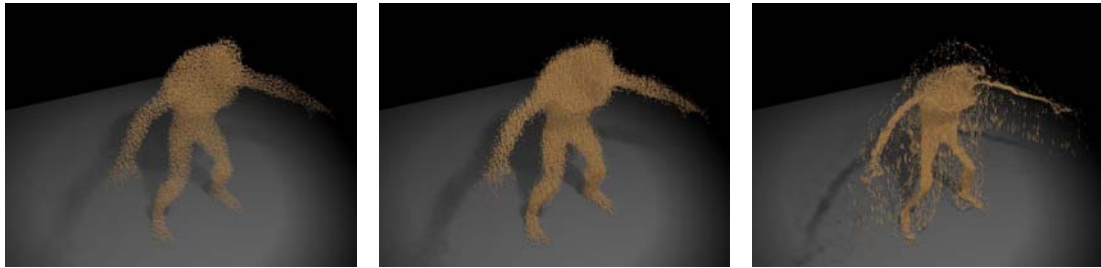
Work to be done:
- Finish the running and punching animations of the sand man.
- Finish the compositing of the sand man into real scene.
- Create the sand splashing effect when the sand man is hit by the car.
- Create audio effect for the video.