Multimed Tools Appl
DOI 10.1007/s11042-013-1774-4

Topology-independent 3D garment fitting for virtual clothing

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Abstract]Using computer-aided design system to design an elegant 3D garment for a virtual human is often tedious and labor-intensive. Moreover, the garment is usually designed for a reference human model and generally not fitted to other individuals, which largely reduces the reusability of existing 3D garments. In this paper, we introduce proxy mesh to fit 3D garment to another human model whose topology or shape is different from the garment's reference human model. Firstly, a proxy mesh is generated for the reference human model and the specified human model respectively. Secondly, the garment is parameterized based on the proxy mesh of the reference model and an independent dataset is obtained. Thirdly, the dataset is decoded to the proxy mesh of the other human model and a roughly fitted garment is gained. Lastly, local shape constrains are enforced to the fitted garment and garment-body penetrations are resolved to get a well fitted garment. Our approach is efficient, simple to implement and is potential to be applied to existing applications such as virtual try-on and virtual clothing design.

Keywords Fit · Dressing · Virtual try-on · Clothing simulation

1 Introduction

Cloth simulation has been widely researched in the last two decades. Along the evolution of cloth simulation techniques, the focus was primarily on improving realism [2, 14, 17] and efficiency [1, 2]. Terzopoulos et al. [14] were the first to develop a generic physical model to

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Published online: 06 December 2013