

Introduction

CIS782

Advanced Computer Graphics

Based on notes of Raghu Machiraju and Torsten Moeller

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Realism Through Synthesis



Holy Grail



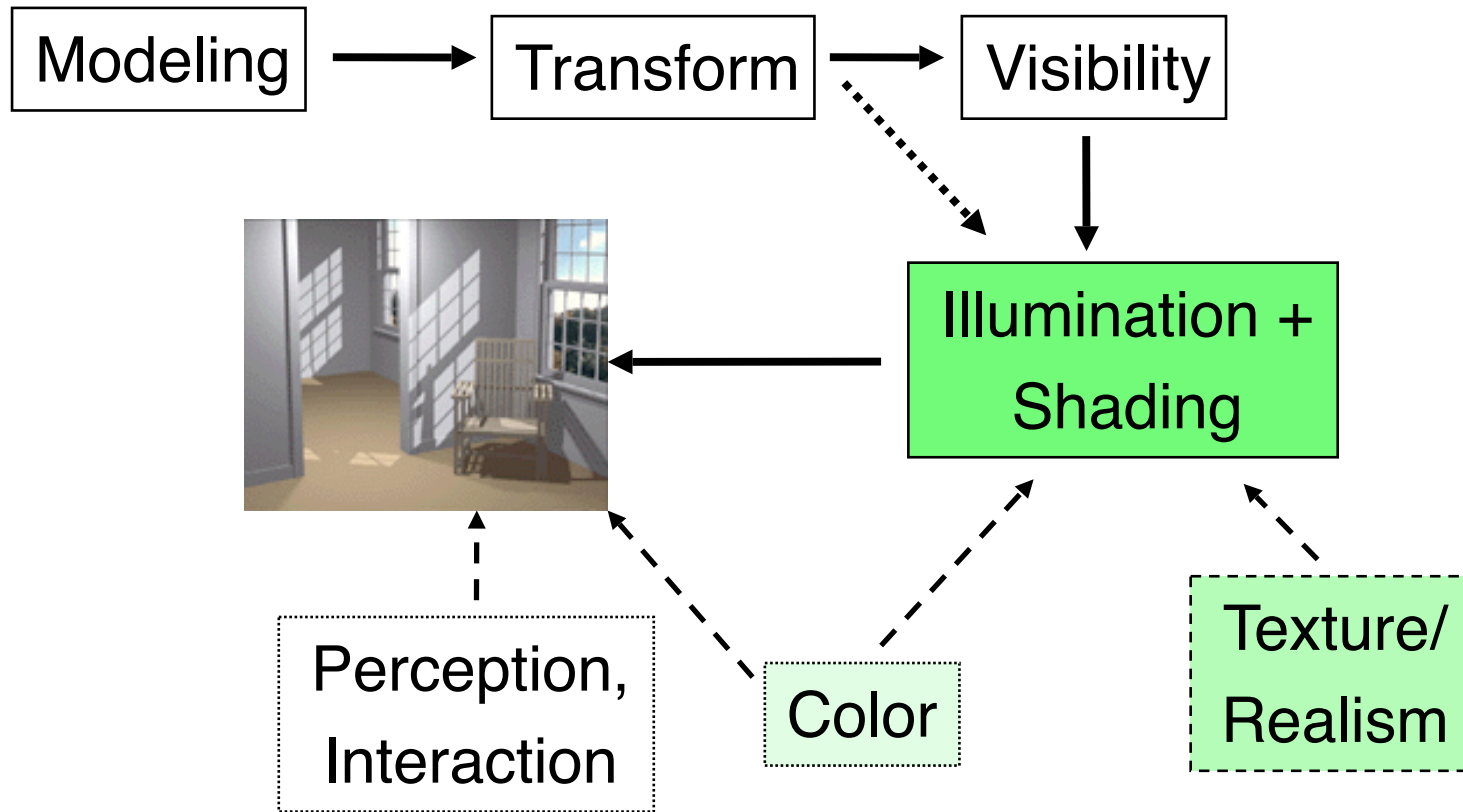
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Photorealistic (Physically Based) Rendering

- **Visibility: sampling**
 - camera to surface
 - surface to surface
 - surface to light source
- **Optics**
 - Nature of Light & its Transport
 - Interaction with surface
- **Display: sampling & color mapping**
 - Perception-based

Graphics Pipeline



Integrated Text & Software

- *Physically Based Rendering* by Pharr & Humphreys
- PBRT software from book / web site
- www.pbrt.org
- Software on your own machine?
 - * if not, let me know asap

Grading

- Labs - 40%
- Homework - 5%
- Midterm - 20%
- Final Project - 35%
- Final?

Required Background

- Good Programming Background - C/C++
- Basic computer graphics (681 or equivalent)
 - ray tracing
- Basic Linear Algebra - Matrices, Vectors
- Basic Computer Science - Data Structures, Grammars
- Basic applied math - interpolation, approximation theory

Performance expected:

- Keeping up with the text(s) is VERY important
- Reading necessary foundational material
- Respond to somewhat open-ended assignments
- Be motivated to learn the material

I am not going to ...

- Teach C/C++
- Teach Data Structures
- Teach Linear Algebra
- Teach PBRT implementation
- Hold your hand

Do immediately!

- Get **PBRT** up and running on your, or some other, computer
- Do **Lab 0**: render an image using PBRT with one of the supplied input files.
- Read the book about ‘**literate programming**’
 - this will not be covered in class!
- Start getting familiar with **PBRT software structure**
 - We’ll devote some class time to this