

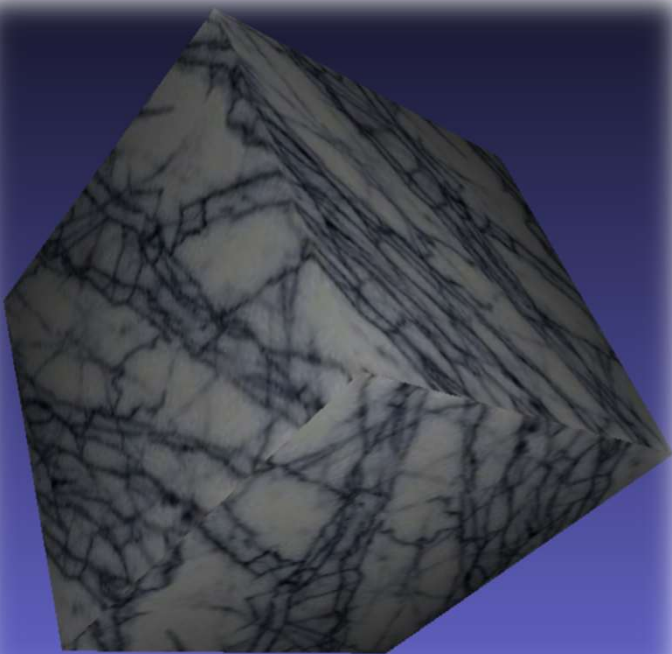
Computer Graphics

by Ruen-Rone Lee



Assignment #3

*Draw some 3D models with
Textures and Lighting*



Purpose of the assignment

- ◆ **Know how to add textures on 3D models**
- ◆ **Know how to apply lighting on a textured 3D model**
- ◆ **Know how to apply texture filter and see the difference between different filtering modes**
- ◆ **Know how to apply texture transform for some specific textured models**



Requirement

- ◆ You are required to write a program that can accept 3D test models as in previous assignments
- ◆ The models should be rendered with provided textures
 - The provided model will contain each vertex's position, normal, and **texture coordinate**



Requirement

- ◆ The texture mapping results should combine with the lighting results from assignment #2
 - Use a **modulation** function to combine texture and lighting effect
- ◆ Run time modification to different **texture filtering mode** is required
 - **Texture mipmapping** is required
 - Demonstrate the filtering effects when the model size is change (zoom in or zoom out)



Requirement

- ◆ Transformation such as model transformation and viewing transformation in assignment #1 are required to check the texture mapping effect on the 3D models
- ◆ **Texture transform** on some Pokemon models' eyes to animate the facial emotion

Hint

- ◆ **How to make sure the texture filtering works as expected**
 - **Use a small texture for magnification filtering check**
 - **Use a large texture for minification filtering check**
 - **Use regular patterns so that you can easily find the difference between various filtering modes**
 - ▶ **Replace the texture image by the one you would like to verified. E.g., a checkerboard texture image.**



Input Model Format

- ◆ Wavefront 3D Graphics model description file with extension .obj
- ◆ The input model contains not only the vertex position information (“v”), but also the normal information (“vn”) for lighting calculation, and the **texture coordinates (“vt”)** for texture mapping



Due Date

- ◆ **Two weeks** after the assignment is announced, should be **6/5**
- ◆ Late submission is allowed with less score
- ◆ No score if you don't submit your assignment
- ◆ If you copy from others, your score will become zero or be down-graded



Final Reminder

- ◆ All the late submissions should be received by eeclass no later than **11:59pm on 6/19**
- ◆ The final grade will be submitted to the grading system **within 1~2 weeks after 6/19**
- ◆ For those graduating students, if you would like to receive your grade earlier, then you will have to follow the following instructions
 - Submit all your homework assignments before **11:59pm on 6/12; and**
 - **Send an email (with your student ID and name) to me and TAs for requesting an early grade submission (again, no later than 11:59pm on 6/12)**
 - ▶ **I will reply you an acknowledgement to confirm your request**



Final Reminder

- ◆ **We will have class on 5/29, 6/5, 6/12, and 6/19**
 - **If you are still interested in other topics of Computer Graphics**
 - **We still have the following topics**
 - ▶ Shader in depth
 - ▶ Shadow generation
 - ▶ 3D Modeling
 - ▶ Anti-aliasing
 - ▶ Global illumination
 - ▶ Non-photorealistic rendering
 - ▶ Animation
 - ▶ ...



Q&A

