Docket #: S06-193

A New, Integrated Method of Human or Animal Body Modeling with Applications for Animation and Tracking

Stanford researchers have patented a data-driven method for building a human shape model that spans variation in both subject shape and pose. The method is based on a representation that incorporates both articulated and non-rigid deformations.
Capabilities include partial-view completion and lifelike animation of marker motion-capture sequences. Specifically, this method is capable of constructing a high-quality animated surface model of a moving person, with realistic muscle deformation, using just a single static scan and a marker motion capture sequence of the person.

Related Markerless Motion Capture Technologies also available for license:
S05-433– US Patent 7,804,998
S07-254– US Patent 8,180,714
S08-122– US Patent 8,384,714

Figure



Figure description - Animation of a motion capture sequence taken for a subject, of whom we have a single body scan. The muscle deformations are synthesized automatically from the space of pose and body shape deformations.

Applications

- Animation and computer graphics
- Digital movies
- Interactive Gaming and video games industry
- Biomechanical and clinical applications
- Biofeedback and rehabilitation
- Design and engineering
- Ergonomics
- Digital simulation of human and animal interaction
- Education
- Art. Visual arts and any art using biological signals as an input or output.
- Robotics. Development of biomimetic robots
- Surveillance

Advantages

- **Captures body deformations** due to change in pose and body shape variation between different individuals
- **Maintains proper deformation scaling**
- **Efficient** shape-completion of different subjects in different poses
- **Enables marker-less motion capture** of different people and animals from any kind of 3D readings, including stereo cameras, or multiple camera feeds combined, using shape-from-silhouette techniques, or the input from any 3D range sensors
- **Accurate -** The shape-completion capability provides accurate subject-specific automatic segmentation
- **Low cost -** The integrated method saves production time and cost

Publications

- Anguelov, D., Srinivasan, P., Koller, D., Thrun, S., Rodgers, J., & Davis, J. (2005, July). SCAPE: shape completion and animation of people. In ACM Transactions on Graphics (TOG) (Vol. 24, No. 3, pp. 408-416). ACM.

Patents

- Published Application: 20080180448
- Issued: 8,139,067 (USA)

Innovators

- Dragomir Anguelov
- Sebastian Thrun
- Daphne Koller
- Praveen Srinivasan

Licensing Contact

Imelda Oropeza

Senior Licensing Manager, Physical Sciences

Email