Motion capture sensing techniques used in human upper limb motion: a review

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Abstract

Purpose Motion capture system (MoCap) has been used in measuring the human body segments in several applications including film special effects, health care, outer-space and under-water navigation systems, sea-water exploration pursuits, human machine interaction and learning software to help teachers of sign language. The purpose of this paper is to help the researchers to select specific MoCap system for various applications and the development of new algorithms related to upper limb motion. Design/methodology/approach This paper provides an overview of different sensors used in MoCap and techniques used for estimating human upper limb motion. Findings The existing MoCaps suffer from several issues depending on the type of MoCap used. These issues include drifting and placement of Inertial sensors, occlusion and jitters in Kinect, noise in electromyography signals and the requirement of a well-structured, calibrated environment and time-consuming task of placing markers in multiple camera systems. Originality/value This paper outlines the issues and challenges in MoCaps for measuring human upper limb motion and provides an overview on the techniques to overcome these issues and challenges.

Keywords

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KeyWords Plus: INERTIAL SENSORS; JOINT ANGLE; MOVEMENT; TRACKING; KINECT; STABILITY; FUSION; RANGE

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