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Human motion tracking of athlete using optical flow & artificial markers

Abstract

Recently, the studies of human motion analysis have attracted great attention among the researches in the field of biomechanics, medicine and sports by analyzing the joints, postures, and movements of the human. Our research focuses on analyzing the joints movement of a professional golfer. We represent those joint movements with an articulate stick human model. This paper presents a method for tracking of the general human joints (head, torso and joints) from an uncalibrated outdoor sports video by using Lucas-Kanade optical flow algorithm. No additional physical marker or special tight fitted clothes were applied to the subject. The major human joints were first located by artificial markers selected from the user; the movements of the joints were tracked overtime using the proposed optical flow algorithm.

Keywords — Artificial markers, human joints, human model, human motion analysis, human motion tracking, optical flow algorithm