Docket #: S07-254

Automatic Generation of Human Models for Motion Capture, Biomechanics and Animation

Stanford researchers have patented an automated method for generating articulated human models consisting of both morphological and kinematic model data. This invention provides the algorithms to generate models from the data captured in the method and software described in Stanford dockets **S05-433 and US Patent 7,804,998**. These inventions can be used for biomechanical, clinical, sports, animation, video gaming, design, ergonomics, and surveillance applications.

Video of Markerless Motion Capture

Related Markerless Motion Capture Technologies also available for license:
S05-433– US Patent 7,804,998
S06-193– US Patent 8,139,067
S08-122– US Patent 8,384,714

Applications

- Biomechanical and clinical settings
- Sports performance evaluation or sports medicine
- Animation and computer graphics
- Digital movies
- Interactive gaming and video games industry
- Biofeedback and rehabilitation
- Design and engineering
- Ergonomics
- Visual arts and any art using biological signals as an input or output
- Robotics - development of biomimetic robots

- Surveillance

Advantages

- **Accurate, markerless capture**of human body shape that provides joint centers locations, using just one static passive capture pose of the subject
- **Efficient, automatic generation** of a model eliminates time consuming task in model-based markerless motion capture

Publications

- Corazza S, Mündermann L, Chaudhari A, Demattio T, Cobelli C, Andriacchi T: A markerless motion capture system to study musculoskeletal biomechanics: visual hull and simulated annealing approach, Annals of Biomedical Engineering, 2006,34(6):1019-29.
- Mündermann L, Corazza, S, Andriacchi, T: The Evolution of methods for the capture of human movement leading to markerless motion capture for biomechanical applications. Journal of NeuroEngineering and Rehabilitation, 3(1), 2006.
- Corazza S., Mündermann L., Andriacchi T., A Framework For The Functional Identification Of Joint Centers Using Markerless Motion Capture, Validation For The Hip Joint, Journal of Biomechanics, 2007.
- Mündermann L., Corazza S., Andriacchi T., Accurately measuring human movement using articulated ICP with soft-joint constraints and a repository of articulated models, CVPR 2007.

Patents

- Published Application: 20100020073
- Issued: 8,180,714 (USA)

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