
Introduction to 3D Graphics

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Basic Issues

- ◆ Given an internal model of a 3D world, with textures and light sources how do you project it on the screen from any perspective *fast*.
 - Restrictions on geometry
 - Restrictions on viewing perspective
 - Lots of algorithms
 - Powerful hardware
- ◆ Questions
 - How do I draw polygons on the screens?
 - Which polygons should I draw?
 - How should I rasterize them (for lighting and texture)?

Overview: “Simple” 3D Graphics

- ◆ 3D space
- ◆ Points, Lines, Polygons, and Objects in 3D
- ◆ Coordinate Systems
- ◆ Translation, Scaling, and Rotation in 3D
- ◆ Projections
- ◆ Solid Modeling
- ◆ Hidden-surface removal
- ◆ Painter’s Algorithm
- ◆ Z-Buffering