

1 What are the difference between Local illumination model and Global illumination model?

Local illumination considers only the direct interaction between surfaces, light and the viewer. It ignores indirect lighting effect such as shadows cast by other objects.

Global illumination considers both direct and indirect lighting. It simulates how light rays bounces between surfaces.

2 What is the purpose of material attribute?

Material attribute describes how a surface interacts with light. It defines properties such as ambient, diffuse, and specular reflectance (Blinn-Phong lighting). These properties allow the surface to appear as different materials.

3 Can you approve Blinn-Phong is an approximation of Phong reflection model?

Blinn-Phong replaces the specular reflection vector with the half-vector between light direction and view direction. This simplification approximates the Phong specular term while reducing computational costs.

4 Why Phong shading produce better result than Gouraud shading?

Phong shading directly interpolates per pixel while Gouraud shading computes lighting only at vertices and interpolates across the surface. Phong shading captures details that Gouraud shading always miss such as specular highlights and performs way better at large surfaces.

5 What information can be stored in a Texture?

PBR: albedo(color), normal, metallic, roughness, AO.

6 Why the Texture coordinates require perspective correction?

Because after perspective projection, linear interpolation in screen space does not preserve the correct position of texture coordinates in view space

7 What is the cause of aliasing in Textures?

Jagged edges, moiré patterns, shimmering, etc.

8 What are the rendering equation and reflection equation?

The rendering equation models total outgoing light at a surface, including all incoming light.

The reflection equation describes how incoming light is reflected by a surface using a BRDF.