Synthetic Environment for Human Body Walk-through

Friday, February 08, 2002

Main Goal:

Provide a real time, high-resolution animation environment for human bodies. We will support multi-resolution - LOD representations, spatial / medical queries, animation scripts and high performance rendering on the SGI Onyx2 environment using the Performer library.

Preprocessing:

Iso-contours from the human body data sets need to be extracted, segmented, and named and data structures created to support:
- Fast search
- Kinematics
- Multiresolution

Animation scripts, parsing to provide a good framework for easy, and natural animation specification.

Rendering:

Rendering will be done using the Performer library on the SGI Onyx2. We have to take advantage of the Onyx2 facilities to get optimum performance. Occlusion culling, LOD etc should be implemented.

Groups:

There will be three groups working in parallel on isocontour extraction, rendering and animation.

Group 1:

Model creation:

- Creation and naming of most body parts.
- Multi-resolution mesh
- Obtain connection joints, their properties like degrees of freedom
- Assign material properties
- Prepare texture maps, colors
- Data structure for fast queries

Members:

- Young-in Shin
- Sue Baldor
- Zaiqing Xu
- Florian Mayer
- Jessica

Group 2:

- Learn Performer software
- Learn SGI architecture
- LOD, occlusion culling, display on wide screen
- Fly through
- UI with query interface

Members:

- Matthias Wiesen
- Sangmin Park
- Kevin Baldor

Group 3:

- Animation scripting language
- Collision detection
- Joint modeling
- Physics based animation
- Mapping from a 'ball and stick' model to human body

Members:

- Vinay
- Jessica
- Young-in Shin

Software:

- Parallel iso-contouring from Dr Xiaoyu
- Perfly, the Performer library (code is at /usr/share/Performer/src/sample/c/perfly on milagros.hpc.utexas.edu) The docs is at SGI.com

Data:

- The visible male data set is at /ccv/vhmale/freshct on milagros.hpc.utexas.edu

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