

3rd International Conference on

Computer Graphics & Animation

November 07-09, 2016 Las Vegas, USA

Scanned human body model realistic pose deformation

Shuaiyin Zhu and P Y Mok

The Hong Kong Polytechnic University, Hong Kong

Realistic human body modelling is an important process in many research applications, including computer animation, computer vision, ergonomic application or even biometric. In recent decade, the modelling of dynamic body poses has gained much developments. Among which most design-focused methods generate realistic appearance by deforming 3D characters into different poses. Since design-focused methods mainly concern about the deformation speed and these methods focus more on global shape rather than local details, thus some deformation errors or distortions at the joint areas are expected when the range of movement is large. In view of this, some example-based methods are proposed to learn from a large range of scans of a single subject in different poses a template deformable model. The pose deformation of example-based methods combines rigid deformation and non-rigid deformation and thus is able to obtain natural skin appearance. However, these methods can only deform a parametric template model into different poses. For arbitrary models, such as real human scanned models, it is very challenging to deform these models into different poses rapidly and realistically. In this paper, we propose a rapid skeleton embedding and deformation method for scanned human models. We first develop algorithms to automatically recognise important body features from a scanned model (i.e. a real human subject scan in standard pose), from which we construct a detailed framework for the scanned model. The detailed framework enables easy and accurate skin segmentation and skeleton embedding and is then used to drive the rigid deformation. Next, we train non-rigid deformation from a dataset of registered scans. We applied non-rigid deformation to correct rigid deformation in the first step so as to simulate natural skin appearance of the scanned real subjects in different poses. Experimental work shows that the proposed method can generate realistic pose deformations for real subject scans. The method can be used by the fashion industry, where accurate size measurements are the mandate, for different applications including fit design analysis.

Biography

Shuaiyin ZHU is currently a PhD student of the Institute of Textiles and Clothing, The Hong Kong Polytechnic University. His research interests include precise human shape modelling and pose deformation.

shuaiyin.zhu@connect.polyu.hk

Notes: