CSCI 520 Computer Animation and Simulation

Motion Capture

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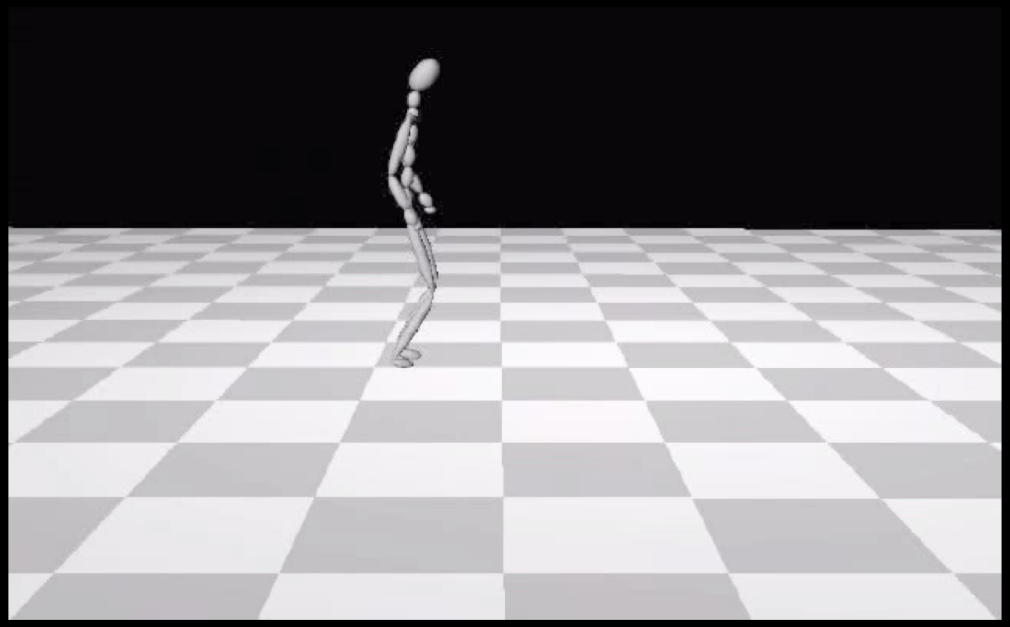
What is Motion Capture?

- Motion capture is the process of tracking real-life motion in 3D and recording it for use in any number of applications.

Why Motion Capture?

- Keyframes are generated by instruments measuring a human performer — they do not need to be set manually
- The details of human motion such as style, mood, and shifts of weight are reproduced with little effort



Mocap Technologies: Optical

- Multiple high-resolution, high-speed cameras
- Light bounced from camera off of reflective markers
- High quality data
- Markers placeable anywhere
- Lots of work to extract joint angles
- Occlusion
- Which marker is which? (correspondence problem)
- 120-240 Hz @ 1Megapixel

Facial Motion Capture

Mocap Technologies: Electromagnetic

- Sensors give both position and orientation
- No occlusion or correspondence problem
- Little post-processing
- Limited accuracy

Mocap Technologies: Exoskeleton

- Really Fast (~500Hz)
- No occlusion or correspondence problem
- Little error
- Movement restricted
- Fixed sensors

Motion Capture

- Why not?
  - Difficult for non-human characters
    - Can you move like a hamster / duck / eagle ?
    - Can you capture a hamster's motion?
  - Actors needed
    - Which is more economical:
      - Paying an animator to place keys
      - Hiring a Martial Arts Expert

When to use Motion Capture?

- Complicated character motion
  - Where “uncomplicated” ends and “complicated” begins is up to question
  - A walk cycle is often more easily done by hand
  - A Flying Monkey Kick might be worth the overhead of mocap
- Can an actor better express character personality than the animator?