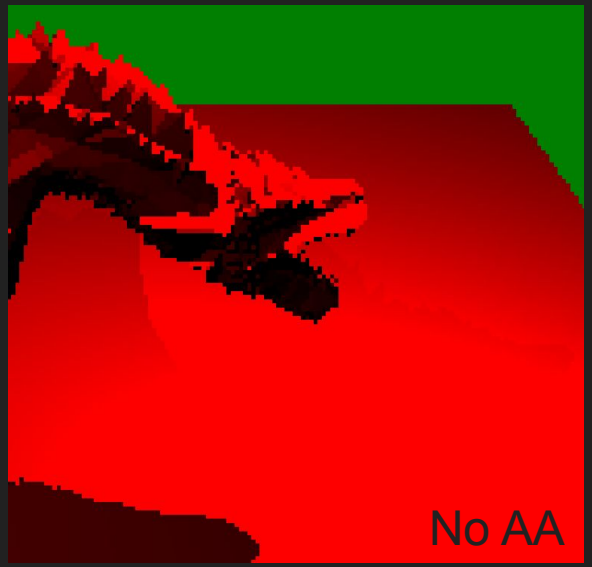
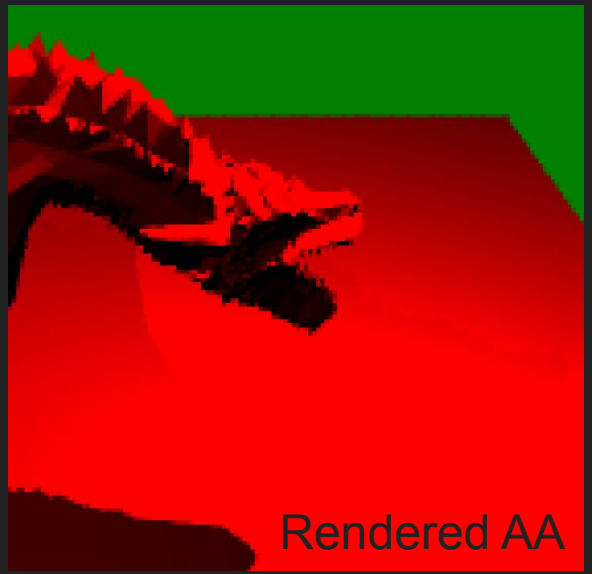
Course assignment added functionalities:

1. Anti-Aliasing
2. Depth of Field effect
3. Stereoscopy, anaglyph 3D effect
4. Global Illumination with explicit light sampling
5. Bidirectional Path Tracing, achieving caustics

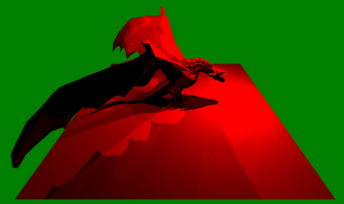
Anti-Aliasing



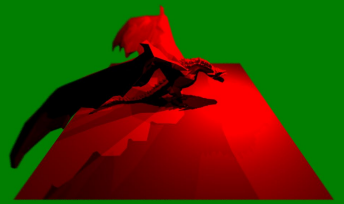


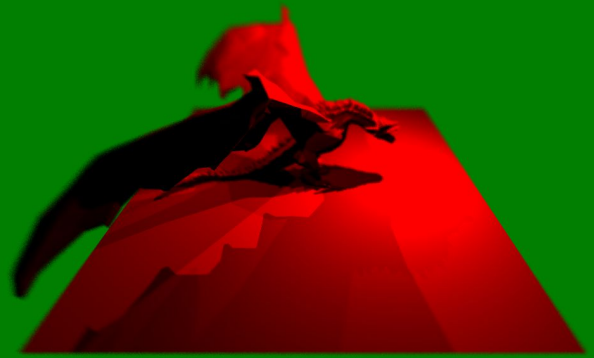
Depth of Field

¼ aperture



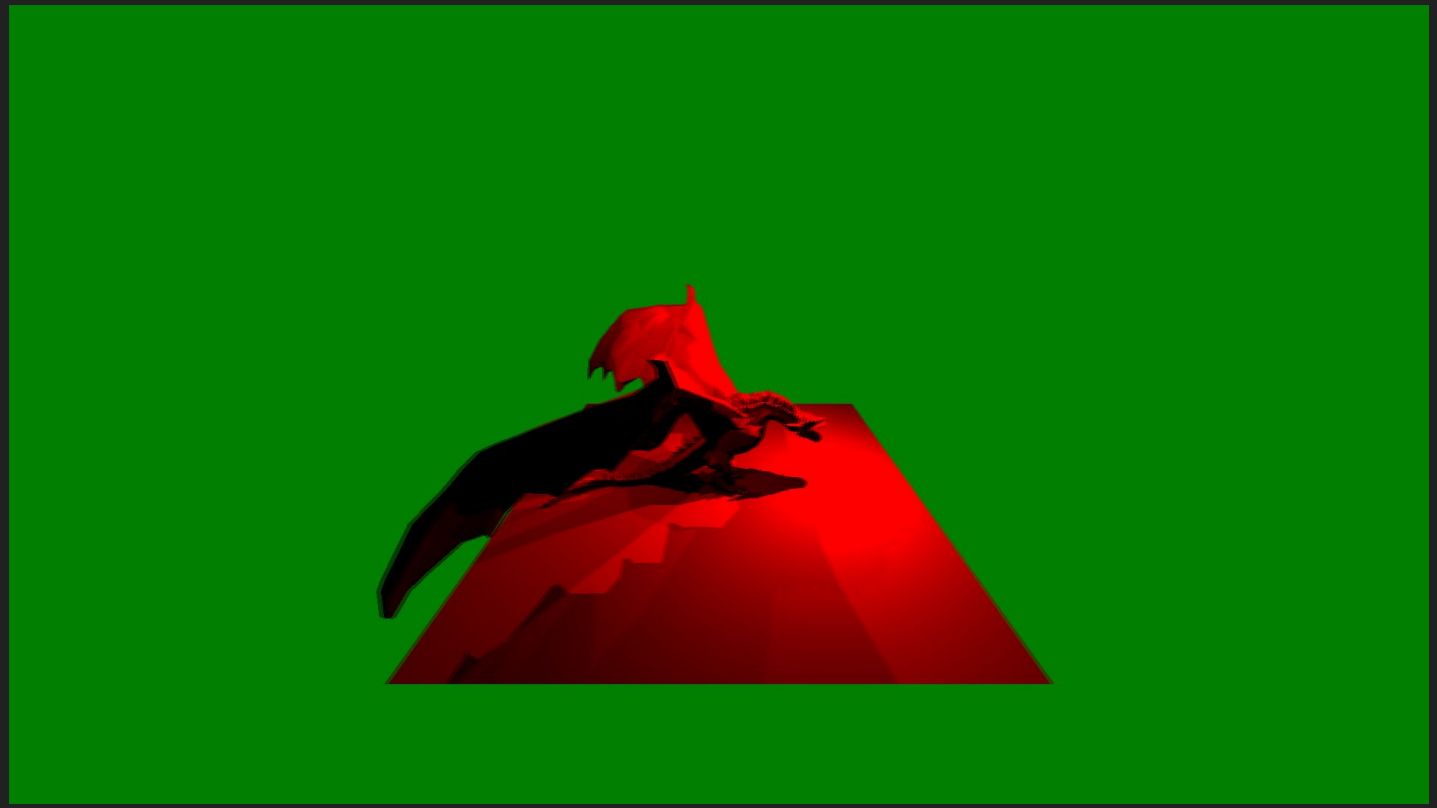
½ aperture





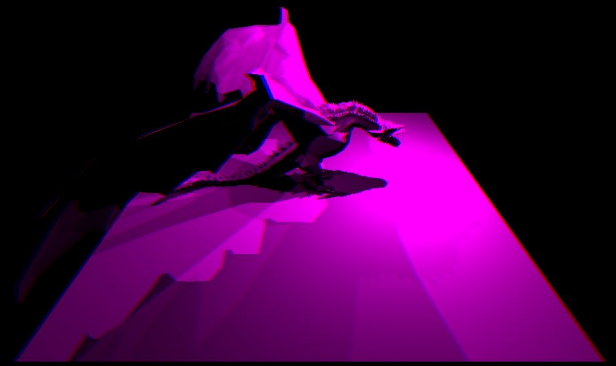
1/1 aperture

Stereoscopy

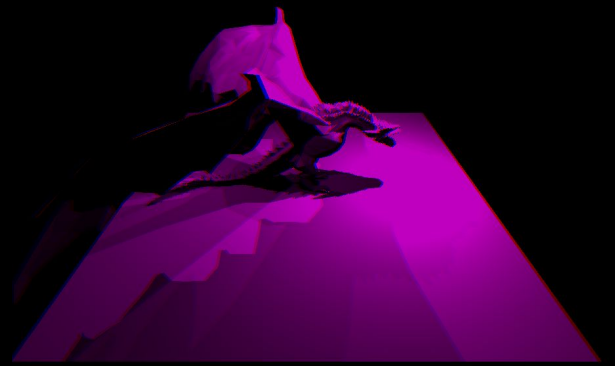


Anaglyph effect

Left eye is tinted with red
Right eye is tinted with blue



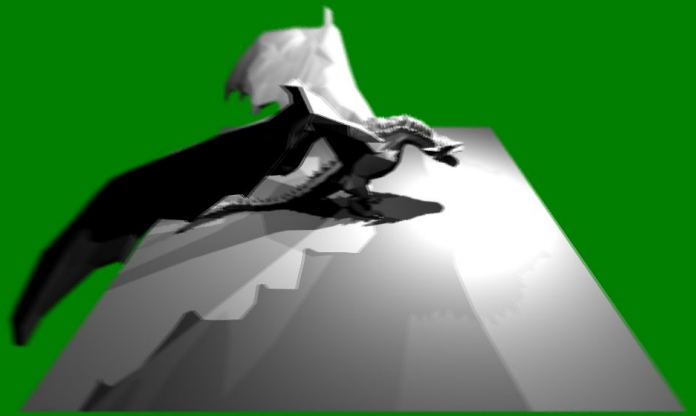
The effect is more pleasing after desaturating the resulting image



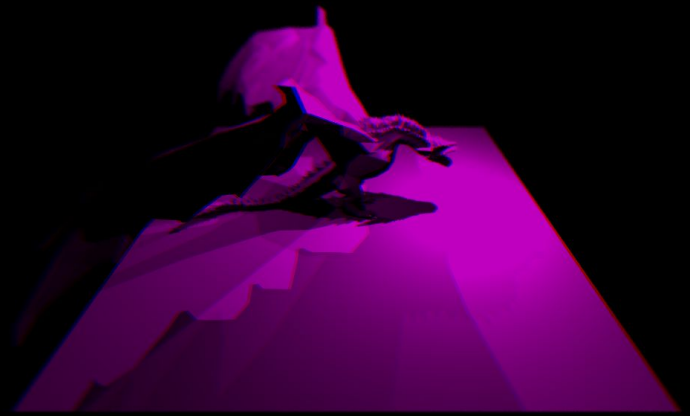
*the dragon in the scene has white albedo

Combining effects

DOF + Stereoscopy

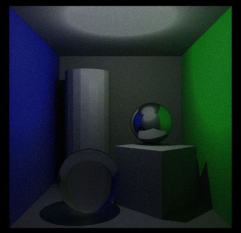


DOF + Stereoscopic + Anaglyph

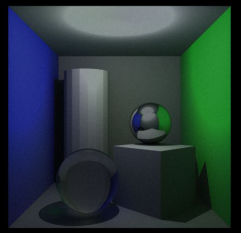


Global Illumination

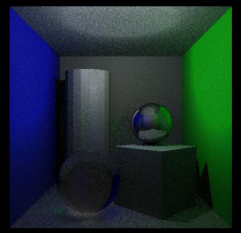
No light sampling (no caustics)



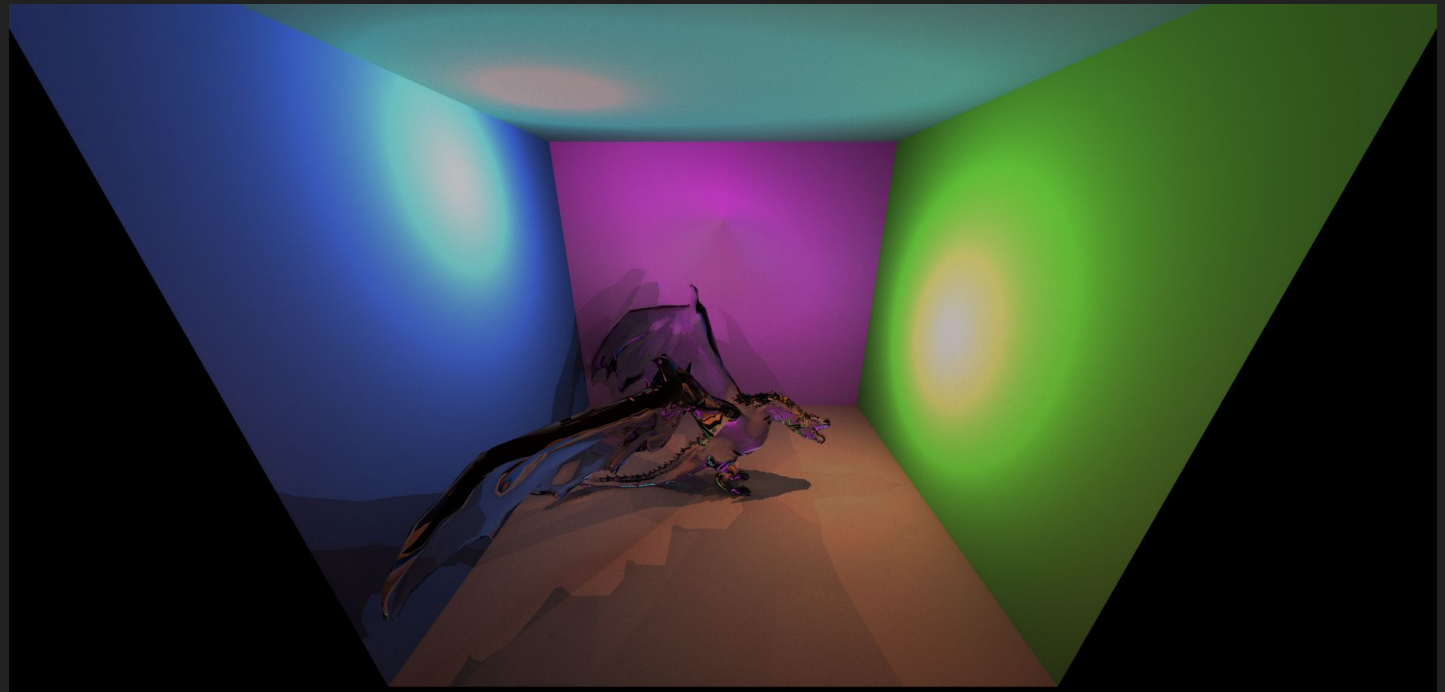
Explicit light sampling
(still no caustics)



Multiple GI rays per hit
(hints of caustics)

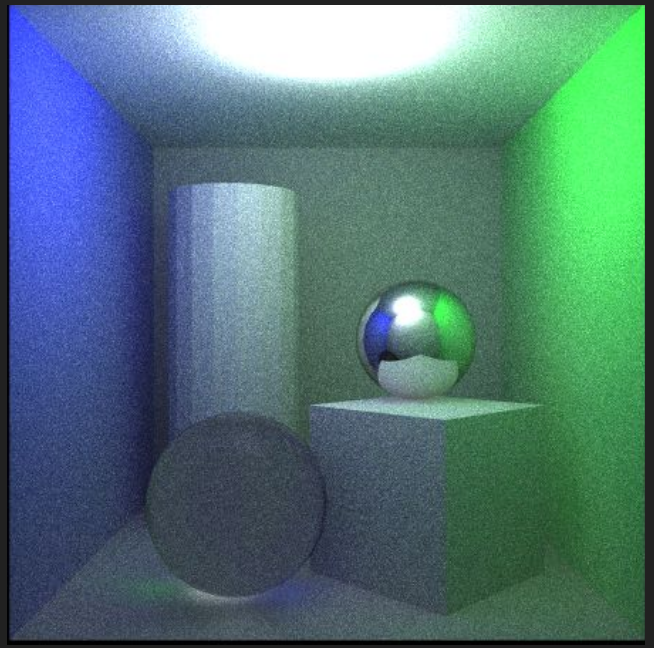


Glass dragon scene with GI



100 spp, 5 ray depth, no caustics

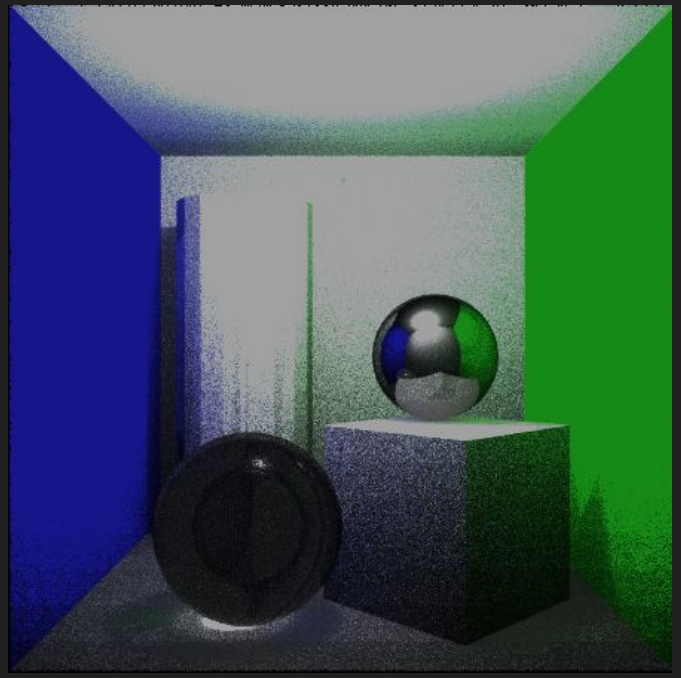
Bidirectional Path Tracing



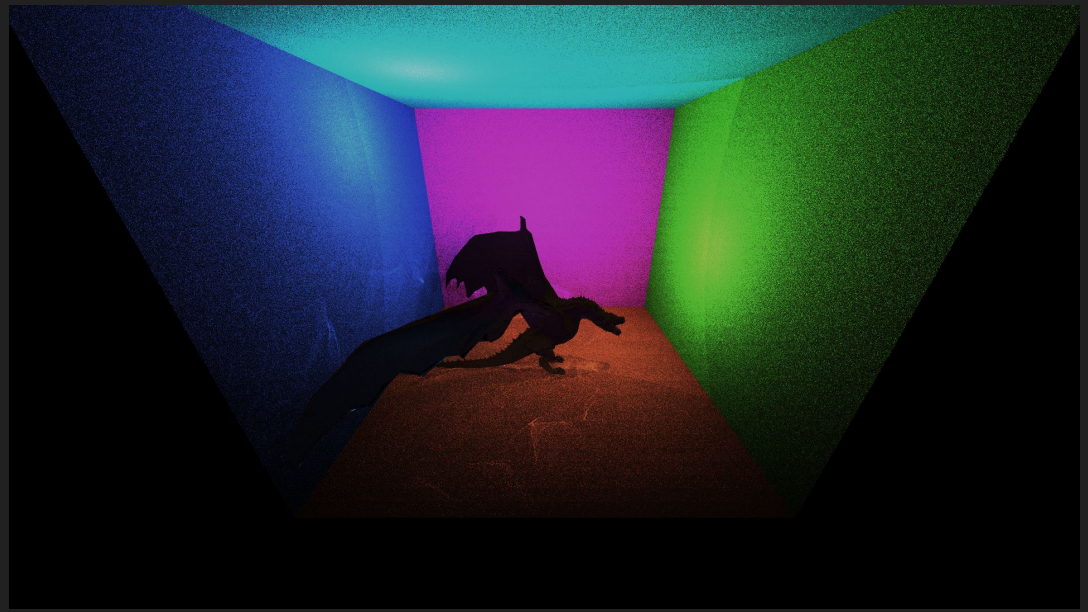
BDPT result with no direct connection between the light paths and the image plane, hints of caustics

Glass dragon scene with no light path camera sampling, still no caustics

BDPT, connecting light path to image directly



When connecting the light path to the image we finally get the desired light concentration from the glass sphere, although the image is slightly too bright



The glass dragon scene finally renders some concentrated light from the wings after casting light path vertices directly to the image, again the image is slightly oversaturated