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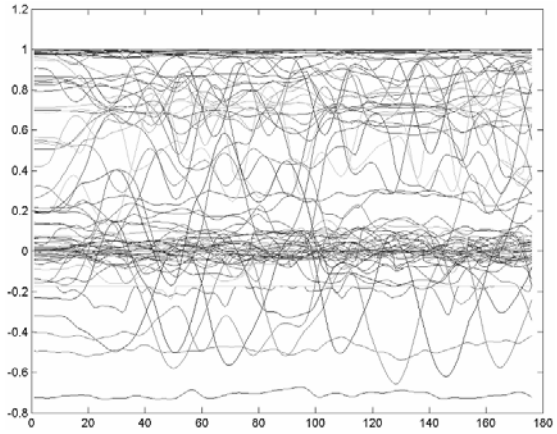
Motion Capture



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Data Acquisition

- mechanical
  - *joint angles*
- electromagnetic
  - *6 DOF sensors*

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Data Acquisition (cont)

- active optical systems
  - *self-identifying markers*
- passive optical systems

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Data Acquisition (cont)

- building a skeleton
  - *joint locations, limb lengths*
- from marker positions to joint angles
- data cleanup

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Editing Mocap Data

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- map onto a new character
  - *e.g., character that is larger than actor*
- change the motion
  - *e.g, walk with larger steps, higher jump*
- take physics into account?
- maintaining constraints
  - *footskate cleanup*
- mirroring and transplanting limbs

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Using Mocap Data

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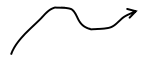
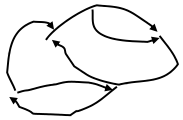
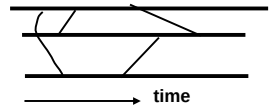
- continuous motion spaces
  - *e.g., walk(speed, turning rate)*



- discrete motion spaces
  - *e.g., motion graphs from motion capture soup*
  - *e.g., designed motion trees for games*
  - *when can we transition btwn two motions?*
  - *what should the blend time be?*
  - *which motions to add?*





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Using Mocap Data (cont)

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- planning in discrete and continous motion spaces
- UIs for using discrete and continous motion spaces
- abstracting motion style

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Limitations of mocap

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- ***can never have enough motion data !***
- complex interactions with the environment,
  e.g, tripping over a box; colliding football players
- motion done in the context of an environment and this context is not captured
  e.g., objects, other people
- motions can be composed
  e.g., can walk and scratch one's head
- motion can have huge variation and expressiveness
  e.g., acting, dancing, particular walk
  e.g., facial animation
- not a predictive model

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