Computer Graphics -Introduction of Animation

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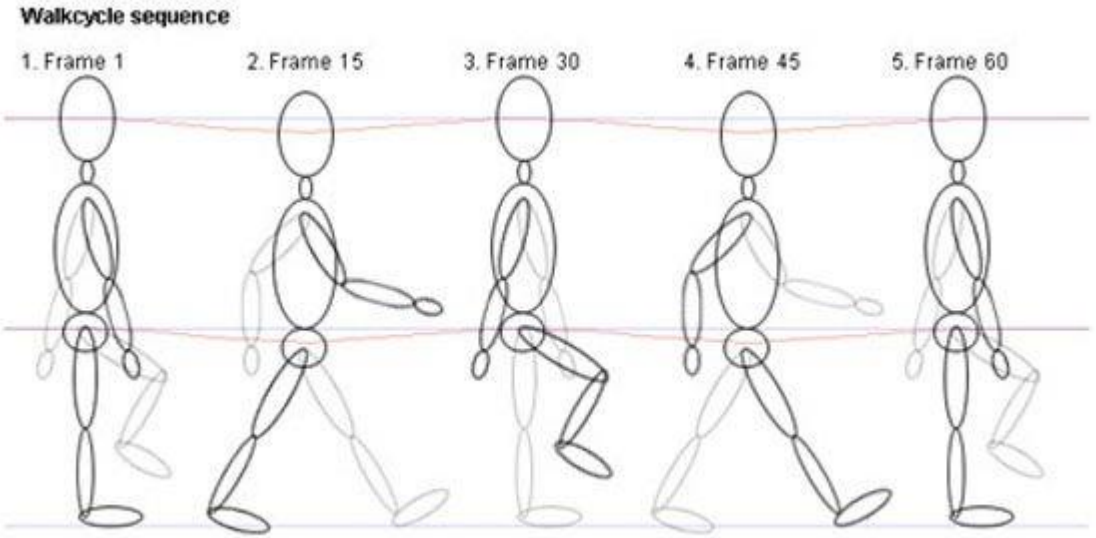
http://jjcao.github.io/ComputerGraphics/

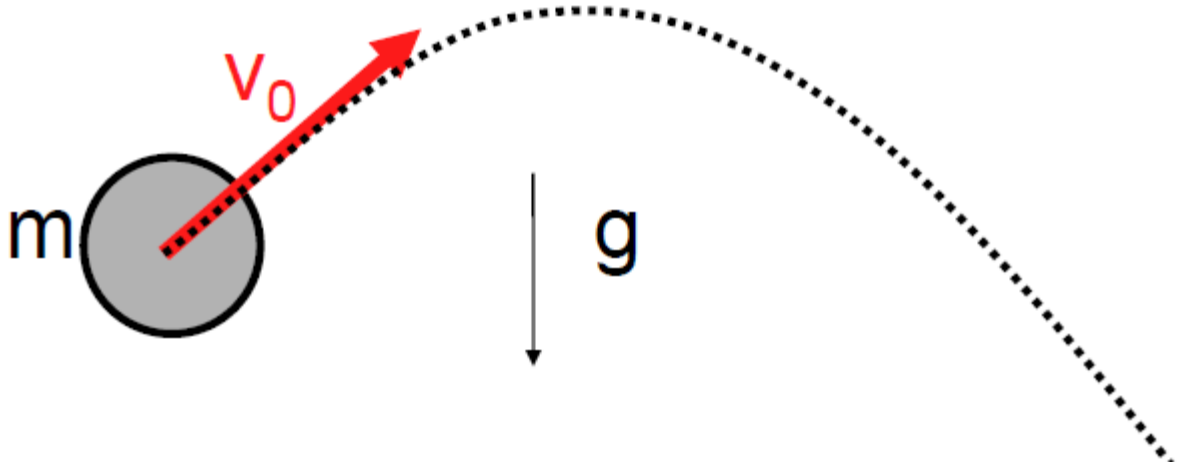
How do we animate?

- Keyframing
- Motion Capture
- Procedural
- …
- Physically-based
  - Particle Systems: **TODAY**
    - Smoke, water, fire, sparks, etc.
    - Usually heuristic as opposed to simulation, but not always
    - Mass-Spring Models (Cloth) **NEXT CLASS**
  - Continuum Mechanics (fluids, etc.), finite elements
    - Not in this class
  - Rigid body simulation
    - Not in this class
- Forward and Inverse Kinematics



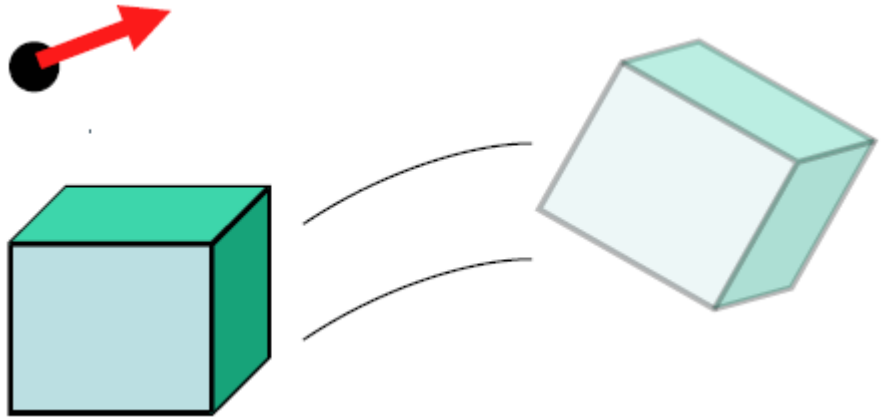
Types of Animation: Physically-Based

- Assign physical properties to objects
  - Masses, forces, etc.
- Also procedural forces (like wind)
- Simulate physics by solving equations of motion
  - Rigid bodies, fluids, plastic deformation, etc.
- Realistic but difficult to control



Types of Dynamics

- Point



- Rigid body

- Deformable body (include clothes, fluids, smoke, etc.)

Sig02 Melting and Flowing, by Mark Carlson, etc.