Illumination and Ray Tracing

Summary

Illumination

Main Topics

- Light Emission and Propagation
  - Light Sources / Surface Materials / Radiant Energy
- Basic Concepts
  - Illumination Models / Transport Equation / Illumination Hemisphere
- The Rendering Equation
  - Boundary Conditions / Numerical Solution
- Computational Methods
  - Explicit Approximation (Radiosity, Radiance) / Implicit Samplig (Ray Tracing)
- Classical Solutions
  - Direct Lighting / Indirect Diffuse / Path Tracing / Photon Mapping

Ray Tracing

Main Topics

- Path Tracing
  - Three-Point LT / Integral over Paths / LTE in Surface Form
- Algorithm Implementation
  - Path Integrator (Path Sampling, Incremental Construction) / Image Generation
- Ray Tracing Options
  - Hardware (RTX) / Software (Path Tracing)
- GPU Rendering
  - Raster Pipeline / Ray Pipeline
- GPU Ray Tracing
  - Ray Generation / Ray Shading / Ray Programs / Scene Geometry