COMP 600.[34]56: Rendering Techniques

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Preliminaries

1. Fill out roster

2. Go over syllabus

3. Answer questions

Discussion

In what contexts have you seen computer graphics?

What characteristics do these applications of computer graphics share?

How do they differ?

3D Computer Graphics

Modeling

Animation/Simulation

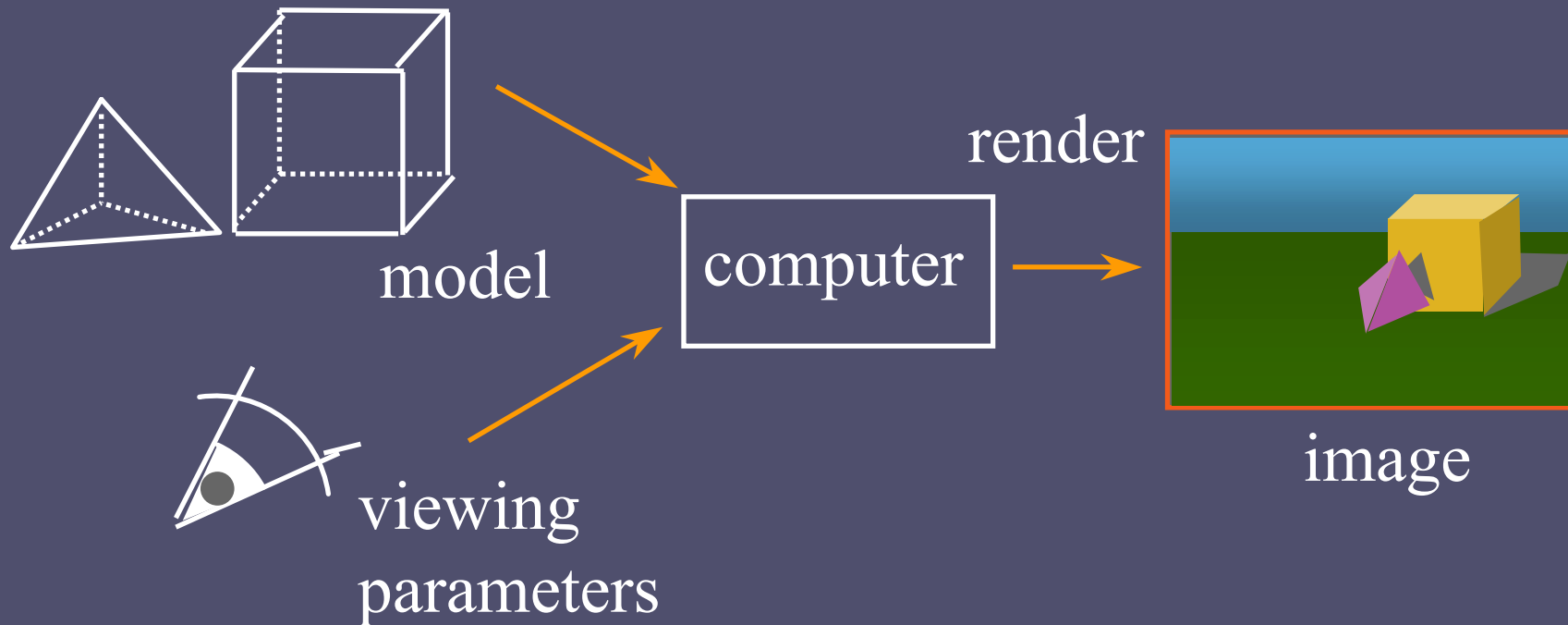**Rendering**

Overview of Topics

3D Rendering in general

Surface rendering

Volume rendering

Image-based rendering

3D Rendering

model
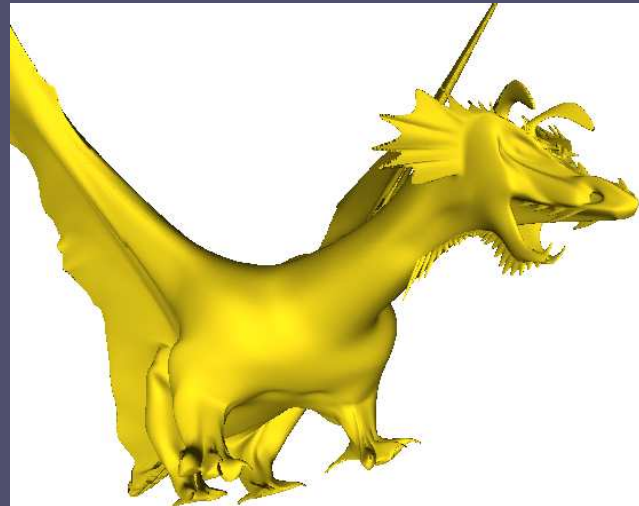
viewing parameters

computer

render

image

Types of 3D models

Surface (boundary representation)

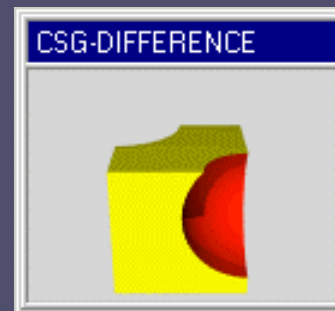- Polygonal

- Curved surface (implicit or parametric)

Types of 3D models

Volume (solid representation)

- Voxels

- Constructive solid geometry (CSG)

Type of model influences type of rendering

CSG-DIFFERENCE

Surfaces - order of traversal

First by object, then by pixel (picture element)

- Scan conversion

First by pixel, then by object

- Ray casting/tracing

Volumes - order of traversal

First by volume element, then by pixel

- Splatting

First by pixel, then by voxel

- Ray tracing

Image-based

First by image sample, then by pixel

- 3D image warping

First by pixel, then by image sample

- Light field rendering