CMSC 435/634: Introduction to Computer Graphics

Marc Olano
TA Pankaj Chaudhari
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 listed chapters, but you are expected to know it all!
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
Production

Toy Story, Pixar
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