CMSC 435/634
Introduction to Computer Graphics

Marc Olano

TA: Kamalika Das

Background

Prerequisites

- Math 211 (Linear Algebra)
- CMSC 341 (Data Structures)

Text

- *Fundamentals of Computer Graphics*, Peter Shirley
- Several others on reserve in the library
- Read BEFORE class; ask questions!
  - Class will cover a **subset** of the material, but you are expected to know it all!

Getting to Know You

Tell me:

- Your name / major / degree
- How many other credits you're taking this semester
- What you hope to get out of this class
- How confident are you in your ability in
  - Linear algebra?
  - Data structures?
- Am I on the hold list?

What is Graphics?

Making pictures with computers?

Making pictures with math?

Making pictures with physics?
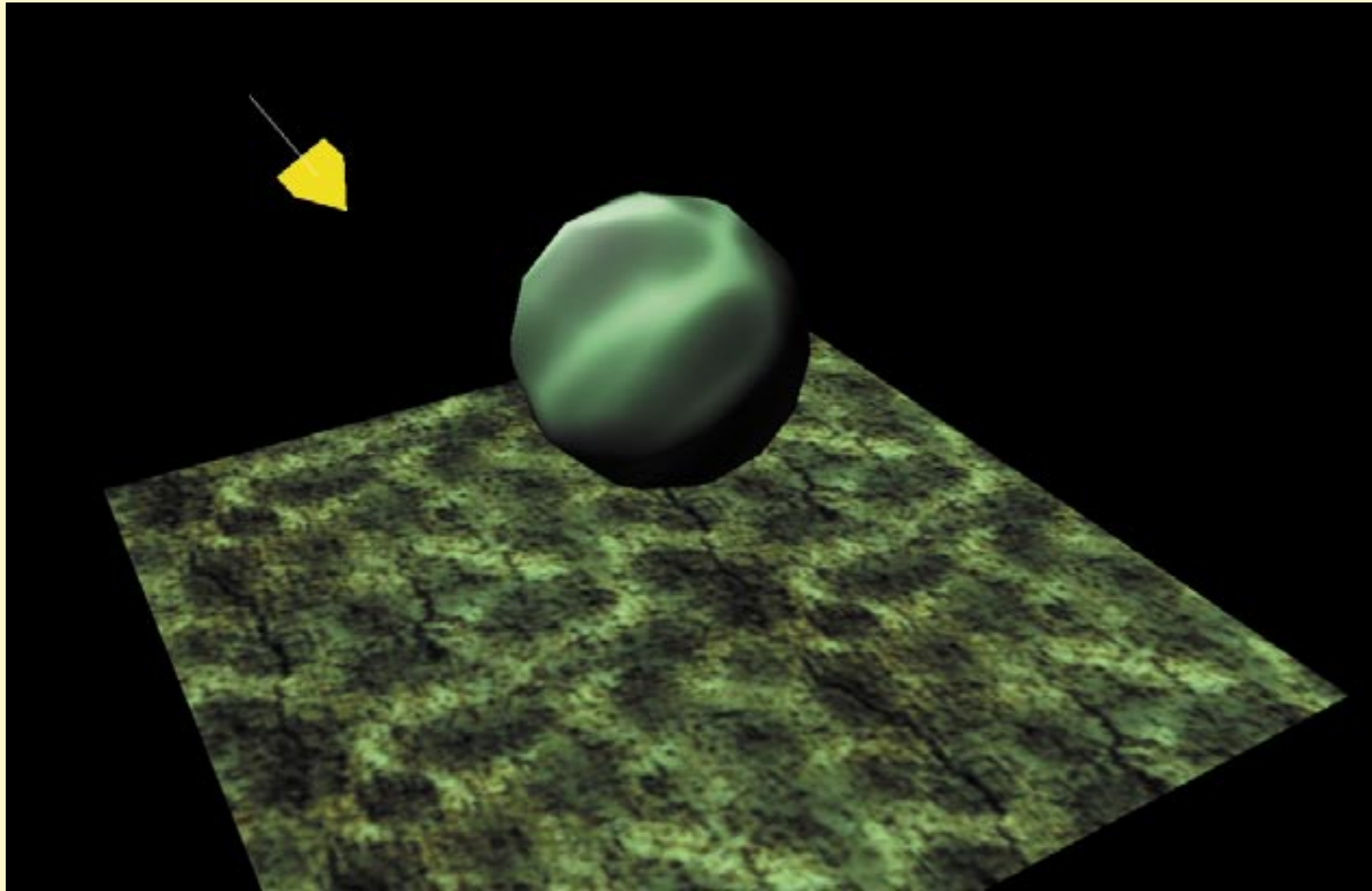
Real-time vs Off-line

Real-time/interactive

- 10–60 frames per second
- Games, interfaces, visual simulation...

Offline/production

- Seconds to hours per frame
- Movies, architectural lighting simulation, ...

Real-time

Mark Kilgard, GLUT Examples

Production

Pixar, Toy Story

Realistic vs. Artistic

Realistic/Photorealistic

- Look like real life
  - Simulate physics
  - Reasonable appearing approximation

Artistic/Non-Photo-Realistic

- Look like what an artist might produce
  - Model artist's process, physics
  - Do what looks right (an art in itself)

Realistic

Norbert Kern, POV-Ray Hall of Fame Gallery

Artistic

Bruce & Amy Gooch, *Non-Photorealistic Rendering*