Computer Graphics Research at SKKU CGLab

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3D Computer Graphics?

The study of creating, manipulating, and using virtual images in the computer
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The study of creating, manipulating, and using virtual images in the computer

Max Edwin Wahyudi
How to create Virtual Hye-Kyo?
3D Computer Graphics?

1. Create a polygonal mesh
3D Computer Graphics?

2. Add more details
3D Computer Graphics?

3. Draw it
3D Computer Graphics?

4. Final image
3D Computer Graphics?

What more do we need?

Animation,
a good background scene,
better lighting,
as far as you imagine
What can we do with Computer Graphics?
Film Production
(Toy Story, Pixar 1995)
Film Production
(Lord of the Rings: The Two Towers, 2002)
Computer-Aided Design: Virtual Prototyping
Virtual Reality: Training and Simulation
Human-Computer Interaction: Augmented Reality
More on Rendering
Big Picture in 3D Computer Graphics

Modeling  Rendering  Animation
Rendering: Goals

A good image?

Photorealism vs. Better perception
Rendering: Photorealism

Simulation of light physics
2 Basic Rendering Techniques

- Rasterization (e.g., OpenGL, DirectX)
- Ray Tracing
Rasterization (e.g., OpenGL, DirectX)
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Rasterization (e.g., OpenGL, DirectX)
Ray Tracing (e.g., film production)
Ray Tracing (e.g., film production)

with Soft Shadows
Ray Tracing (e.g., film production) with Lens Blur