

Project B: dumbbells and windmills with different shading and lighting

Xiao Pan, NetID: xpu1036

Users' Guide:

1) goal:

Implement 3 solid, jointed and flexing shapes and one large slowly-spinning sphere, and they are in different materials. We could see all the shapes are on the ground grid and from a movable camera. Users could also change lighting mode between Phong lighting and Blinn-Phong lighting, change shading between phong shading and gouraud shading.

2) User instructions:

- a. Users could press "w, a, s, d" to control the direction of the camera
w: up, a: left, s: down, d: right.
- b. Users could press arrow keys to move forward, backward, left and right.
- c. Users could press "i, j, k, l" to control the position of the lamp.
i: y+, j: x-, k: y-, l: x+.
- d. Users could press space key to turn on/off the lamp, press enter to turn on/off the headlight.
- e. Users could change lighting mode between Phong lighting and Blinn-Phong lighting, change shading between phong shading and gouraud shading:

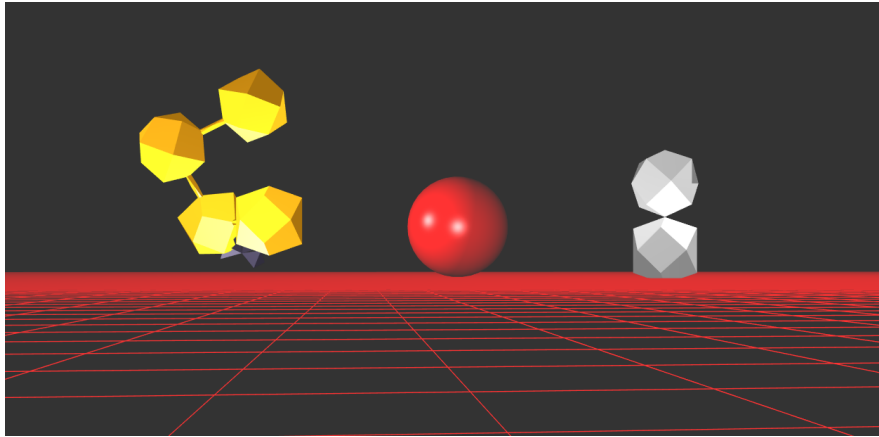
: : Blinn-Phong lighting & phong shading

- f. Users could input the 9 parameters individually of the lamp light source, in website:

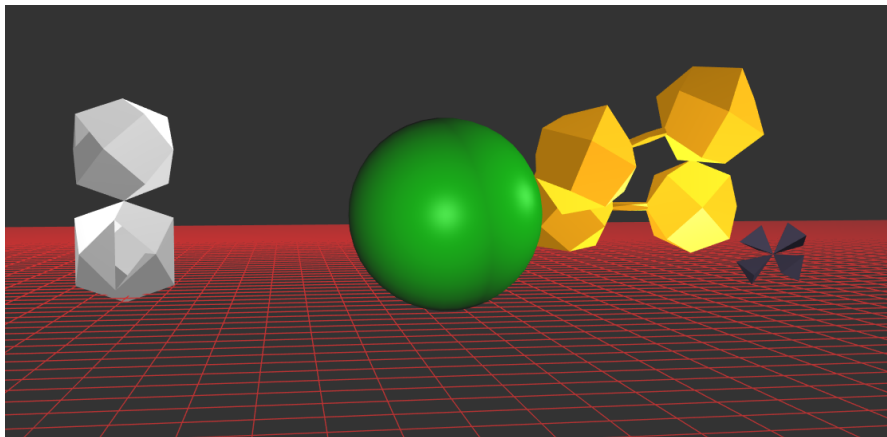
light source: lampAmbiR, lampAmbiG, lampAmbiB, lampDiffR, lampDiffG, lampDiffB, lampSpecR, lampSpecG, lampSpecB
lampAmbiR: lampAmbiG: lampAmbiB: lampDiffR: lampDiffG: lampDiffB: lampSpecR: lampSpecG: lampSpecB:

3) Result:

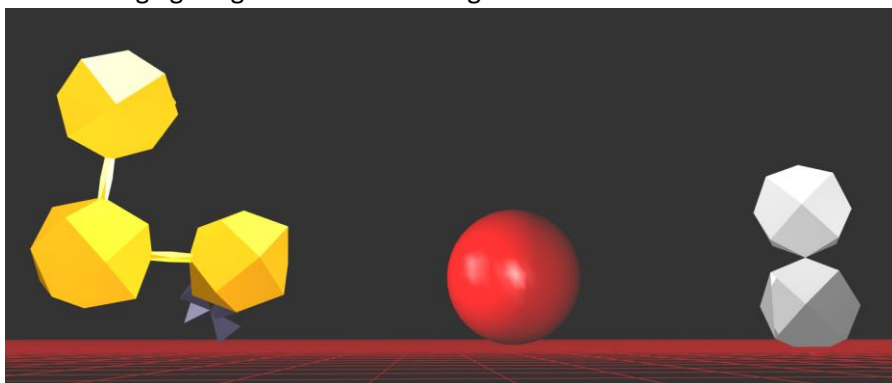
- a. Basic result: sphere on the center, quad-dumbbells and double-dumbbells beside the sphere, windmills behind it.



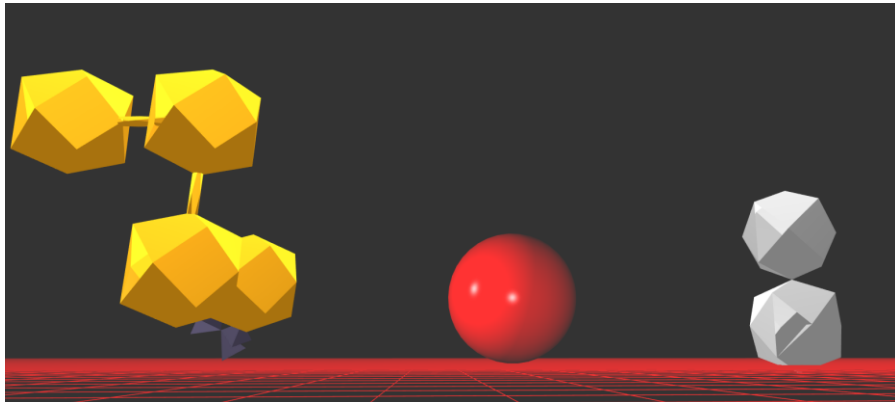
- b. Different camera positions and different material:



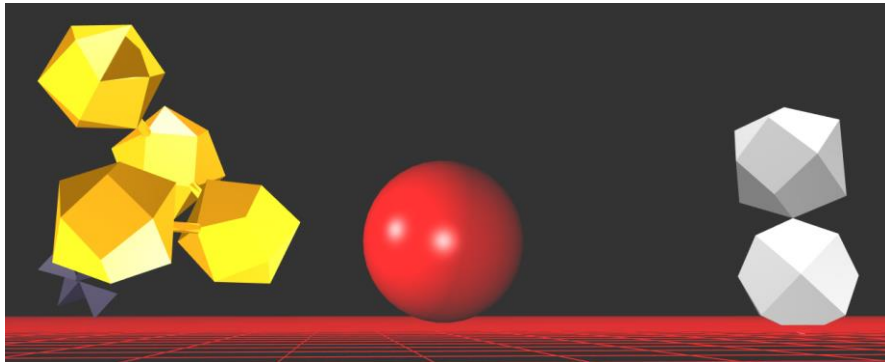
- c. Change the lighting mode and shading mode:
Blinn-Phong lighting & Gouraud shading:



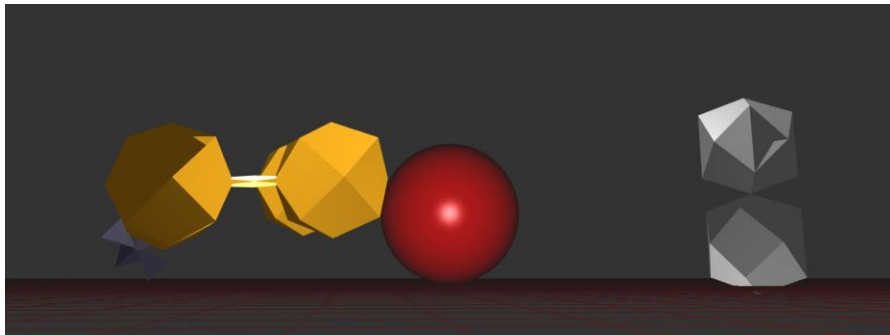
Phong lighting & Phong shading:



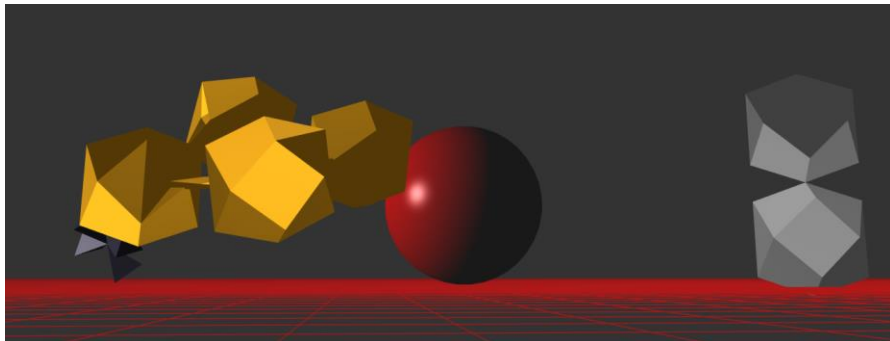
Blinn-Phong lighting & Phong shading:



d. Turn off the lamp:



Turn off the headlight:



Scene graph :

