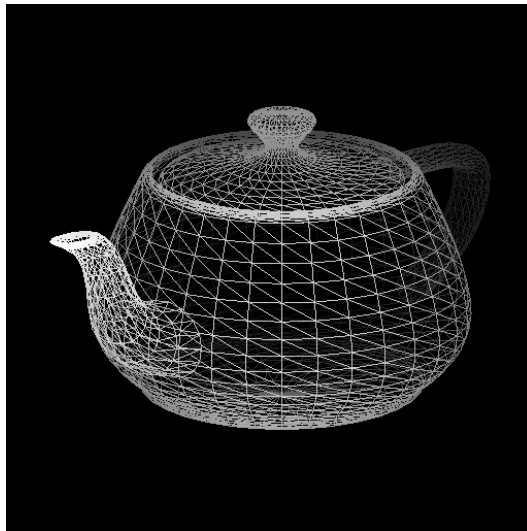


3DMM 2015  
Assignment #1: Rasterization

# Requirement

- You are required to write a C/C++ program that can accept triangles input vertices.
- The program should include the line and triangle rasterization algorithm mentioned in the class.



*Wireframe mode*



*Solid mode*

# Requirement

- Use **orthogonal projection** for ease of viewing projection.
- Implement **back-face culling** to improve the performance.
- Use **Z-buffer** to correctly remove hidden surfaces.
- Assign the vertex color according to its normalized depth.
  - Near: lighter
  - Far: darker
- D3D and OpenGL APIs are not allowed in this assignment.
  - glut is used only for display purpose.
  - <http://web.eecs.umich.edu/~sugih/courses/eecs487/glut-howto/>
  - <http://freeglut.sourceforge.net/>

# Hints

- Not every model has the same scale. You have to **normalize** first and then apply some transformation (scaling, translation, rotation) for better visual result.
  - Make sure the object faces forward.
  - Translate the model center to proper location, such as image center.
- TA provides a simple template for easy starting. 😊
  - Q: Can I start from empty files?
  - Sure. You can write your own code to achieve our main goals.

# Report

- Describe your rasterization algorithm.
- Evaluate performance of rasterization with/without culling.

ex:

Model name	Time (with culling)	Time (w/o culling)

- Show your rasterized results of wireframe mode and solid mode. (12 models \* 2 modes = 24 images)

# Submission

- **Deadline: 2015/4/6 11:59 pm**
- Compress all required files as a single ZIP or RAR file.
  - **Naming rule:**
    - 3DMM\_HW1\_R03943001.zip
    - 3DMM\_HW1\_R03943001\_v2.zip
- **FTP:**
  - **140.112.174.82**
  - Port: **2021**
  - Account: The same as the one used for the course website.
- **Required files**
  - Report, in **PDF** format
  - Source code (C/C++)
  - A readme, to describe how to compile and execute your program.
- Any further question, please contact TA
  - 塗偉志 [wctu@media.ee.ntu.edu.tw](mailto:wctu@media.ee.ntu.edu.tw)