

CSCI 441 – Computer Graphics

Exam II Outline

I. Texture Maps

- A. Mapping Methods
- B. Mapping Strategies
 - 1. Forward vs. Backward
 - 2. Point Sampling vs. Area Averaging
- C. Texture Mapping
 - 1. 2D Texture Maps
 - 2. Assigning Texture Coordinates
- D. Issues and Fixes
 - 1. Mipmapping
 - 2. Filtering
 - 3. Perspective Correction

II. Procedural 3D Models

- A. Sphere
 - 1. OpenGL Indexing
- B. Torus

III. External 3D Models

- A. Wavefront Format Models
- B. Blender Modeling

IV. Lighting Models

- A. Parameters
 - 1. Light sources
 - a. Point source
 - 1. Directional (distant)
 - 2. Positional
 - b. Spotlight
 - c. Ambient light
 - 2. Material properties
 - a. Smooth vs. rough surfaces
 - 1. Lambertian surface
 - 2. Specular surface
 - b. Shininess
 - c. Transparency
 - d. Emissiveness
 - 3. Location of viewer
 - 4. Surface orientation
- B. Models
 - 1. Faceted shading
 - 2. Gouraud shading
 - 3. Phong model
 - 4. Modified Phong, or Blinn Phong

V. Shadows

- A. Projective Shadows
- B. Shadow Volumes

- C. Shadow Mapping

- D. Shadow Mapping Artifacts

- 1. Shadow Acne

- 2. Peter Panning

- 3. Jagged Shadow Edges

- E. Soft Shadows

- VI. Skyboxes and Skydomes

- A. Strategy

- B. Artifacts

- C. OpenGL Cube Maps

- D. Environment Mapping

- 1. Approach

- 2. Limitations