Comparative Analysis of 4D Scanning and Mobile Dynaback Sensors for Ambulatory Imaging of the Spines

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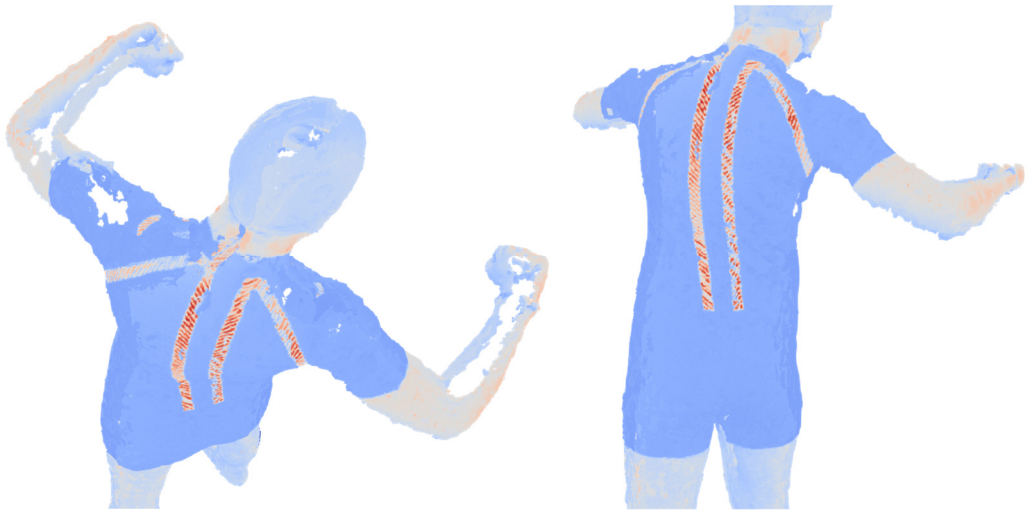
Abstract

This study presents comparative analysis of two systems for body scanning. The optical system of the high speed MOVE4D scanner is able to provide large set of 3D point clouds and meshes of the human body during motion with high accuracy, but is available only on research laboratories and is stationary, which means, that can not be applied outdoor or working space. Contrary, the Dynaback sensors are mounted in the shirt, and can record the positions and orientations of the spine the whole day independent on the environment. The goal of this study is to provide comparative data about the accuracy, time consummation and resourced required for using both systems.
In order to obtain this information, a human, equipped with the Dynaback shirt was scanned during the motions in parallel with the MOVE4D scanner at TU Dresden at different motion sequences. The scan data of the both systems was evaluated. The optical scanning system provide large set of point clouds of the human resp. shirt body surface with high accuracy, where the sensors position can be identified. The coordinates and orientation of the sensors are compared with the data, delivered by these and quantitative and qualitative evaluation of the accuracy of the mobile system is provided.

Keywords: 3d and 4D body scanning, sensors, accuracy, mobile scanning, spine position



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** https://dynaback-tshirt.com