COL781 Assignment 3

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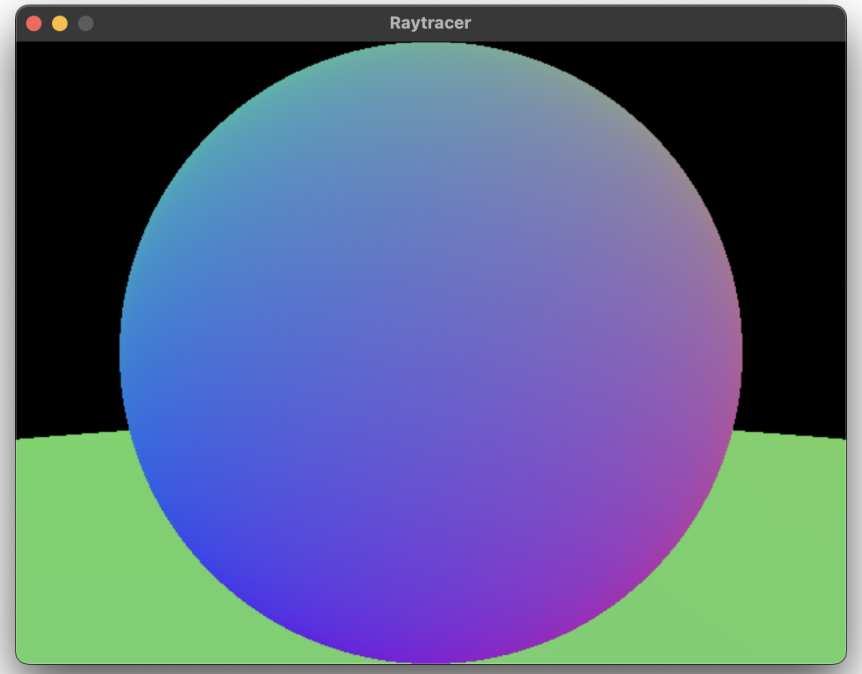
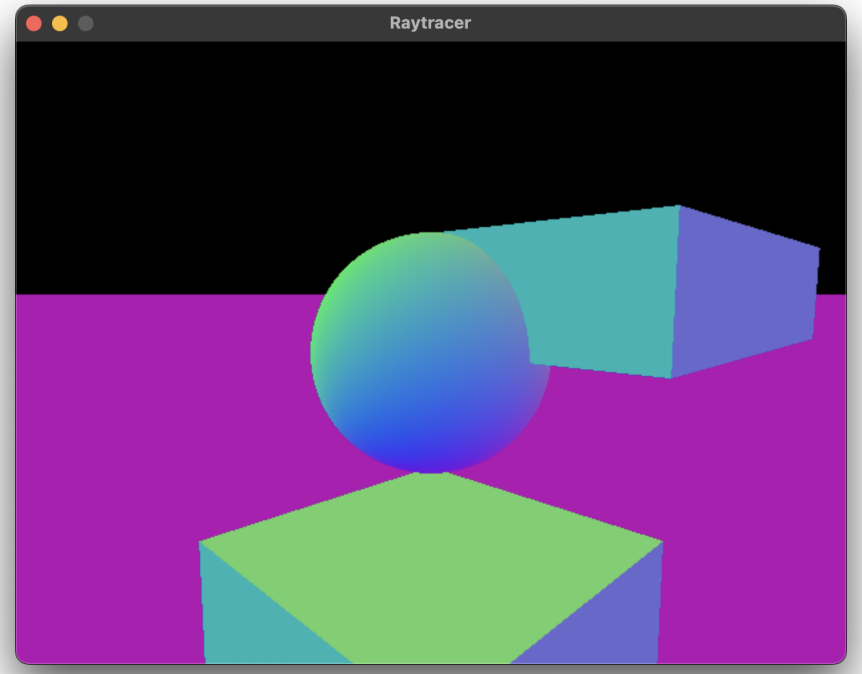
1 Normals Rendering

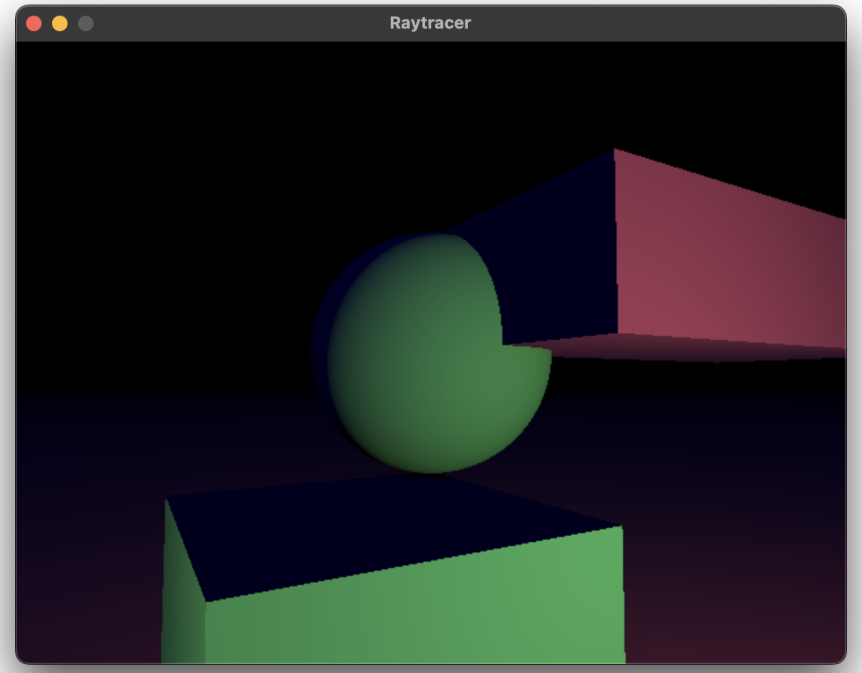


Scene 1: Sphere on top of another sphere

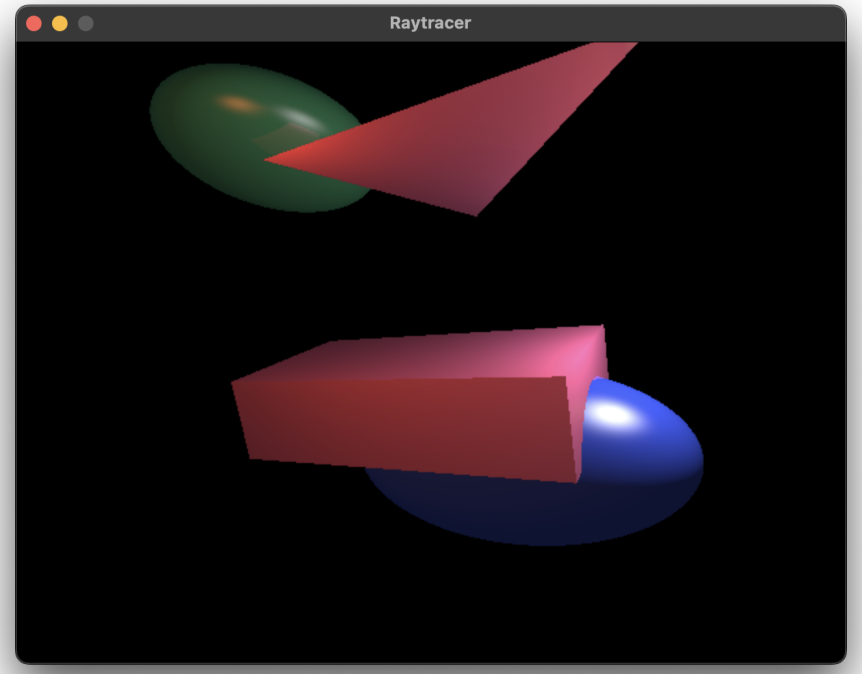


Scene 2: Sphere with some axis-aligned bounding boxes and a plane

2 Diffuse rendering

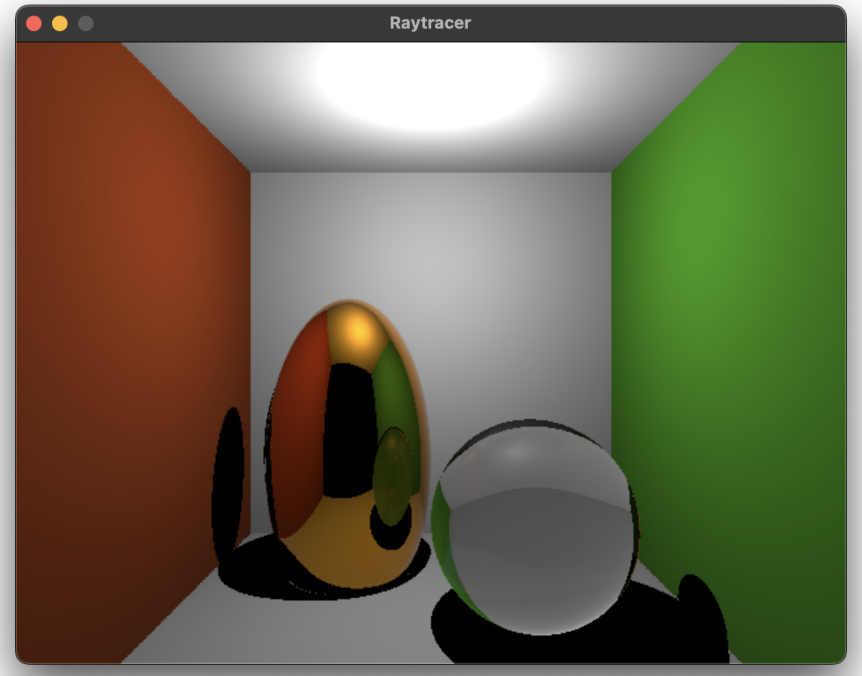


Scene 3: Same as before, but with perfectly diffuse materials and a light source

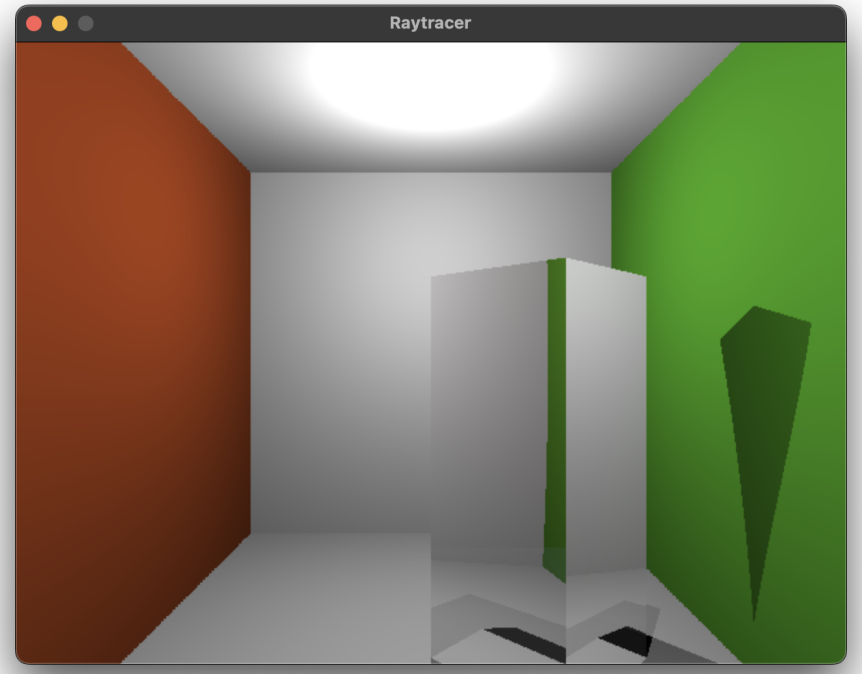


Scene 4: Several deformed spheres and boxes, showing normals being transformed properly

3 Reflective and Refractive materials

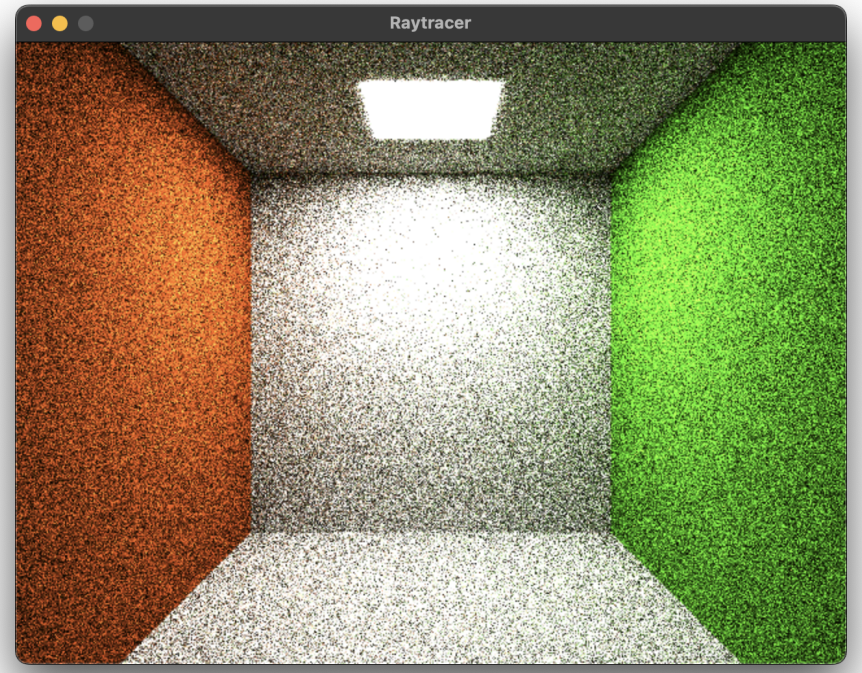


Scene 5: A scene with at least one coloured metallic sphere and one transparent glass sphere



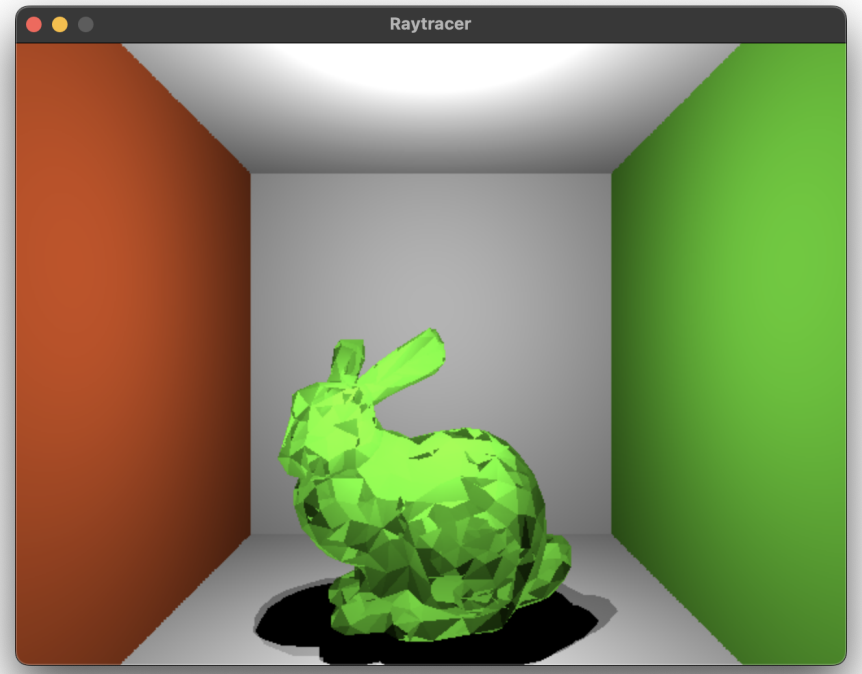
Another scene with a transformed refractive axis-aligned box

4 Path Tracing



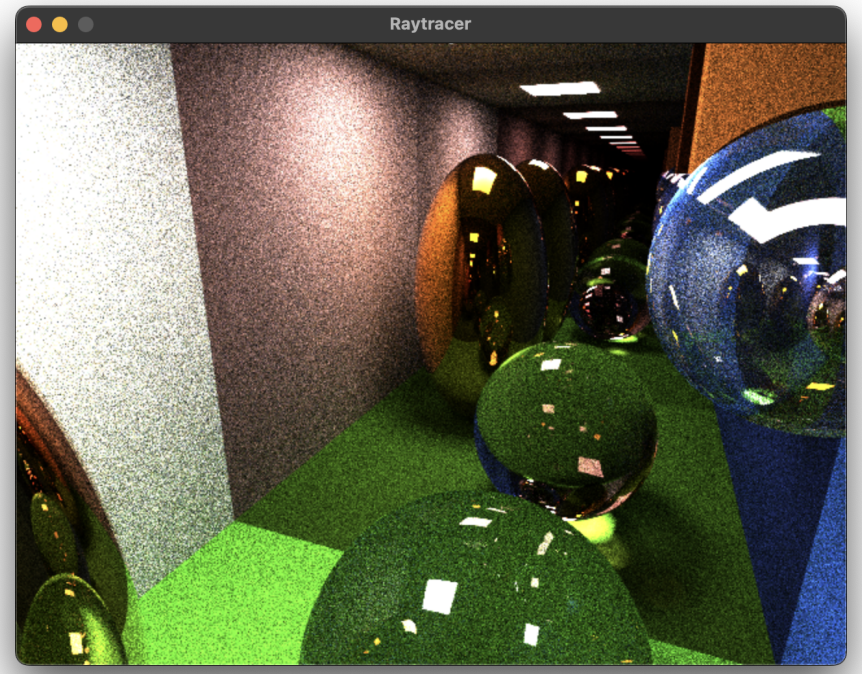
Scene 6: Cornell box, showing diffuse interreflections between the walls

5 Mesh import



Scene 7: Importing the bunny-1k mesh. Collision detection was sped up using a trivial bounding box (take the min/max coords across all the vertices)

6 Interesting scene



Scene 8: Path tracer scene demonstrating all three types of shapes, affine transformations, soft shadows, recursive reflection and refraction, as well as indirect illumination and caustics

7 Comments

Part of the camera code was ported over from Assignment 2, allowing for movement around the scene. Rendering was parallellized using OpenMP. The path tracing viewer is also adaptive (similar to Blender's viewer), meaning that keeping the camera position the same causes the samples to be added to a buffer and overlaid. We also implemented a slight jitter while supersampling as that allowed the image to converge faster.

We were thus able to implement **Every component of the assignment**.