Optimization and Biomechanics for Human Centred Robotics
KIT BioRobotics Lab

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Institute for Anthropomatics and Robotics (IAR)

Bachelor's Thesis: Motion Reconstruction Quality Analysis of a Markerless Motion Capture System

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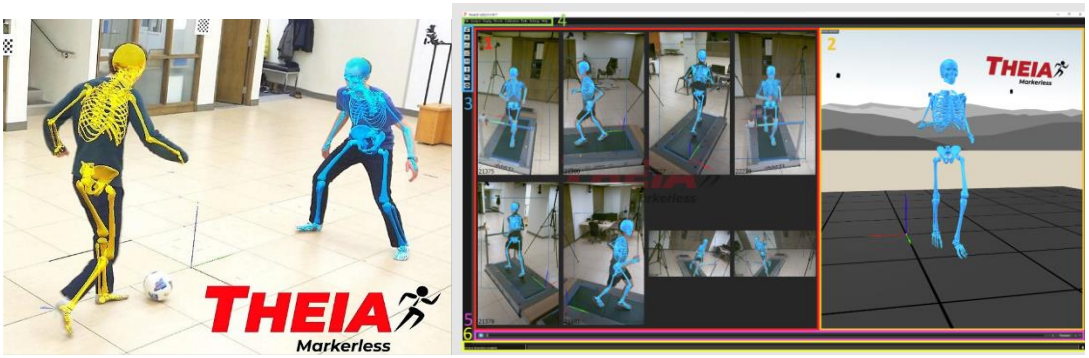
Background

Theia Markerless is a state-of-the-art markerless motion capture system. Similar to the "golden standard" marker-based motion capture systems, multiple cameras are involved for capturing movements and must be calibrated. Cameras can be bumped during an experiment, and this change in camera position affects the quality of motion reconstruction. Although this can be mitigated by collecting another calibration round and applying it to affected experiment trials, these extra steps can be time-consuming.



Goal of the thesis

During the data processing stage, Theia Markerless offers the possibility to omit cameras that would otherwise affect motion reconstruction. The goal is to find out how the number of omitted cameras would affect the quality of the results for different types of motions. This Bachelor's thesis focuses on:

- Designing the experiment protocol, including coming up movements representing different motion scenarios
- Developing appropriate metrics for analysing motion reconstruction quality
- Collecting and processing data using the Theia Markerless System
- Analysing data

Required knowledge

This thesis requires knowledge in programming.