



Evaluation of skeleton tracking algorithms for medical applications

Project Management and Software Development
for Medical Applications

General Info

Project Title: Evaluation of skeleton tracking algorithms for medical applications

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Project Abstract

A quantitative and qualitative evaluation of different algorithms for skeleton tracking using the Kinect.

Background and Motivation

Since the Microsoft Kinect has been introduced, algorithms for skeleton tracking have become very popular. For medical applications such methods are very interesting, e.g. for touch-free user interfaces in the operating room, in serious games for rehabilitation exercises, monitoring of elderly or medical education.

The goal of this project is to compare different tracking algorithms that are available. They differ in accuracy, robustness, processing requirements, number of users that can be tracked at the same time and many other aspects. The students will write a framework that can be used with different existing tracking algorithms and design a test setup. An additional tracking system will be used to obtain ground truth data.

Student's Tasks Description

The students will make themselves familiar with existing software for skeleton tracking using the

Kinect. They will implement a framework that can be used to compare the different methods. For this an abstraction layer between the testing software and the tracking algorithms will be developed. They will make a study plan and do a systematic quantitative and qualitative evaluation.

Technical Prerequisites

The students should have basic knowledge in C++ or C#. Experience in OpenGL or DirectX is helpful.

Administrative Info

Working Time: 100h

Project Location: Garching

Required Equipment: a Kinect will be provided

Timeline and Milestones

Week 2: Literature research on existing skeleton tracking software

Week 3: Study plan prepared

Week 7: Software framework to access different software is ready

Week 10: Software for testing frameworks is ready

Week 15: Study is finished

References

Performance measurements for the Microsoft Kinect skeleton. M Livingston, J Sebastian, Z Ai, J Decker, VR 2012.