

Applications :

Video Games, Movies, Animations, Design, Visualization.

Virtual Reality (虚拟现实：看不见现实)

Augmented Reality (增强现实：虚拟结合现实)

Digital Illustration

Simulation (模拟)

Graphical User Interfaces (GUI) (图形化用户界面)

Typography (字体设计：点、降和矢量)

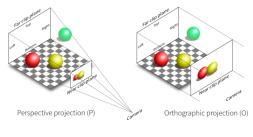
我们计算机图形学真是太厉害啦！

Course Topics:

Rasterization	光栅化
Curves and Meshes	曲线和网格
Ray Tracing	光线追踪
Animation / Simulation	动画 / 模拟

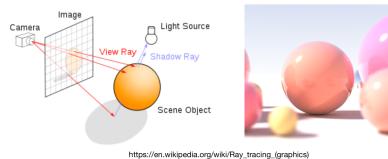
Rasterization

- Project geometry primitives (3D triangles / polygons) onto the screen
- Break projected primitives into fragments (pixels)
- Gold standard in Video Games (Real-time Applications)



Ray Tracing

- Shoot rays from the camera through each pixel
 - Calculate intersection and shading
 - Continue to bounce the rays till they hit light sources
- Gold standard in Animations / Movies (Offline Applications)

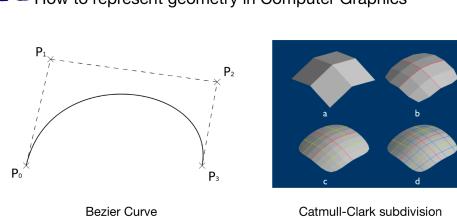


光栅化：
把3D空间几何型体映射到平面上
实时：30 FPS

光线追踪
生成质量更高的画面
人生就是 trade off?

Curves and Meshes

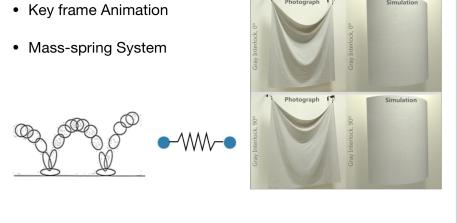
曲线和网格：如何表示几何？



Animation / Simulation

动画 / 模拟

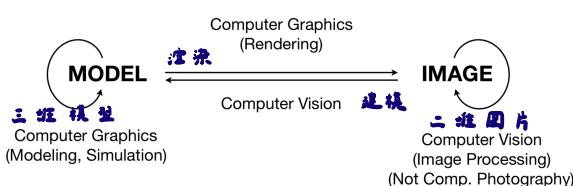
- Key frame Animation
- Mass-spring System

**GAMES 101 程道不程序**

计算机图形学 vs 计算机视觉：是否需要猜测？

Differences?

- Personal Understanding



- No clear boundaries 应用兼容、界线模糊
- And I can't define Computer Graphics