CS 87/187: Rendering Algorithms, Spring 2016
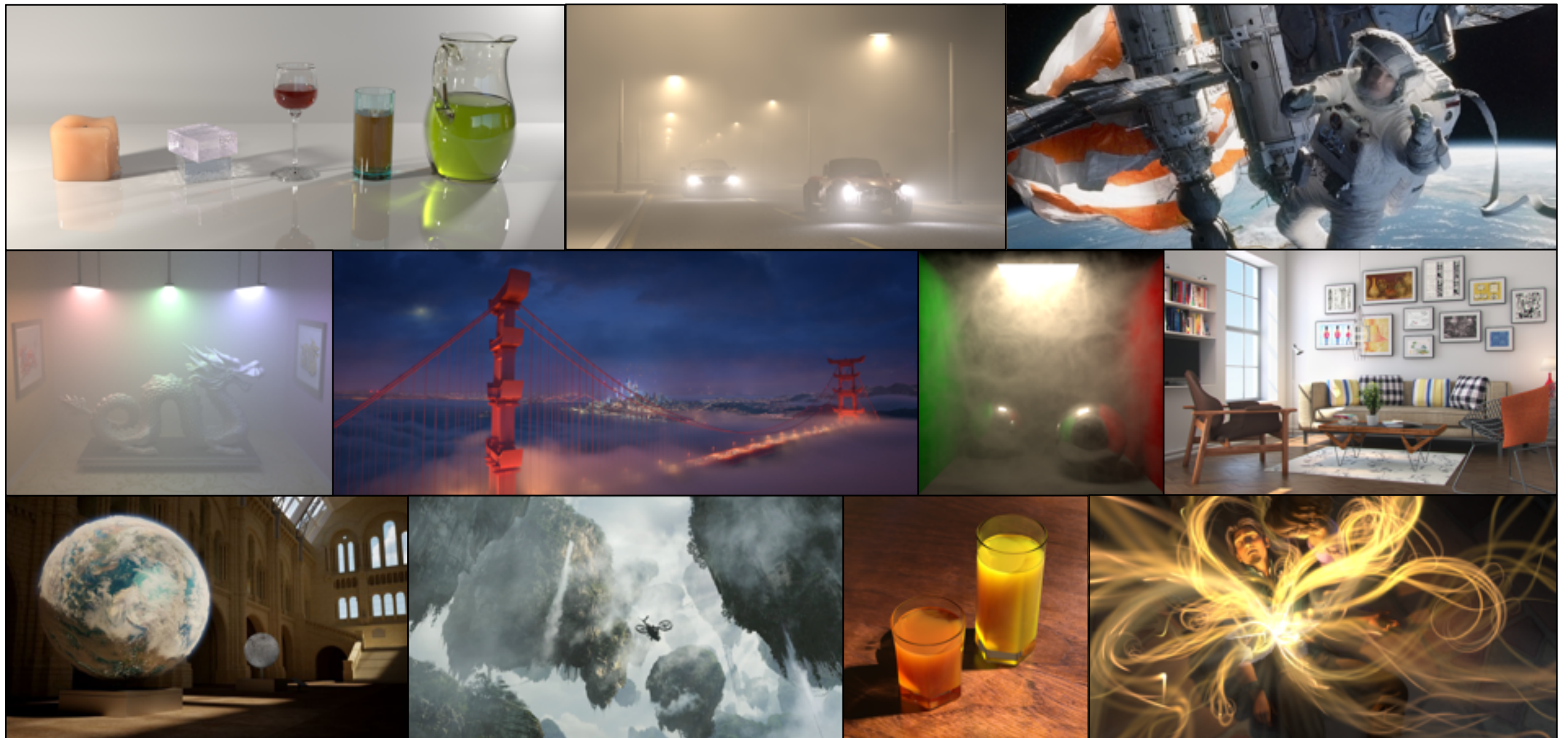# RENDERING COMPETITION
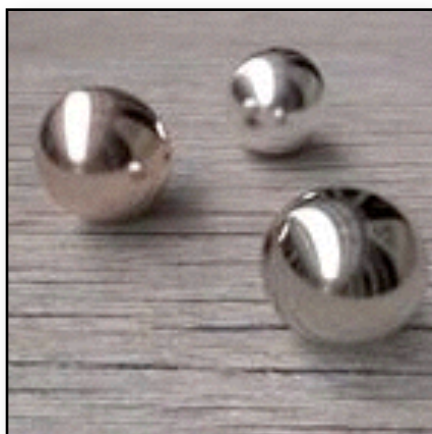

Prof. Wojciech Jarosz

wojciech.k.jarosz@dartmouth.edu
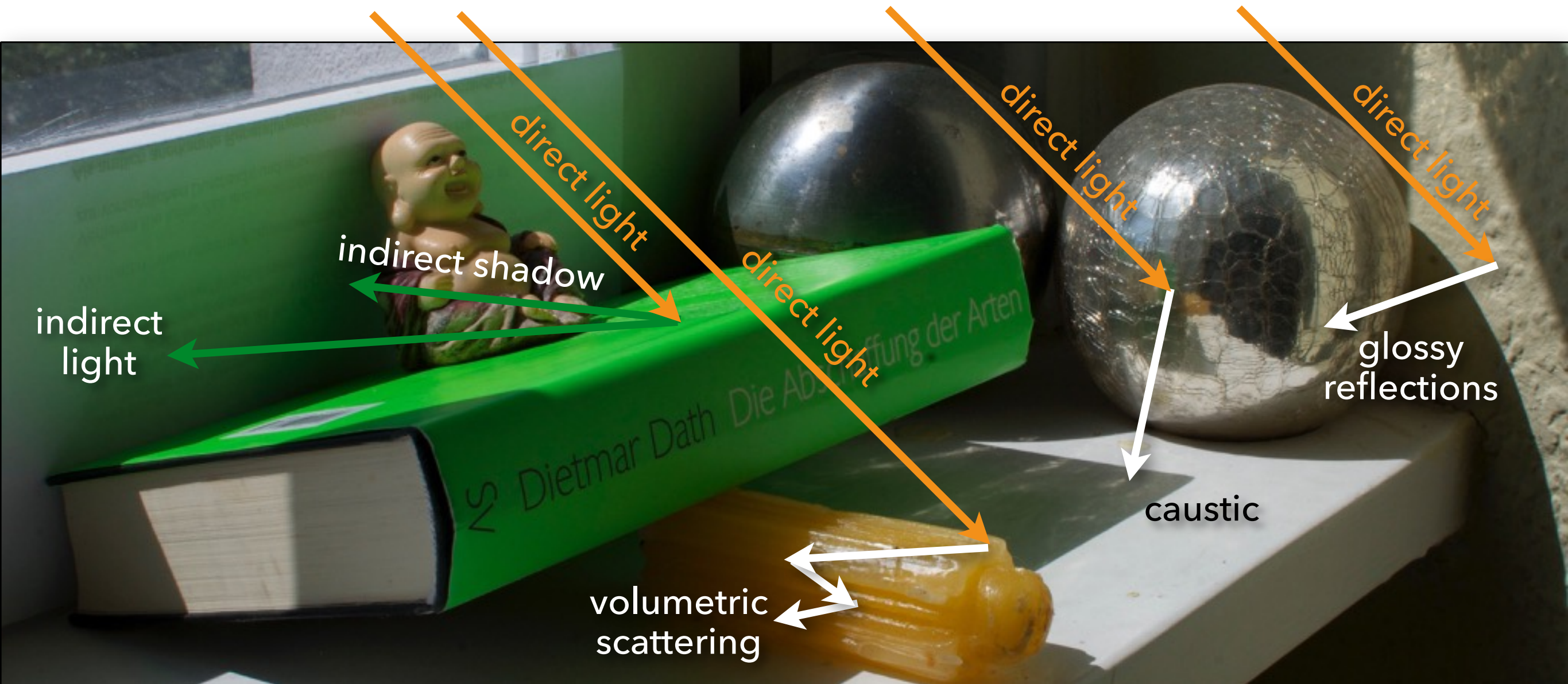
Dartmouth

Rendering

The process of converting a description of a 3D scene into an image

- **Photorealistic Rendering**: create an image of a 3D scene that is indistinguishable from a photo

- **Physically based Rendering**: *simulate* the physical behavior of light as closely as possible to *predict* what would be observed
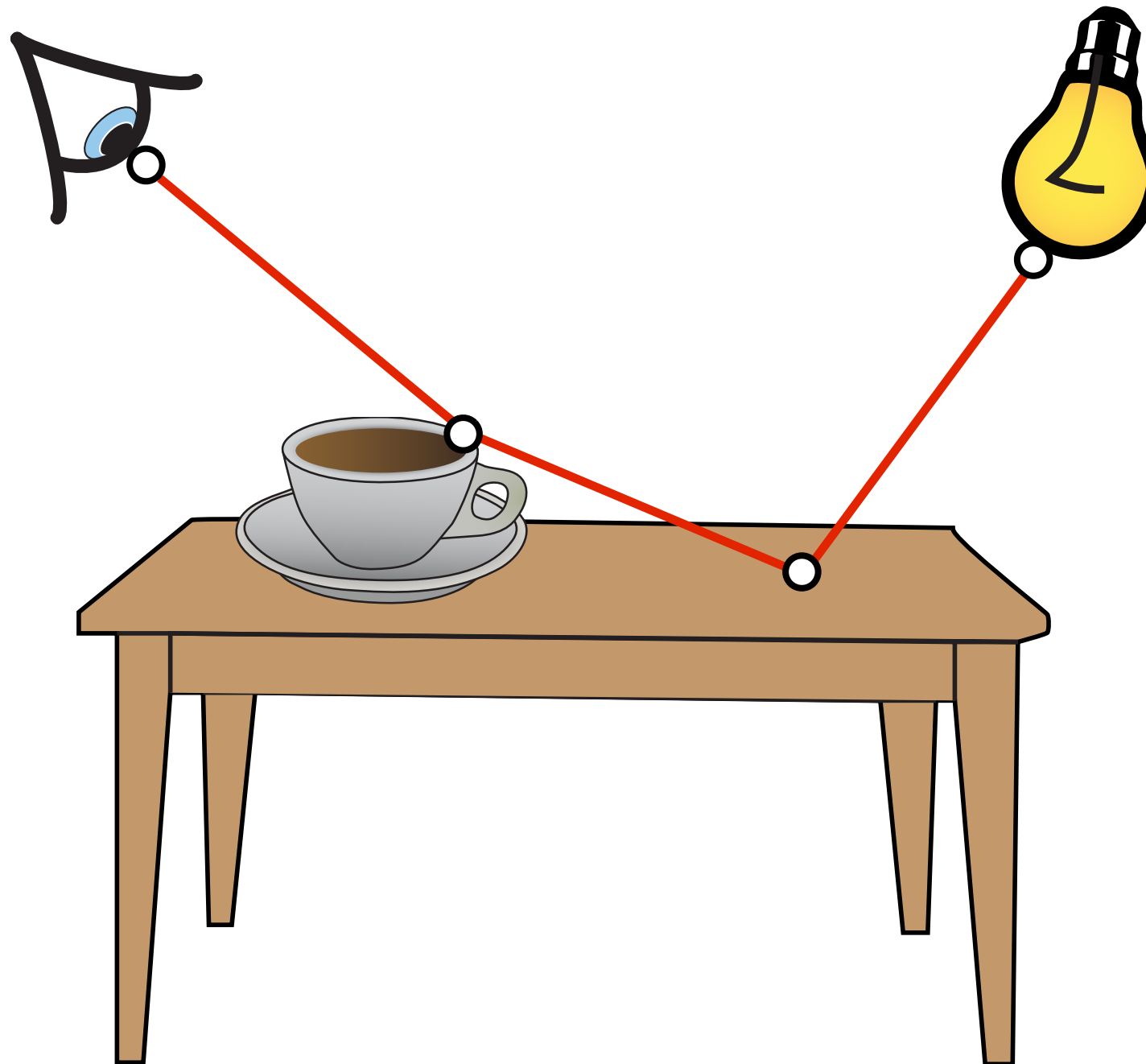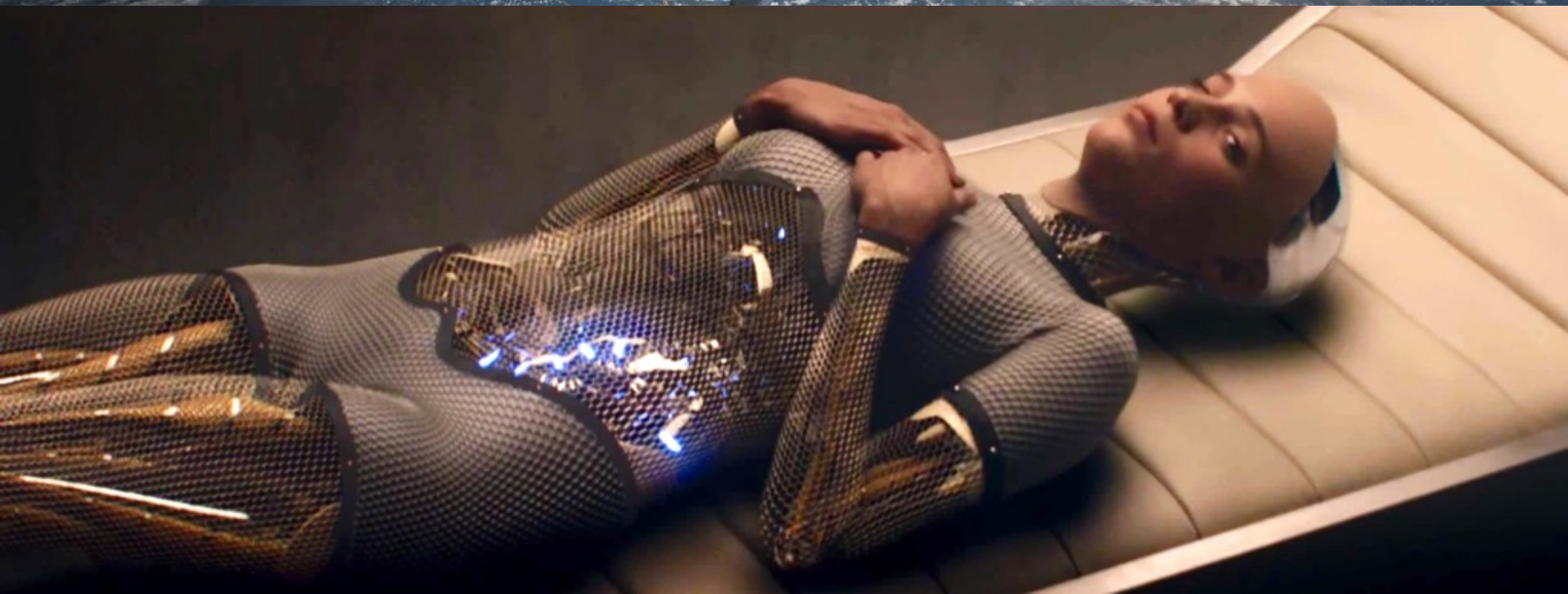
Light transport in the real world

direct light

direct light

direct light

direct light

indirect shadow

indirect light

glossy reflections

caustic

volumetric scattering

After [Ritschel et al 2011]

Ray/path tracing

Visual effects

Animated films

Architectural visualization

Product visualization

Advertising & E-commerce

What is this class about?

Algorithms for realistic image synthesis

Simulating light transport (global illumination)
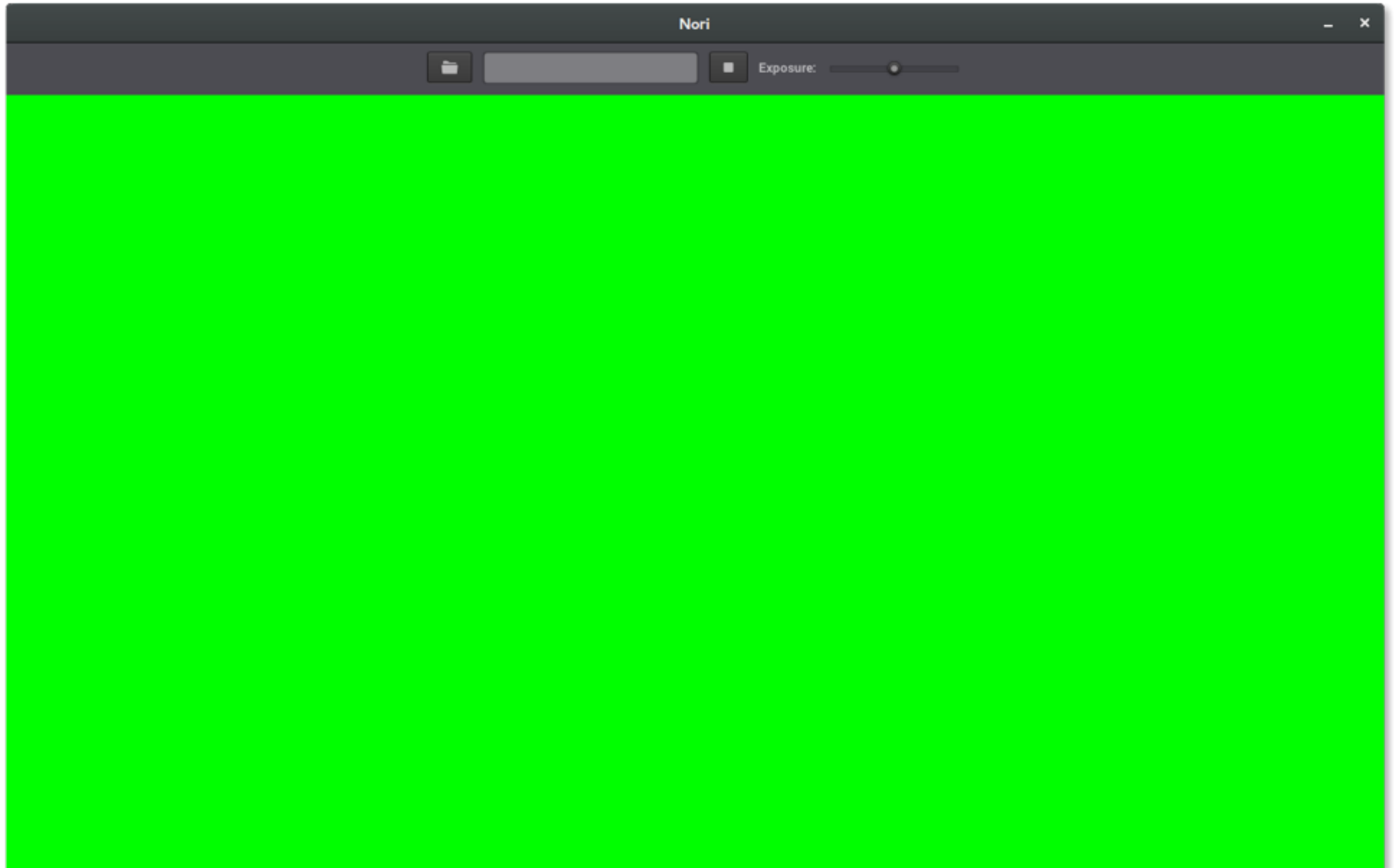
Modeling appearance (simulating materials)

Understanding why things look the way they do:

- Why is the sky blue?

- Why is the grass green?

- Why does metal look different than marble?

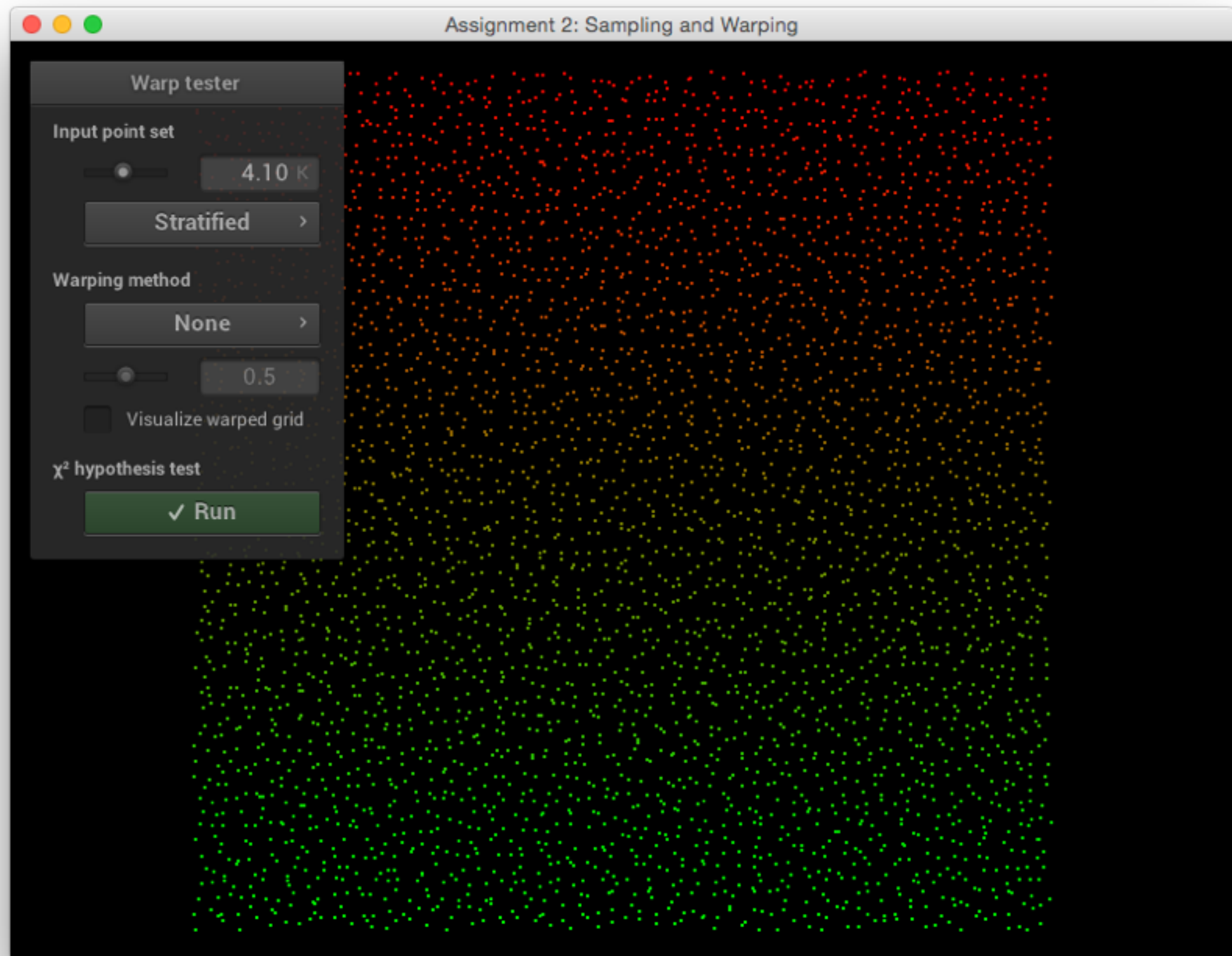Lots of programming in C++

The starting point
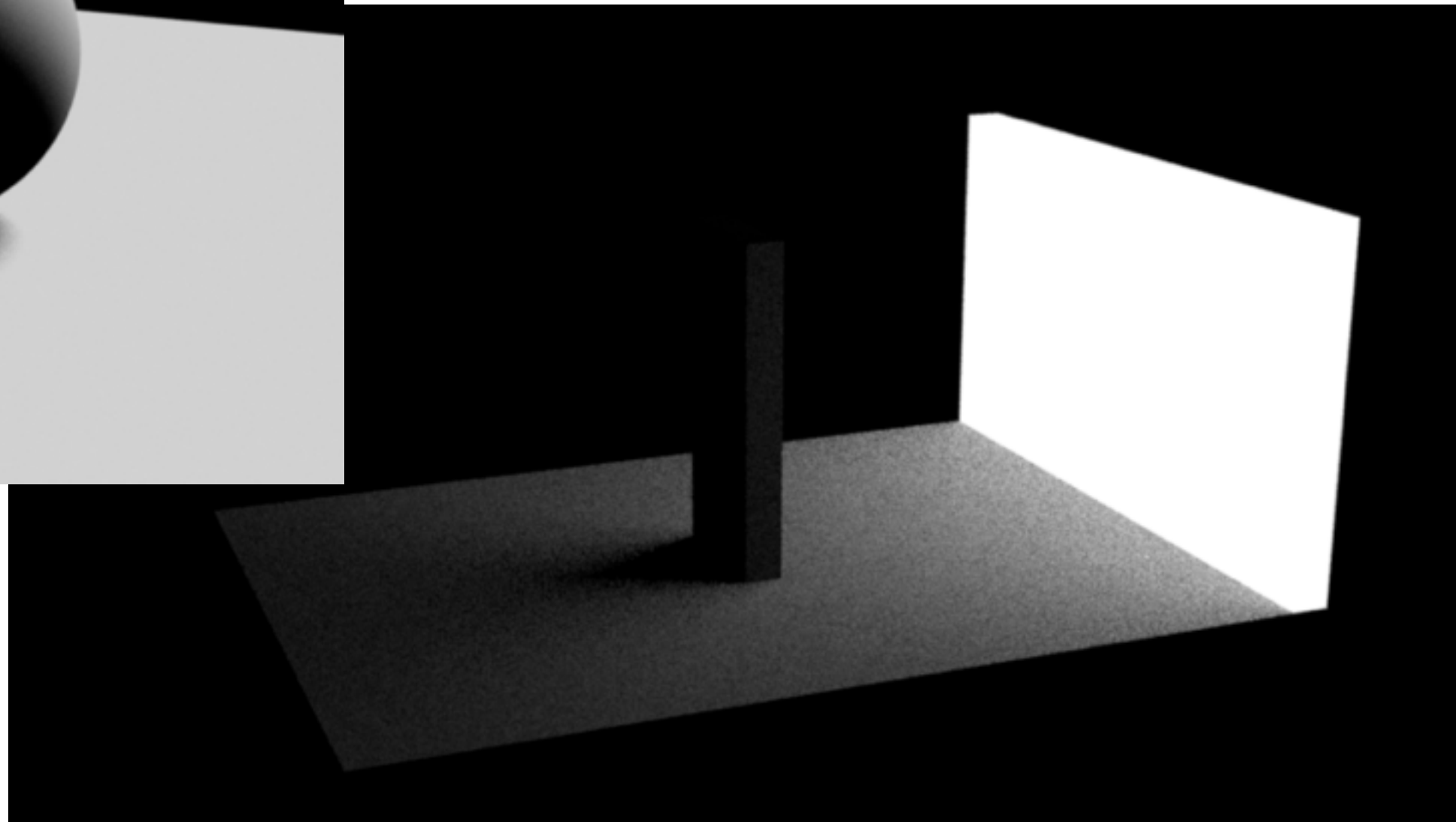
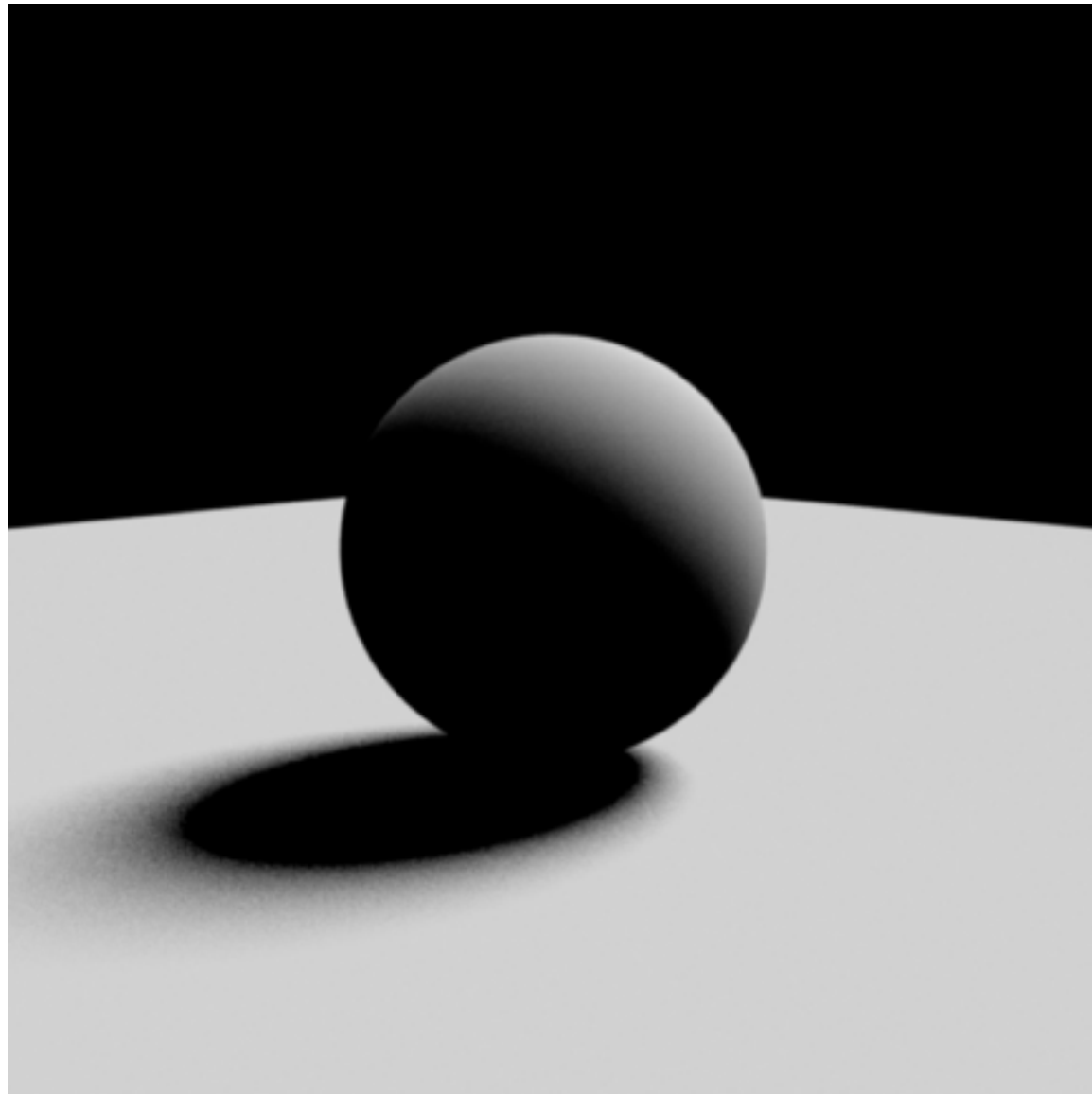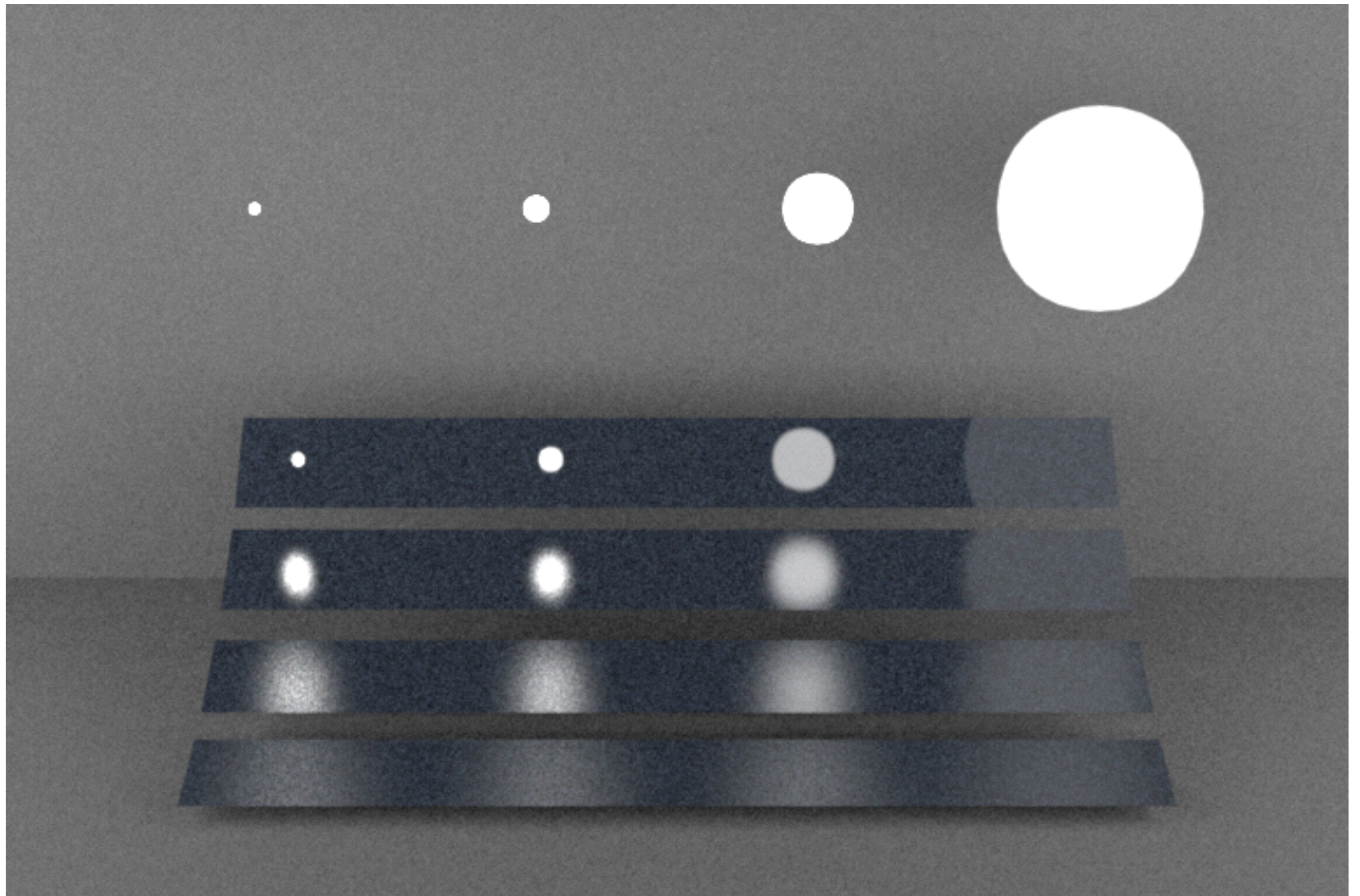# PA 1: Point lights & hard shadows

PA 2: Monte Carlo Random sampling
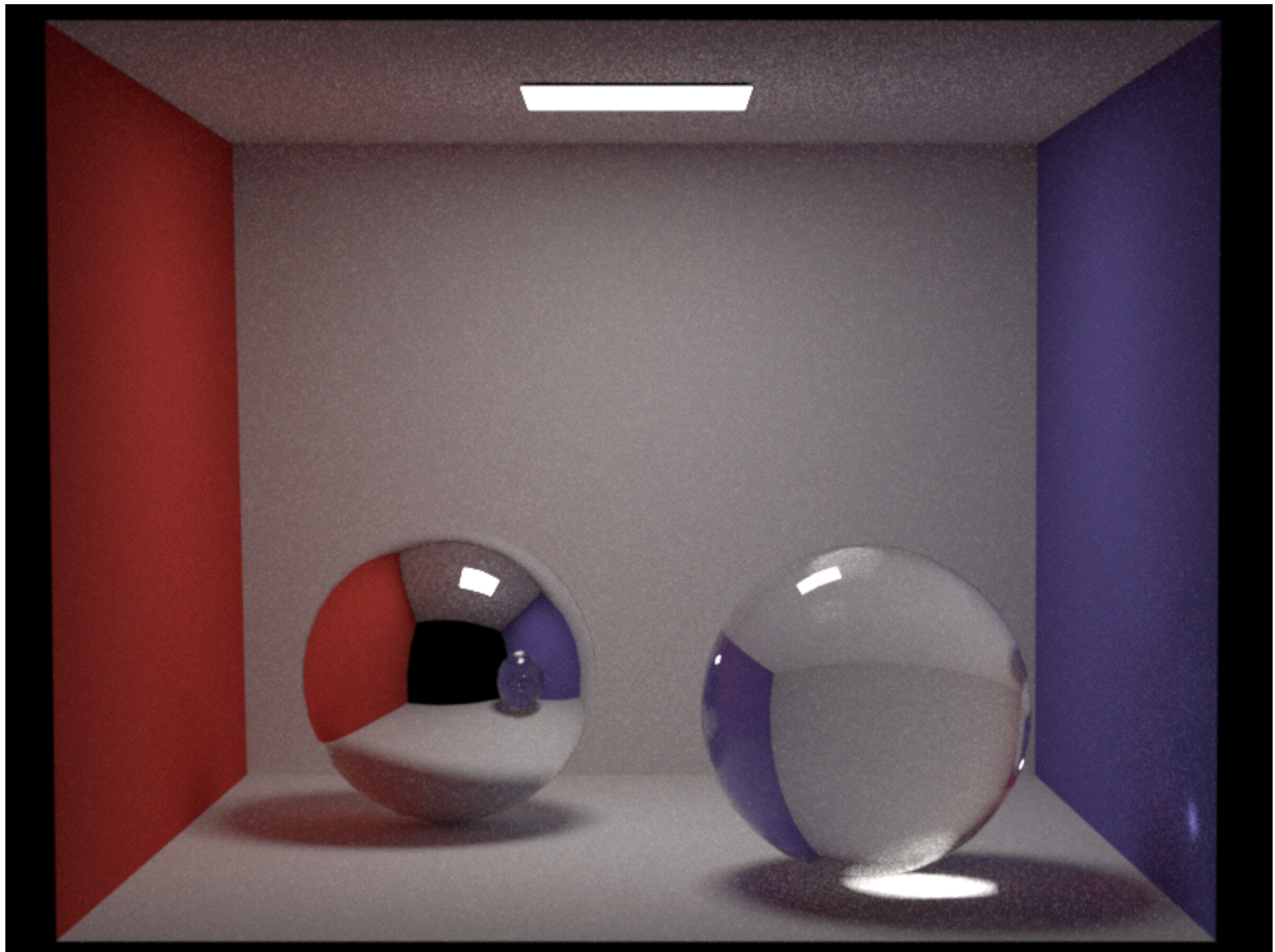
PA 3: Monte Carlo Direct illumination

PA 3: Monte Carlo Direct illumination

PA 4: Global illumination

Final Project & Rendering Competition

Add more advanced features to render a (nice) realistic image

- evaluated on a combination of:
  aesthetic appeal, technical difficulty, realism

Theme: "Contrast"

Format

10-15 minute presentations + questions

- motivation

- connection to "Contrast" theme

- techniques, technical challenges, solutions

- final image

Judges deliberate / snacks + drinks

Award ceremony

Competition Judges

Lorie Loeb (Dartmouth)

Neel Joshi (Microsoft Research)

Derek Nowrouzezahrai (University of Montreal)

Grand Prize

Let the games begin!

Sudhanshu

Yuan

Srinath

Bailey