EBERHARD KARLS
UNIVERSITÄT
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Mathematisch-Naturwissenschaftliche Fakultät
Fachbereich Informatik
Kognitive Systeme (Prof. A. Zell)

Masterarbeit

3D Head Reconstruction Using Face Features

3D head models have been acquired directly with RGBD sensors and the software KinFu (open-source version of KinectFusion) with the aim of estimating anthropometric head measurements. However, in order to obtain real values the subjects are limited to not have voluminous hairstyles, bulky beards, and big accessories as hats and big earrings. We want to extend our approach eliminating such limitations through the deformation of 3D head models using facial features.

The goal of this master thesis is to obtain an estimated 3D model of the head based on facial features. Such features can be extracted from 2D and/or 3D images of subjects with challenging characteristics. The images will be acquired using RGBD sensors as Orbbec Astra S and Asus Xtion Pro Live, they may include all views from profile to front. The experiments will be performed on dummy heads and human subjects. For evaluation purposes, experiments will be executed on heads without challenging characteristics as well. Therefore, ground truth values will be registered manually and with a tracking system allowing a quantitative comparison to measurements obtained with the developed algorithm.

Requirements:

- Knowledge in geometry and linear algebra
- Knowledge in image processing
- C++ programming under Linux

Input

Desired output

Kontakt

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