CIS 636 Introduction to Computer Graphics

CIS 736 Computer Graphics

Spring 2011

Homework 5 (Problem Set)

Modeling Mobiles: Vehicles and Characters

Assigned: Fri 18 Mar 2011

Due: Fri 01 Apr 2011 (before midnight)

The purpose of this homework is to give you some hands-on experience with 3-D modeling and animation tools.

This homework is worth a total of 20 points (2%).

Upload your solution to your K-State Online (KSOL) drop box before the due date and time.

References

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Adobe Photoshop Free Trial (30-day)

<http://adobe.ly/c8S4Ee>

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**Software**

Autodesk Student Download Center

<http://bit.ly/dQyneE>

Latest version of *Blender*

<http://bit.ly/FfvV2> - installers for different platforms (**note**: *Blender* is open source)

<http://bit.ly/fJWhPU> - import/export scripts

Poser Demo (30-day)

<http://bit.ly/dG72J6>

**Models & Tutorials**

Vehicle Model from *Free 3D Models*

<http://bit.ly/i5unKv>

Blender Character Model from *Blender Artists*

<http://bit.ly/e2m9uh>

Poser Character Model from *Telias*

<http://bit.ly/gZZw78>

Vehicle Rigging Tutorial © 2010 by Dinesh Salunke

<http://vimeo.com/9127642>

<http://vimeo.com/9127786>

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*Photofunia*

Main site: [http://photofunia.com](http://photofunia.com/effects/sidewalk)

Sidewalk: <http://photofunia.com/effects/sidewalk>

Notting Hill: <http://photofunia.com/effects/notting_hill>

Osaka: <http://photofunia.com/effects/osaka>

Free 3-D Models

DAZ 3D: <http://bit.ly/dJaZhe>

Video Capture

FRAPS: <http://bit.ly/xlGzq>

636 & 736 Instructions

Preparation: Download and install the latest student edition of *Maya* (currently *Maya 2012*), the latest stable edition of *Blender* (currently 2.4.9b), and latest the Poser Trial Version (currently Poser 8) for Windows from the URLs above.

Turning in the assignment: Turn in ps5.pdf and all screenshots and source code as specified.

636 Problems

Download and install the latest trial edition of Photoshop (currently Creative Suite 5 Extended).

1. (40%) Acquiring and Displaying a Vehicle Model. Download and display the *Maya* .mb file for this year’s vehicle, a 2011 Mercedes-Benz SLS AMG (Wikipedia article: <http://bit.ly/4trTlU>). Include a screenshot of the rendered vehicle as a separate file in your submission, named ps5-1.jpg. You may wish to experiment with different views and lighting conditions. Refer to Aaron Ross’s tutorials and embed the images in the main file you submit (ps5.pdf)
2. (30%) Acquiring and Displaying a Blender Character Model. Download and display the *Blender* .blend file for this year’s *Blender* character, *OSCAR* (*Open Source Character And Rig*). Include a screenshot of the rendered character as a separate file in your submission, named ps5-2.jpg.
3. (30%) Acquiring and Displaying a Poser Character Model. Download and display the *Poser* .pz3 file for this year’s *Poser* character, an astronaut. Include a screenshot of the rendered character as a separate file in your submission, named ps5-3.jpg.

Extra credit (25%). Do one of the following:

* + - 1. (Rigging character model) Complete the rigging of the Tin Can Man from the *Unreal Wiki* and include the rigged model with your homework submission.
      2. (Rigging vehicle model) Follow the rigging video tutorial above to rig a simple vehicle model. Turn in your rig files and screenshots.
      3. (Importing .obj into Blender) Import the Mercedes file into *Blender* and display it there. Take a screenshot of the model being viewed within *Blender*.

(You may do two parts or all three parts for fun, but only 25% extra credit will be given.)

**736 Problems**

1. (50%) Acquiring and Displaying a Character Model as a Projective Texture. You may use either the the Blender .blend file for this year’s Blender character, OSCAR (Open Source Character And Rig) or the Poser .pz3 file for this year’s Poser character, an astronaut. Download and render the character. Use GIMP or Photoshop to extract a still frame of the character (as a bitmap), then use texture mapping in OpenGL or DirectX to decal it onto a simple planar surface as in the *Photofunia* “Sidewalk” or “Notting Hill” web applications. Include a screenshot of the rendered scene as a separate file in your submission, named ps5-1.jpg.
2. (50%) Acquiring and Displaying a Vehicle Model as a Projective Texture. Download and display the Maya .mb file for this year’s vehicle, a 2011 Mercedes-Benz SLS AMG (Wikipedia article: <http://bit.ly/4trTlU>). Use GIMP or Photoshop to extract a still frame of the character (as a bitmap), then use texture mapping in OpenGL or DirectX to decal it onto a simple planar surface as above. You may wish to experiment with different views and lighting conditions. For extra credit, include a reflection of the texture on the ground, with some truncation or distortion as in the *Photofunia* “Osaka” effect.

Extra credit (25%). Do one of the following:

1. (Reflection) Use planar reflection mapping with one of your textures.
2. (Hair) Download and display a free 3-D character model with hair and explain in your own words how the hair is modeled (as far as you can tell). Use FRAPS to capture a short video of the character moving, if it is a rigged model.
3. (Skin) Download and display a free 3-D character model with skin and explain in your own words how the skin is modeled (as far as you can tell). Use FRAPS to capture a short video of the character moving, if it is a rigged model.

(You may do more parts for fun, but only 25% extra credit will be given.)

Class Participation (required):

Post your first paper review, as specified in class, to KSOL by Fri 01 Apr 2011.