

H-Anim Hands and Feet Animation

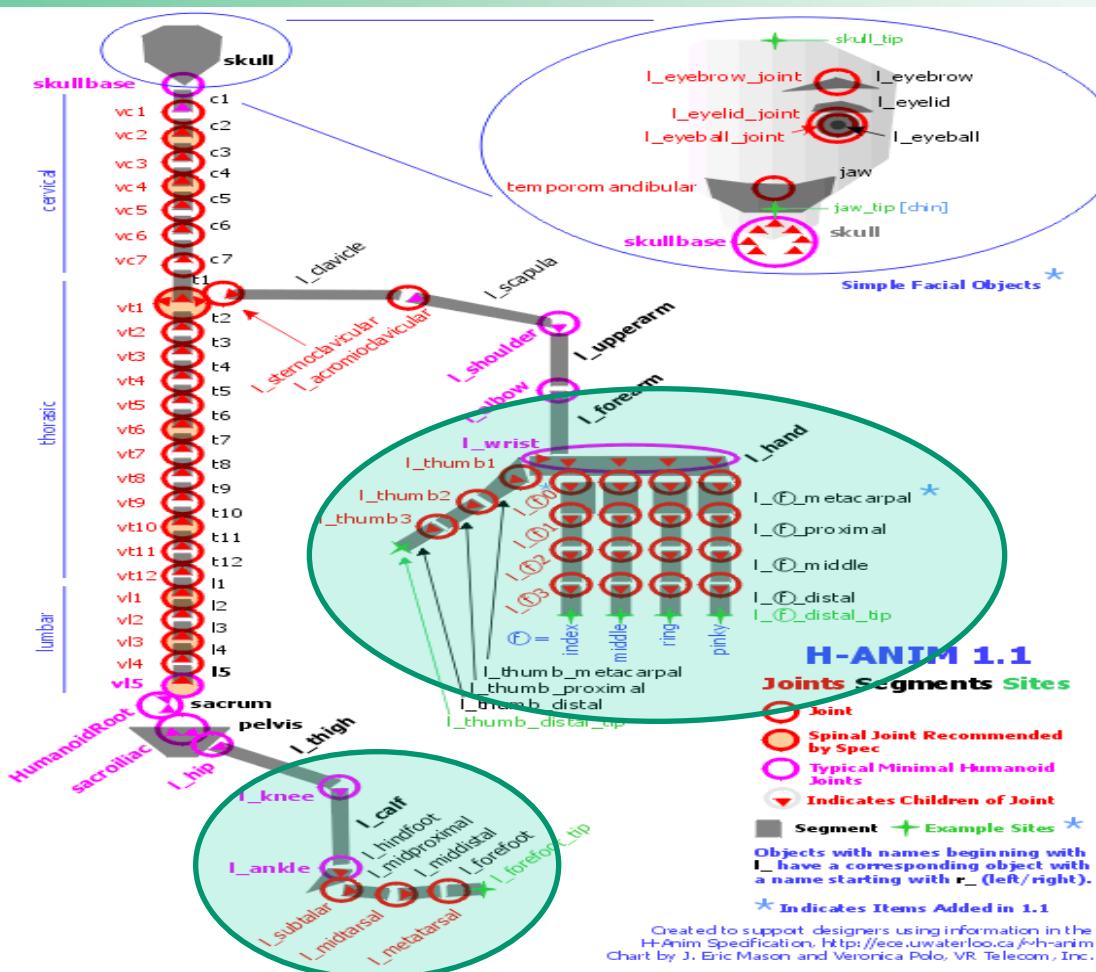
ISO/IEC JTC 1/SC 24 Plenary & WG6 Meetings
August 26-30, 2013

Kwan-Hee Yoo
Chungbuk National University

Introduction

- H-Anim
 - ISO/IEC 19774: 2006 Information technology — Computer graphics and image processing — Humanoid animation (H-Anim) 1.1
 - Will be updated
- Human Body Animation
 - Head, Face
 - Vertebrae, Hip
 - Arms
 - Hands
 - Leg
 - Feet

Humanoid animation (H-Anim) 1.1



ISO/IEC 19774: 2006 Information technology — Computer graphics and image processing — Humanoid animation (H-Anim) 1.1

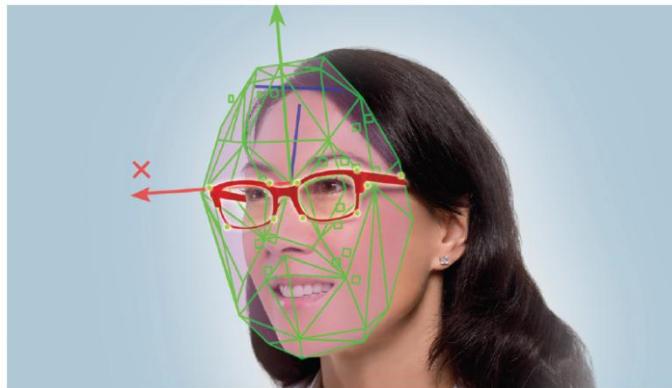
Hands and Feet

- Hands
 - Gestures User Interface
 - Hand Sign Languages
- Feet
 - Dancing
 - Walking Analysis in Medicine

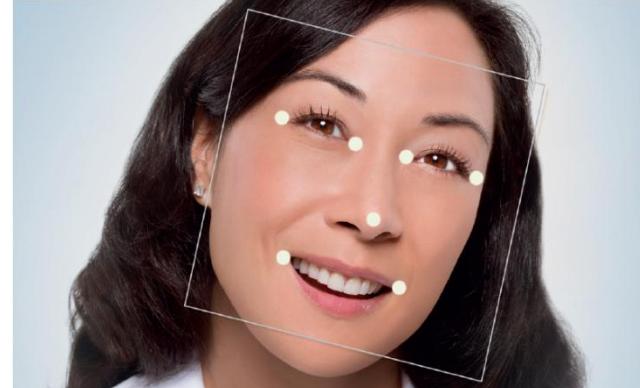
Hands

- Three kinds of hand joints
 - metacarpal joints
 - finger joints
 - joints between metacarpi and fingers
- Animation
 - Palm Animation
 - Fingers Animation

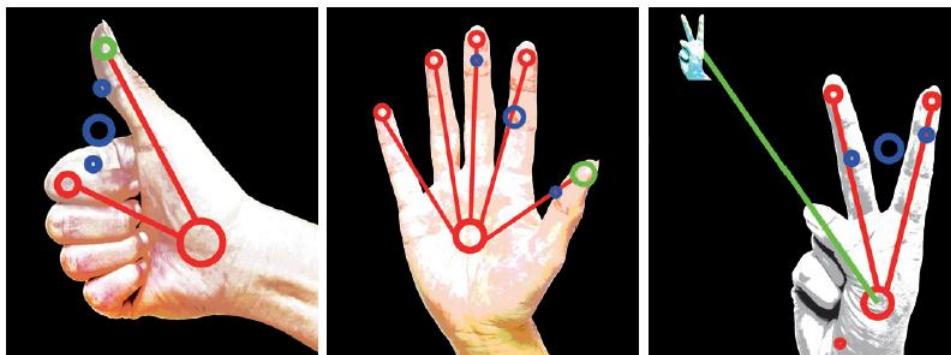
Sensing Device (Senz 3D)



2D/3D Object Tracking



Facial Analysis

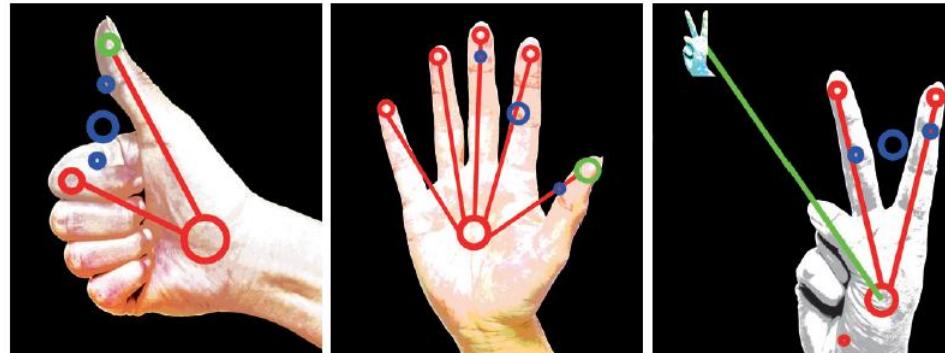


Close-Range Finger Tracking



Speech Recognition

Sensing Device (Senz 3D)



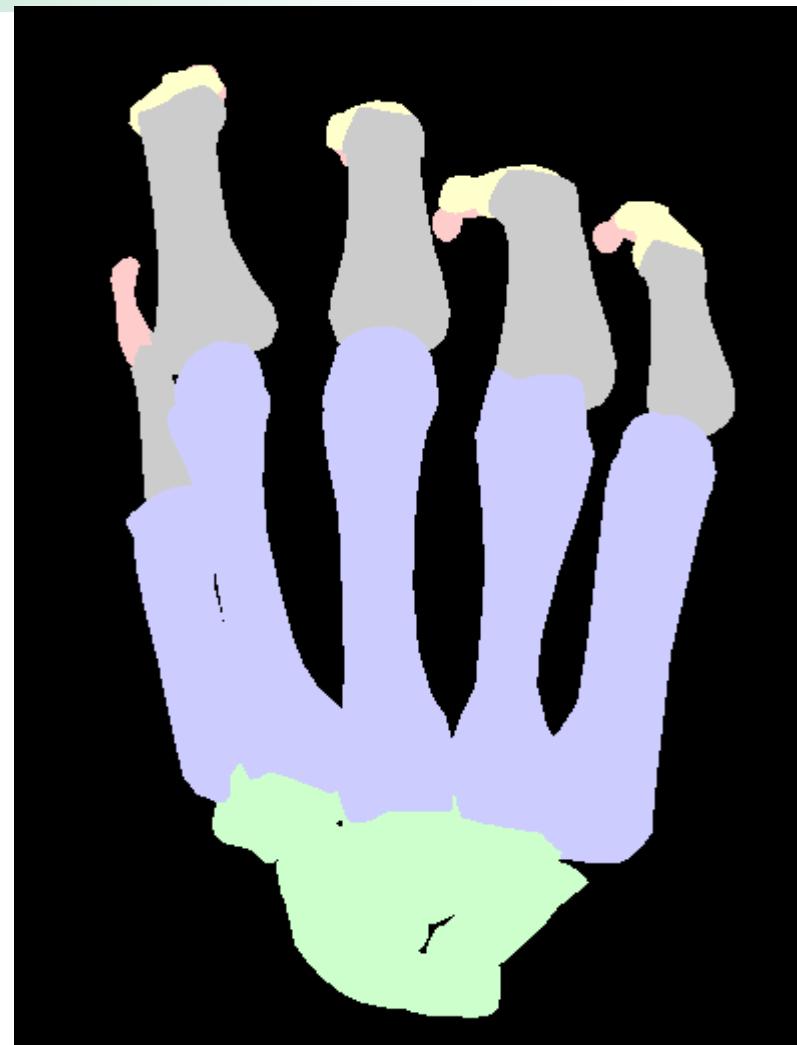
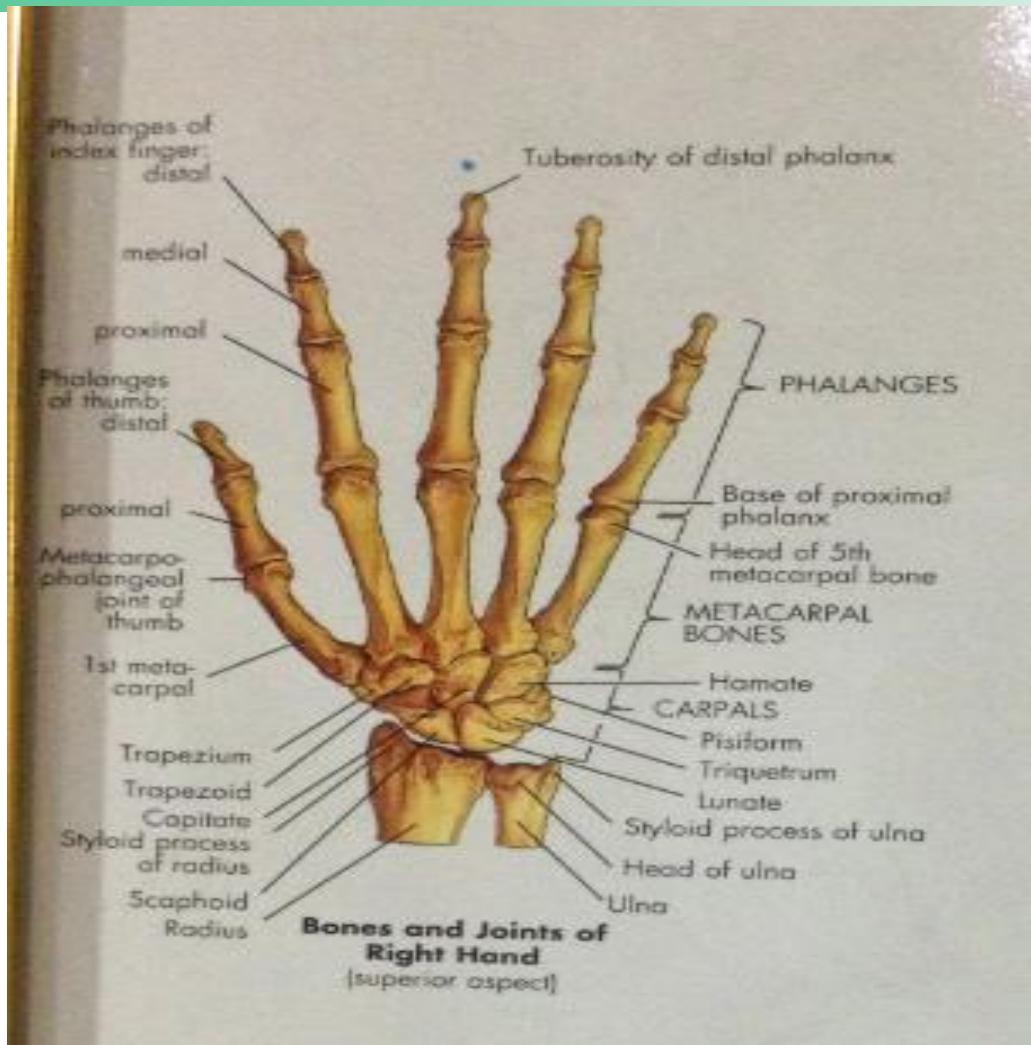
Close-Range Finger Tracking

Geometric Node Tracking

- 7-point tracking : fingertips, palm center and elbow.
- Special usability Points: fingertip and grabbing points.
- Estimate positions, volumes, openness and handedness.

Standardized Poses/Gestures

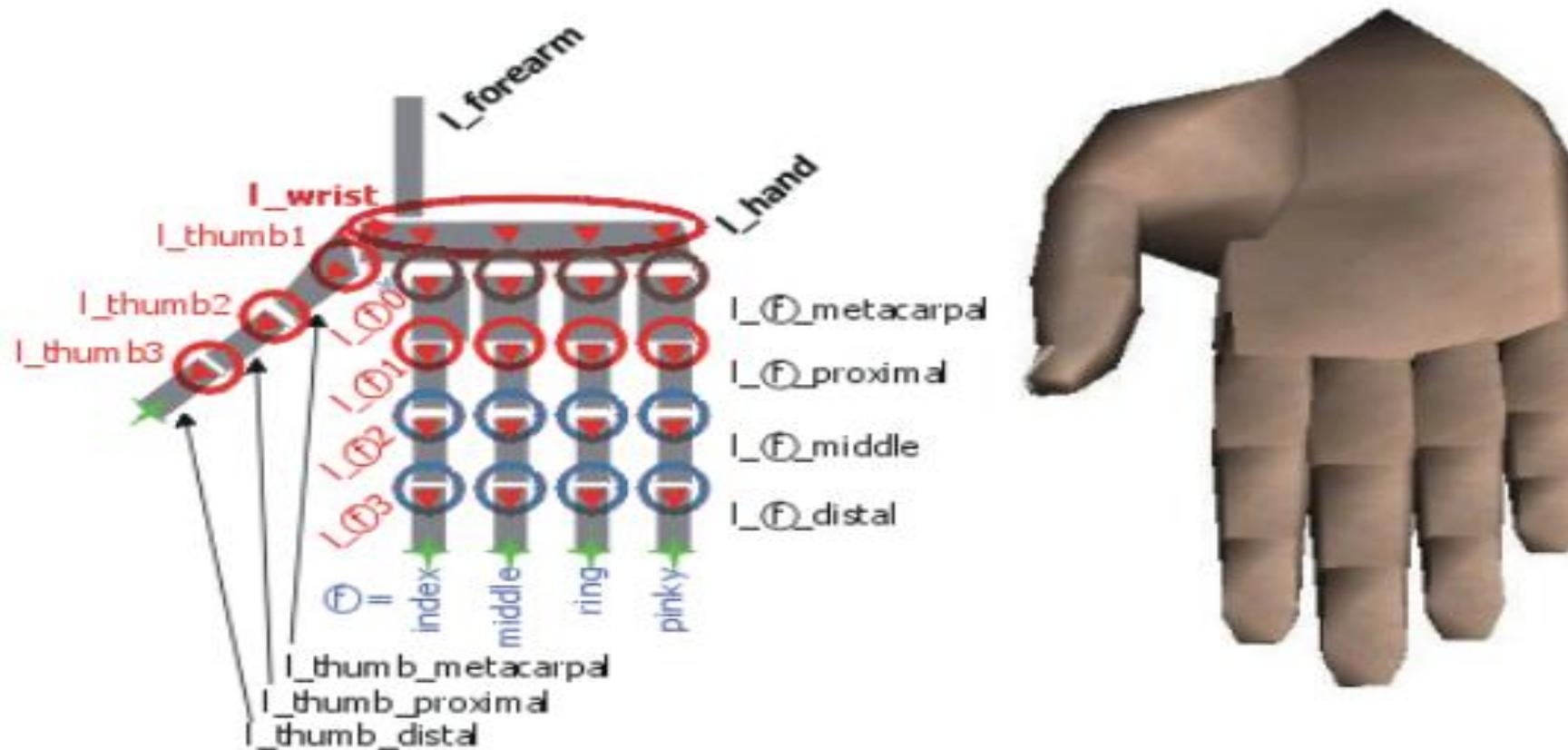
- Poses : thumb up/ down and peace
- Gestures : swipe left/right/up/down, circle, and wave



<http://www.youtube.com/watch?v=zyl6eoU-3Rg>

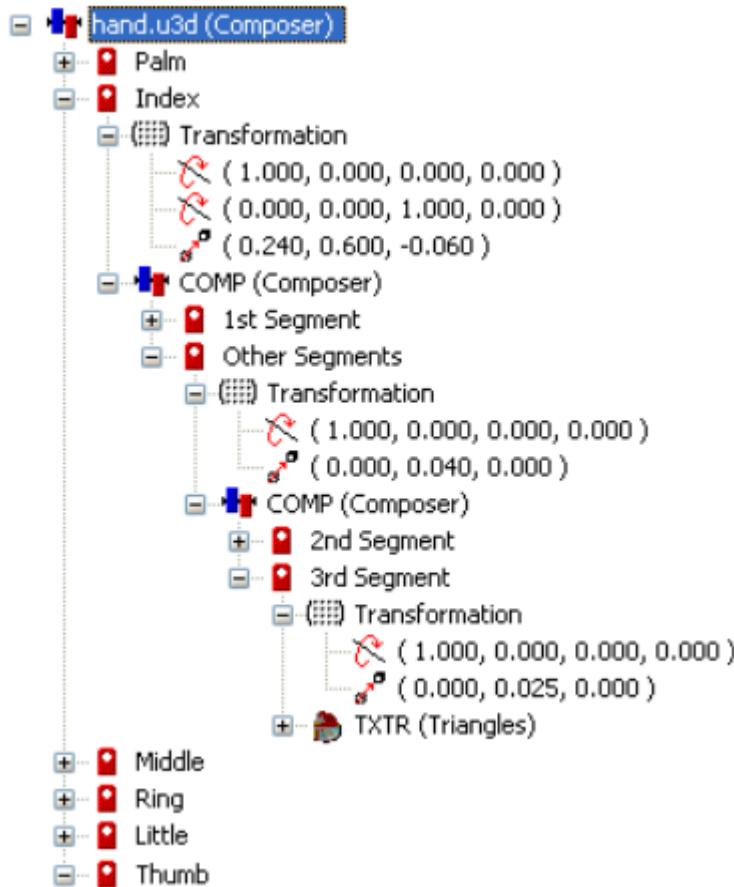
A Hand Model in H-Anim 1.1

- Is it possible to do palm animation and fingers animation with the hand model of H-Anim 1.1



Node Representation

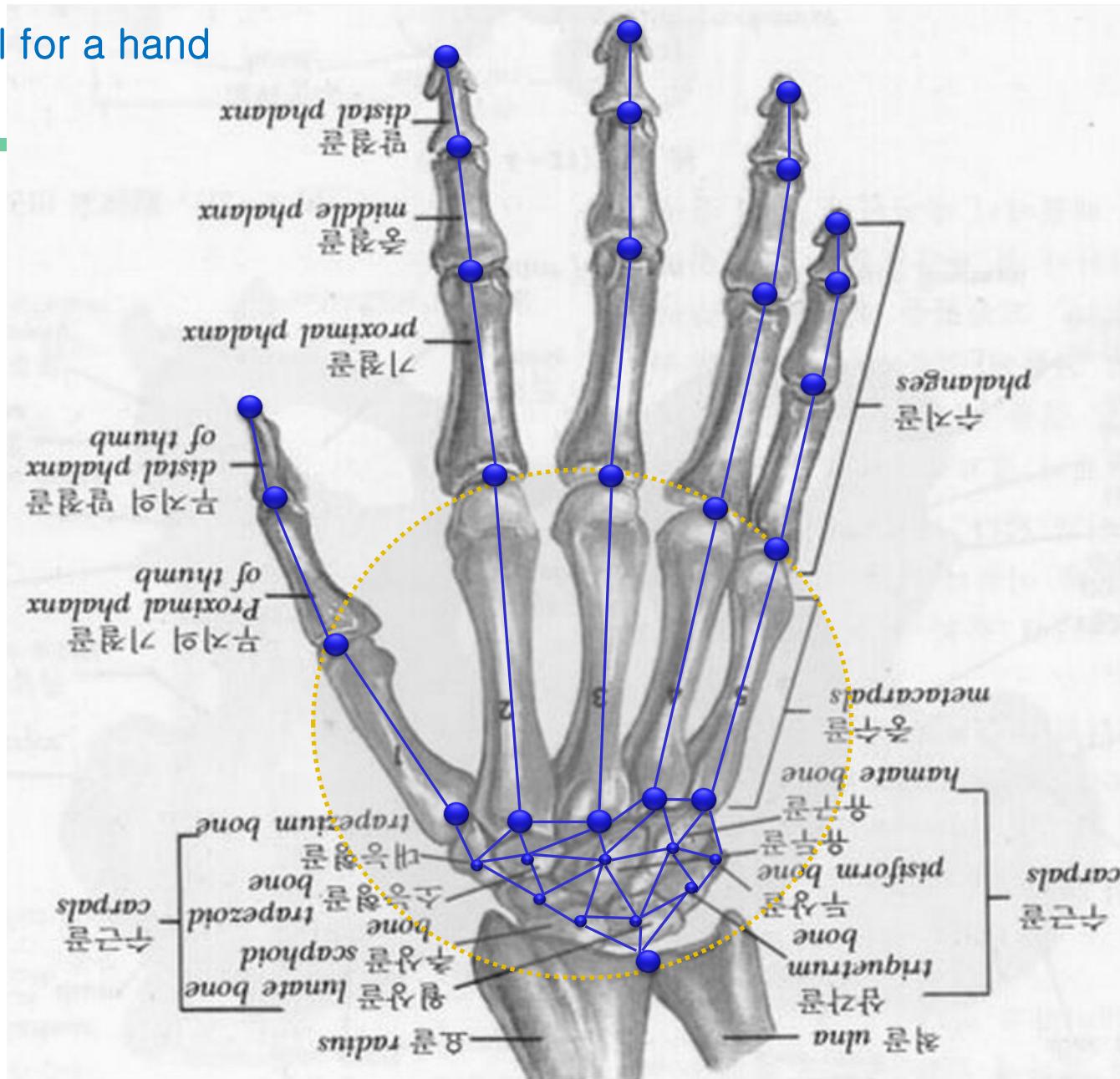
- Hierarchical Model
- Segment data
 - Translation
 - Graphical data
- Joint data
 - Rotation



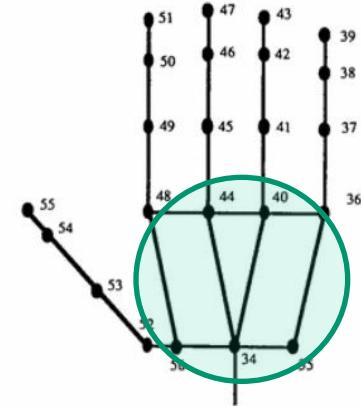
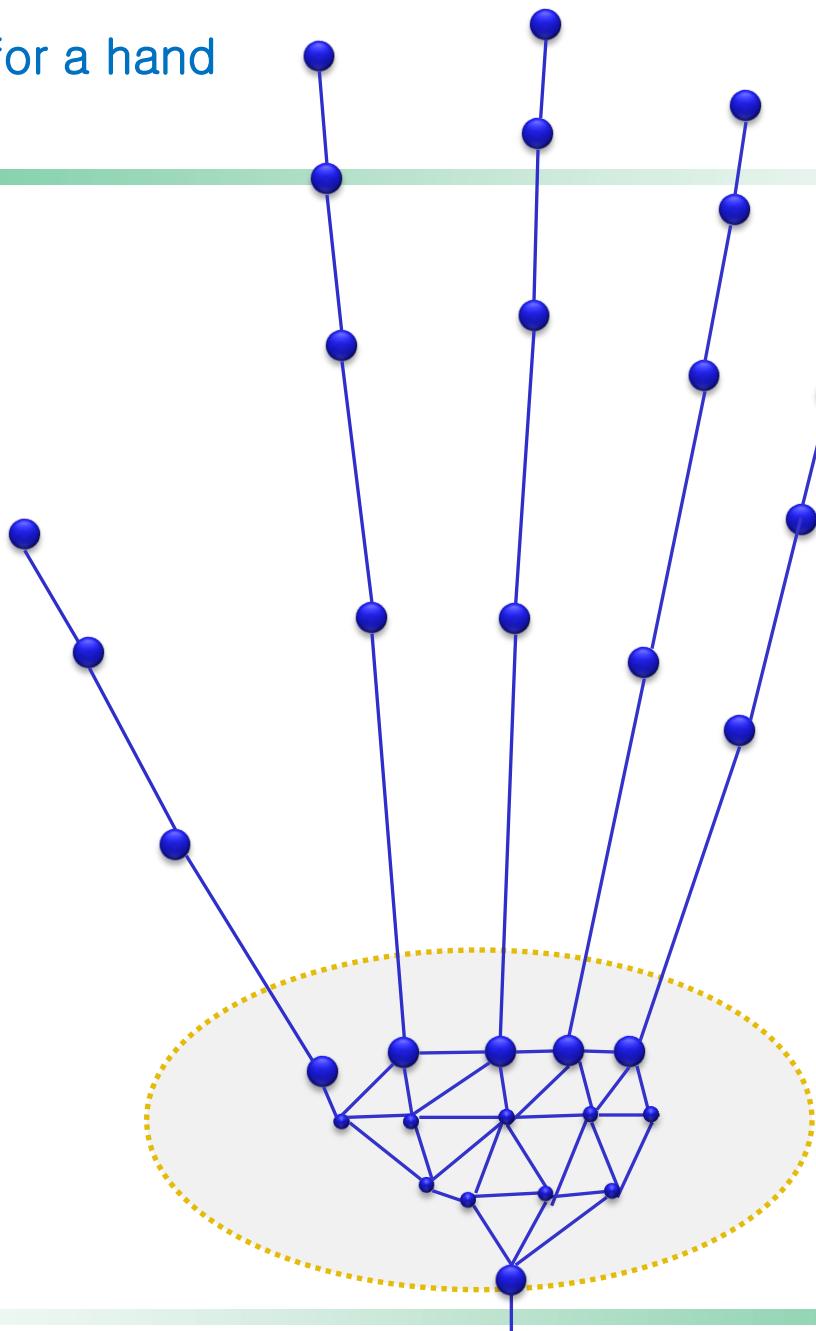
A Hand Model in H-Anim 1.1

- Fingers animation (OK)
- Palm Animation (???)
- New Model of a hand and its motion (???)

New Model for a hand

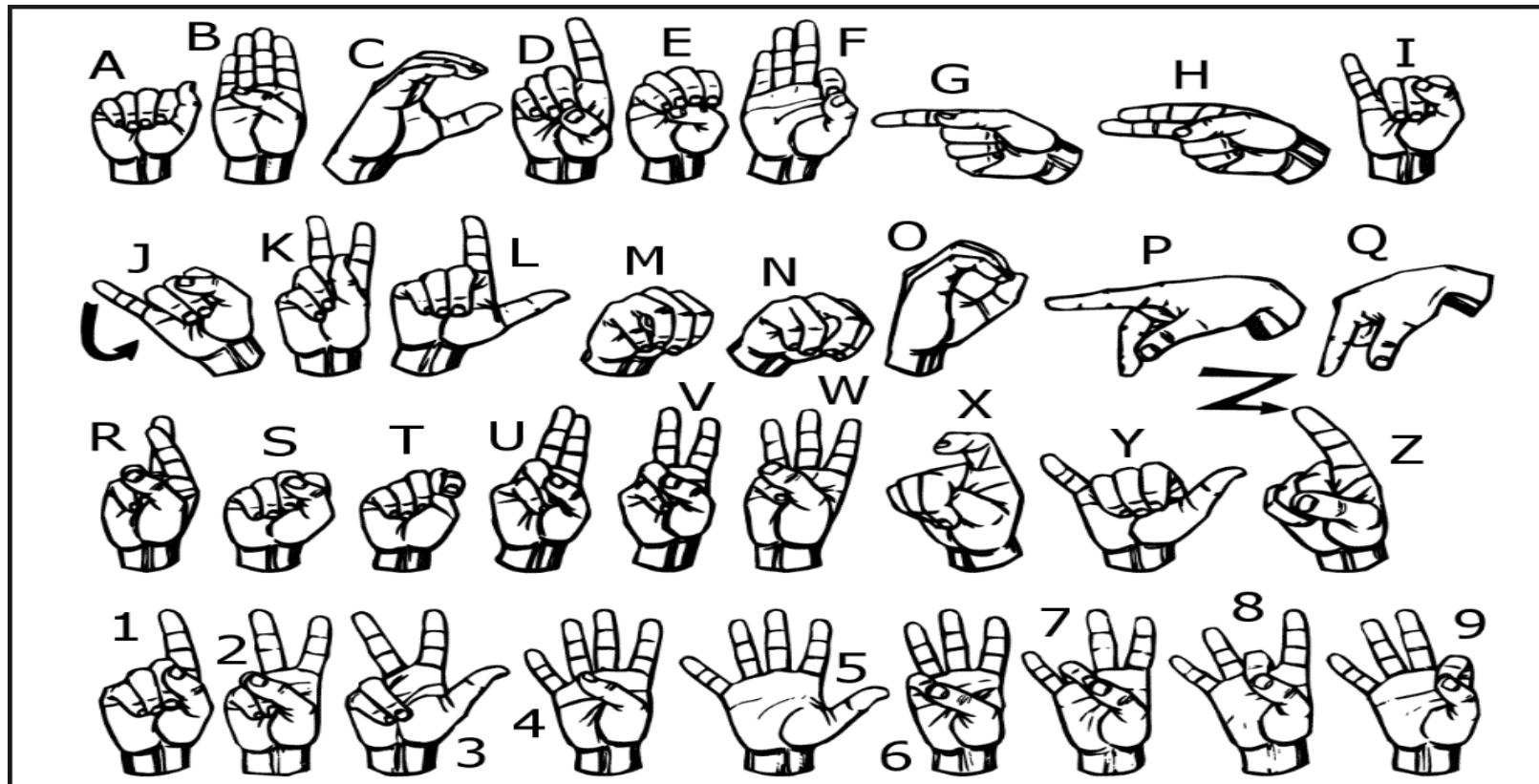


New Skeleton Model for a hand



Applications of Hand Motions

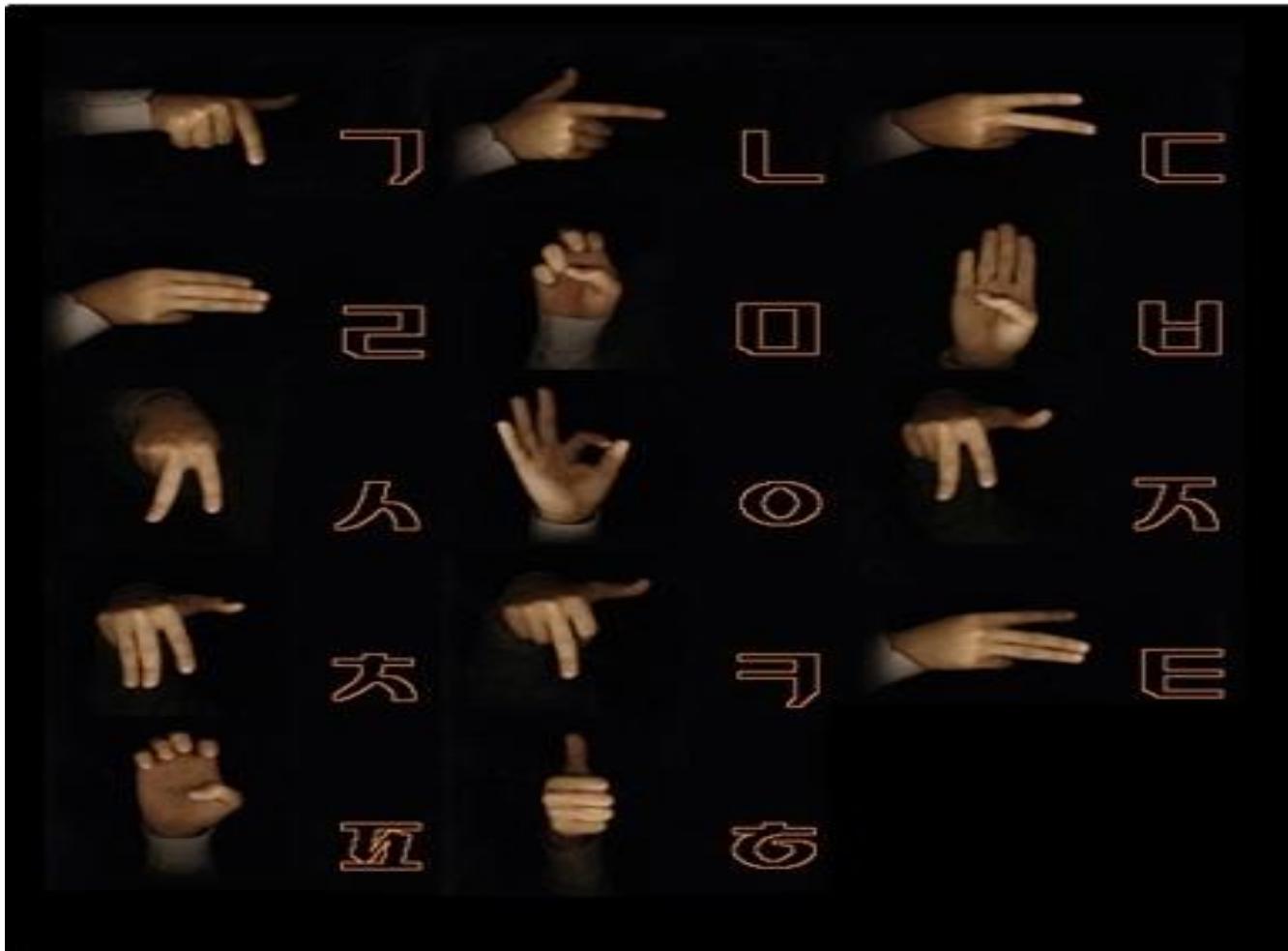
- Hand animation for American Alphabets



S. Harold Collins, Kathy Kifer: Finger Alphabet Book, Garlic Press, 1992

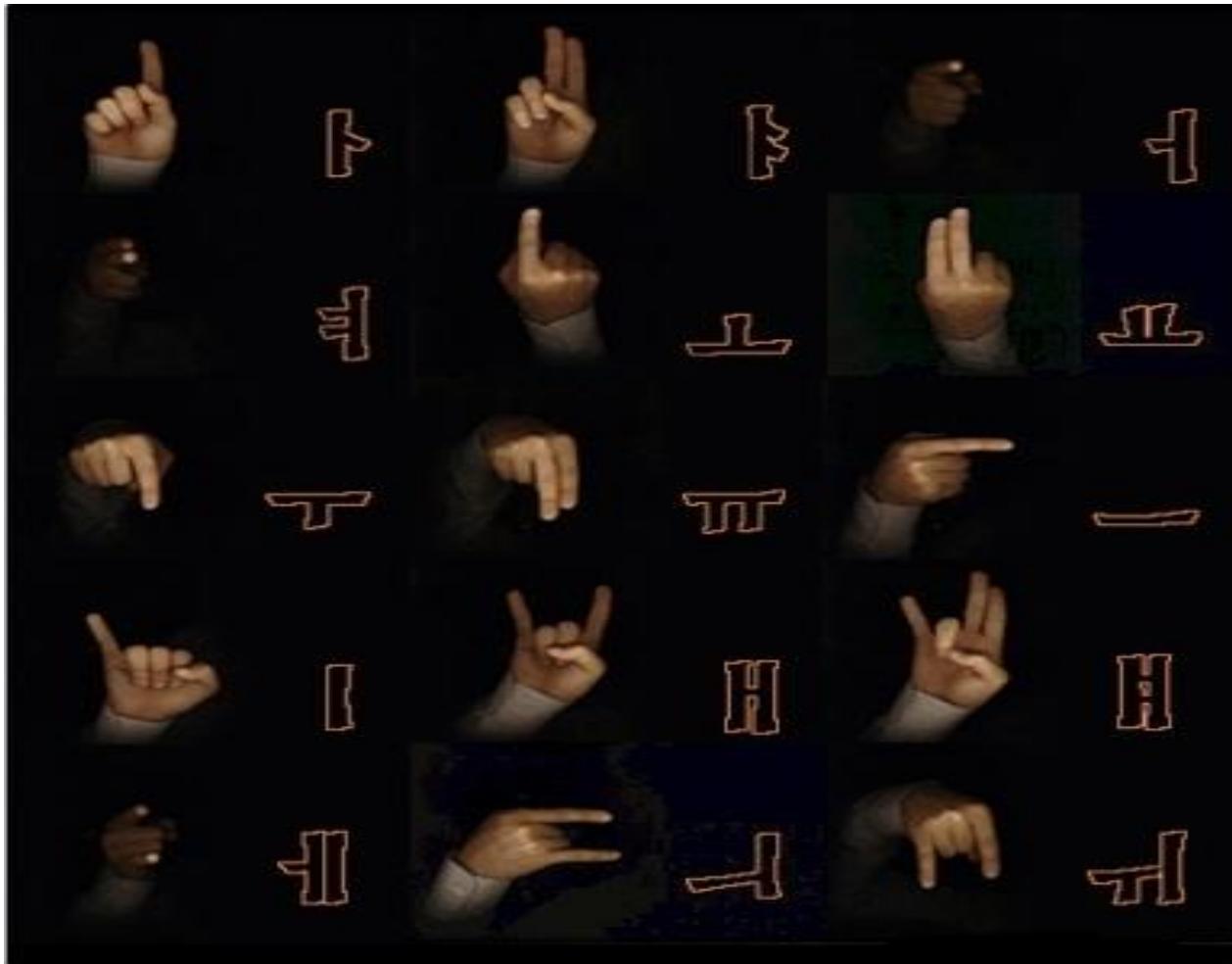
Applications of Hand Motions

- Hand animation for Korean Alphabets – consonant letters



Applications of Hand Motions

- Hand animation for Korean Alphabets – vowel letters



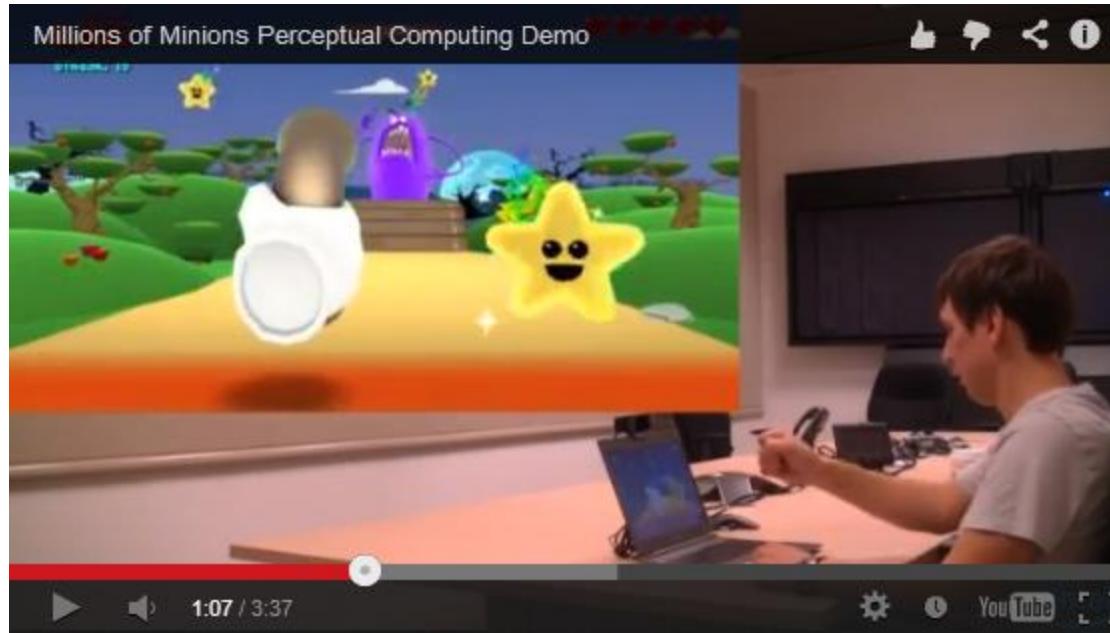
Applications of Hand Motions

- Grasp
- Gestures for User Interface

S. Harold Collins, Kathy Kifer: Finger Alphabet Book, Garlic Press, 1992

Example1 (Senz 3D)

http://www.youtube.com/watch?feature=player_embedded&v=gqUFnKvZ84c



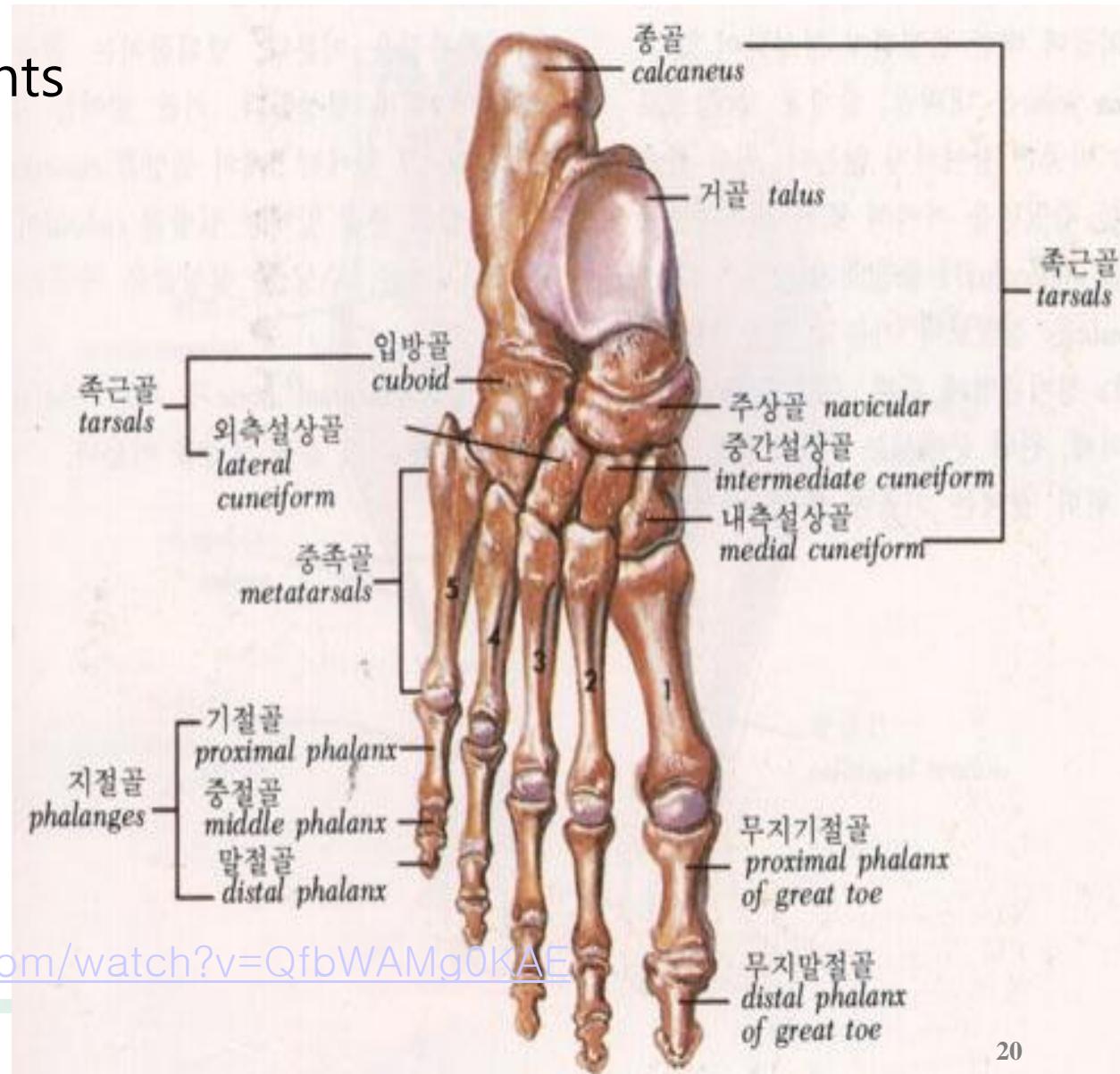
Example 2(Senz 3D)

- http://www.youtube.com/watch?feature=player_embedded&v=catt5ZHCnI4

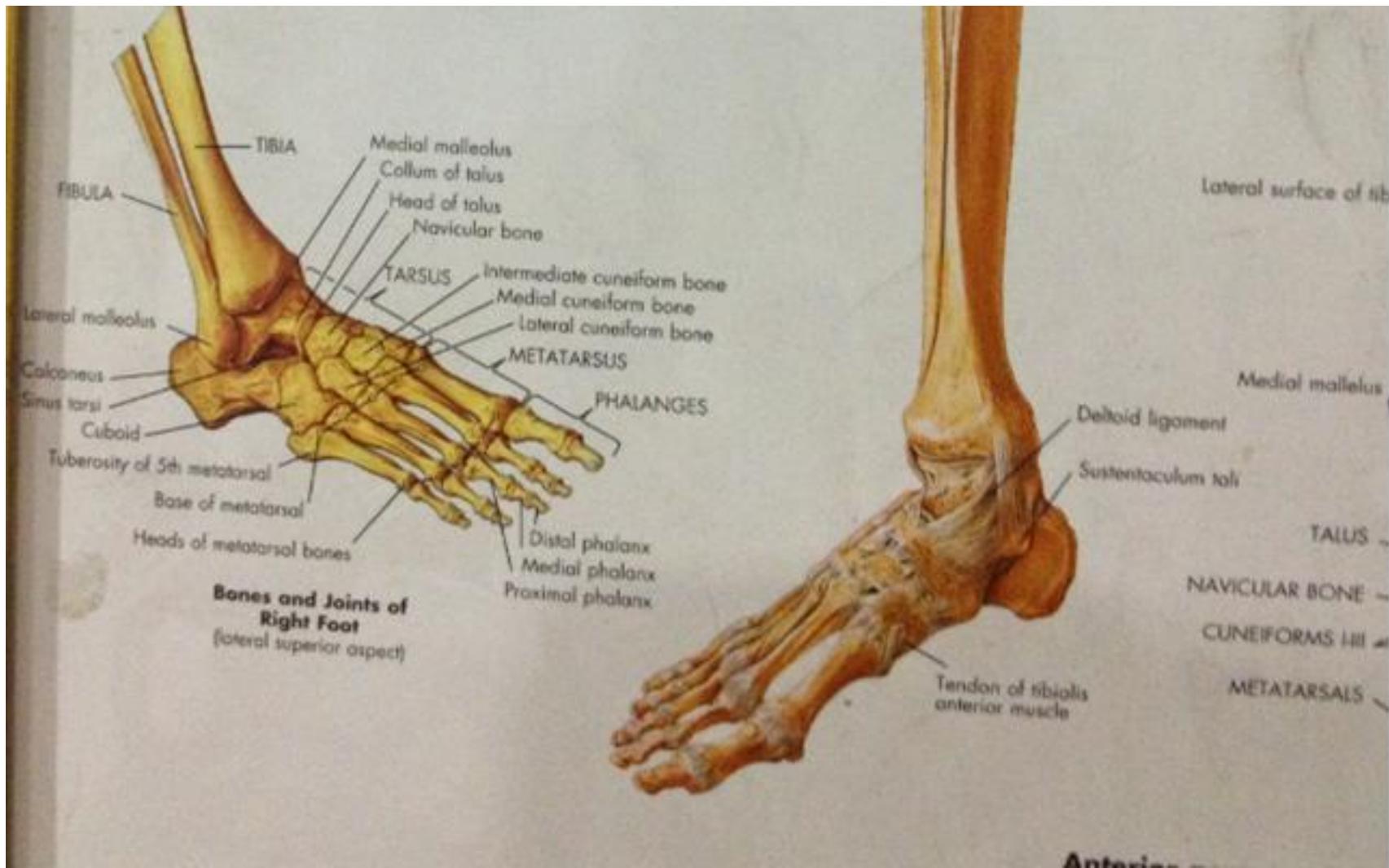


Feet

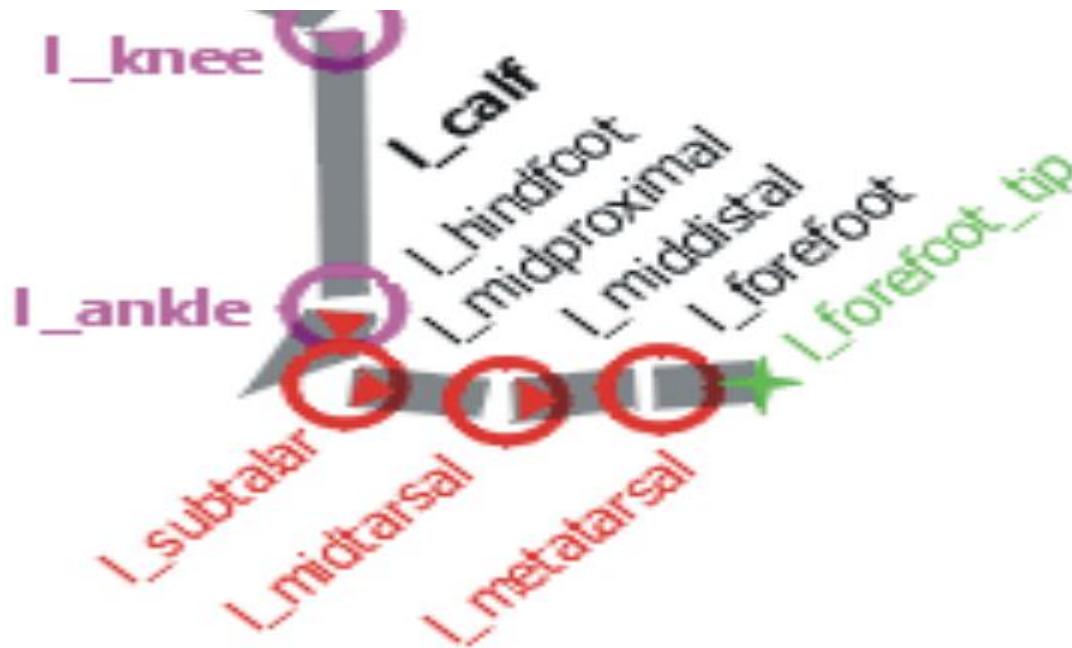
- Kinds of foot joints
- Animation



<http://www.youtube.com/watch?v=QfbWAMg0KAE>

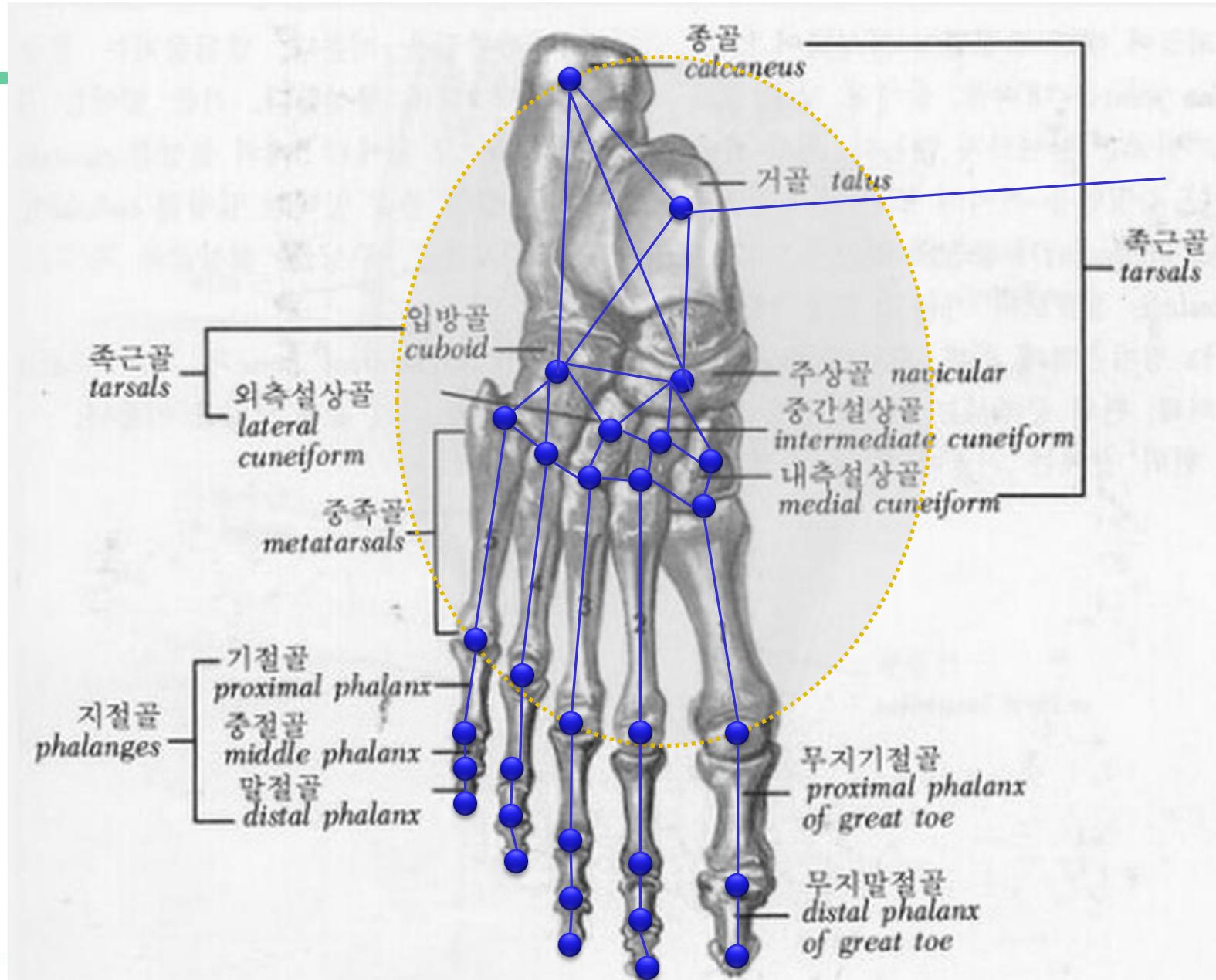


A left foot model in H-Anim 1.1

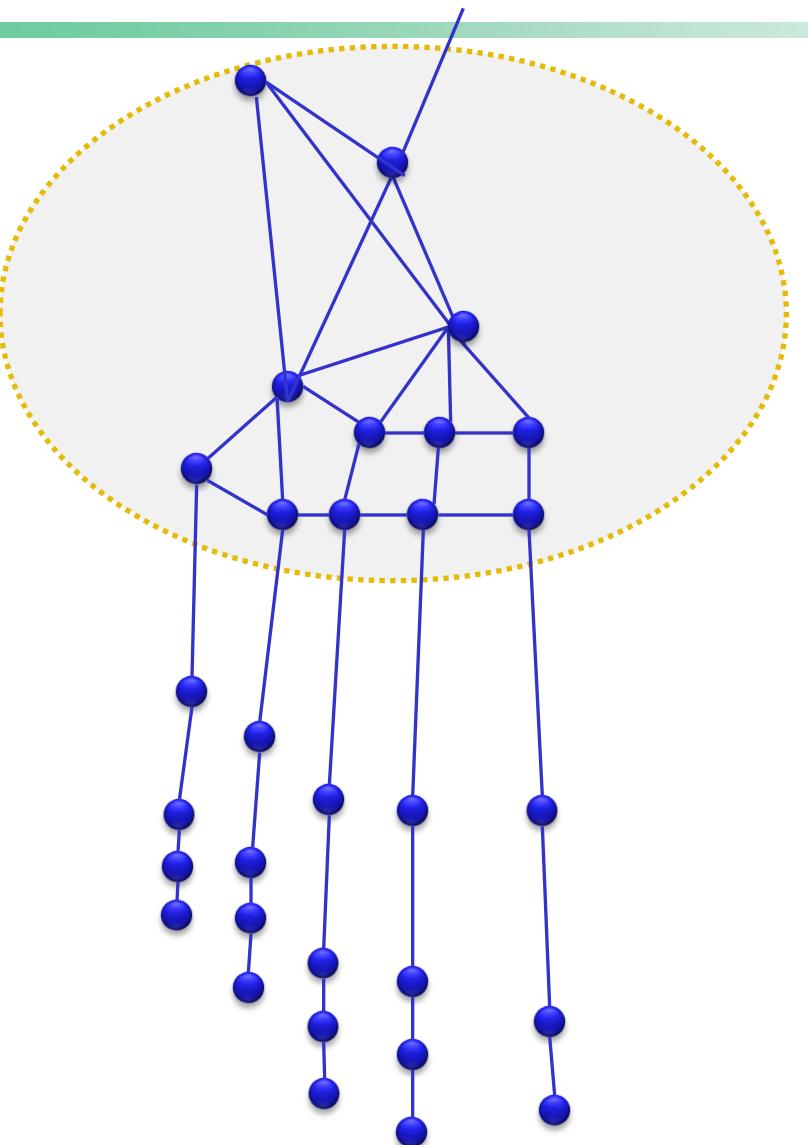


- A single polyline model for each foot
- How are feet represented by the polyline model?
- How are feet movements represented ?

New Model for a foot



New Skeleton Model for a foot



Foot Motions

- Dancing

http://www.youtube.com/watch?v=yHhfY_WS52o

- Analysis of Medical Walking

<http://www.youtube.com/watch?v=agqdU4tZU5s>

Conclusion

- New Skeleton Models for Hands and Feet
- Motion Representation for the new skeleton for hands and feet