



Computer Animation

Johns Hopkins Department of Computer Science
Course 600.456: Rendering Techniques, Professor: Jonathan Cohen



What is it?

- **Sequence of computer-generated images**
- **Objects, lights, and cameras may be moving and changing over time**
- **May be generated off-line (as opposed to real-time)**

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What is it used for?

- **Fully computer-generated films (short or feature length)**
 - **entertainment**
 - **visualization of simulation data**
- **Special effects added to real camera footage**

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Common Approaches

Key frame animation

Physically-based simulation

Motion capture

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Key Frame Animation

Specify animation parameters at particular points in time

- **Positions and orientations of objects, lights, and cameras**
- **Non-rigid-body modifications in object geometry**
- **Non-geometric parameters, such as color and intensity of lights, focus of cameras, etc.**

Specify interpolation modes

- **None, linear, higher-order splines, etc.**
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Hierarchical Specification

Hierarchical objects assigned parent/child relationships

- **Child object parameters specified relative to parent**
- **Interpolations performed on these relative parameters rather than absolute**

Often useful for articulated figures, such as humans or animals

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