Global Illumination Methods

Practical Course

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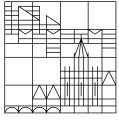


Work Package IV

Tasks

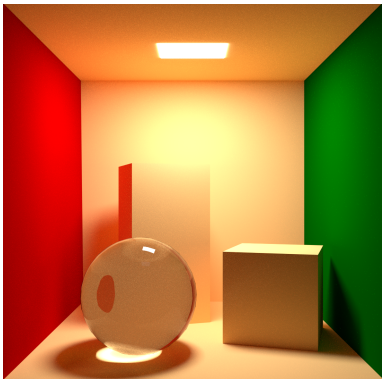
1. Scene similar to Cornell Box
2. Pathtracing

Date

This assignment is due **February, 3th/5th**. Please bring your Laptop to class.
If you have any questions regarding the assignment, just write us an email.

Cornell Box

- light source in the center of a white ceiling (area light)
- green wall (right)
- red wall (left)
- white wall (back)
- white floor

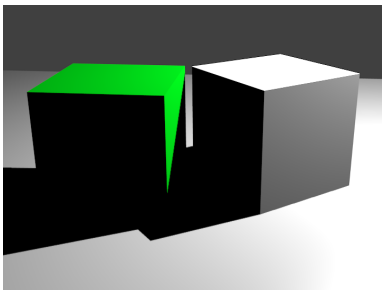


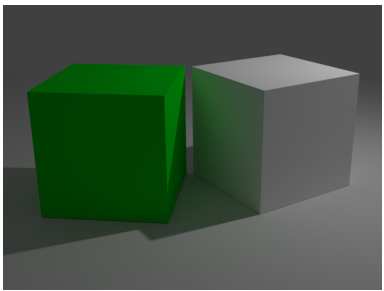
Arbitrary objects can be placed in the box. You should have opaque and semi-transparent objects. Objects can act as light sources are optional.

Path tracing

So far:

- Approximation of rendering equation
- only the local illumination is used

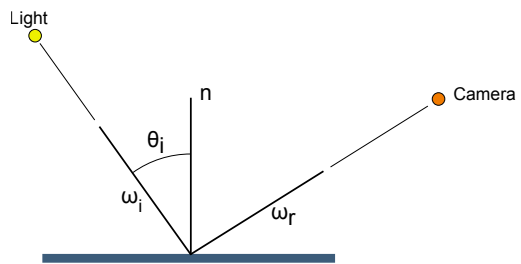




Path tracing

- Integrate over all illuminance for a given point on the surface of an object
- BRDF is used to describe how light is reflected from an object:

$$f_r(\omega_i, \omega_r) = \frac{\mathrm{d}\, L_r(\omega_r)}{\mathrm{d}\, E_i(\omega_i)} = \frac{\mathrm{d}\, L_r(\omega_r)}{L_i(\omega_i) \cos\theta_i \, \mathrm{d}\, \omega_i}$$



Path tracing

Implementation using Monte Carlo integration, i.e. shooting rays into the hemisphere at an intersection.