Motion Capture and Time Series

• “Leveraging the Talent of Hand Animators to Create Three-Dimensional Animation”, Eakta Jain, Yaser Sheikh, Jessica Hodgins (SCA 2009)

• Possible project for this class

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Hand-Drawn Animation

Snow White, Walt Disney Studios
Spirited Away, Hayao Miyazaki

Hand animator’s workdesk

Three-Dimensional Animation

Ice Age, Blue Sky Studios
The Incredibles, Pixar

3D animation software
Approach

Hand animation ▸ User input ▸ Time alignment ▸ Pose alignment ▸ 3D animation
User Input: Motion Capture Data

Motion capture database

User Input

Motion capture segment
Time Series Matching

Query frames $Q = \{q_1, q_2, \ldots q_N\}$

From database $D$, find the most similar frames $F = \{f_1, f_2, \ldots f_M\}$
Challenges

- Notion of similarity
  - Pose descriptor
  - Others?
- Length of matching sequence unknown
- Reasonably quick over large databases
Resources

• Project website: http://graphics.cs.cmu.edu/projects/lifting2d3d/
  – Demo code + data
• CMU motion capture database: http://mocap.cs.cmu.edu/
• Eakta Jain: ejain+@cs.cmu.edu