BSc/MSc-project for students in Biomedical Engineering, DTU/KU

Title: Creating a Baby-Kinect

Description: When the Kinect from Microsoft came out in 2010, the most impressive feature was the fast motion capture algorithm built into the sensor, enabling realtime motion capture from a single depth-image. The backbone for the algorithm was a relatively simple classifier, trained on thousands of depth-images of people doing different postures.

In this project, the student should use similar data to re-create the Kinect, but instead of focusing on adults, the data will consist of data from infants, which the Kinect currently isn't able to detect in realtime.

A relatively large number of infants has been recorded with a 3D camera (Microsoft Kinect), capturing the movement of infants during a 3-10 minutes period. Using this dataset, the student should develop methods for fast segmentation of the infant's different bodyparts, like what the Kinect can do with adults. The student should consider different image features related to so-called depth images and train a classifier for automatic segmentation and classification of the infant's body.

An example of the data. Left: Color image. Middle: Color-coded depth image. Right: Color-coded segmentation of bodyparts.

Required qualifications: Knowledge of; Matlab or similar, image analysis, neural networks, machine learning

Responsible institution: University of Copenhagen

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Allowed no of students per report (1-2): 1-2

KU supervisor: Jens Bo Nielsen, Professor, dr.med., Ph.d.