PostureCheck with the Kinect and Proficio: Posture Modeling for Exercise Assessment

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Abstract : Evaluation of a person's posture while exercising is important in physical therapy. During a therapy session, a physical therapist or a monitoring system must assure that the person is performing an exercise correctly to achieve the desired therapeutic effect. In this work, we introduce a system called POSTURECHECK for exercise assessment in physical therapy. POSTURECHECK assesses the posture of a person who is exercising with the Proficio robotic arm while being recorded by the Microsoft Kinect interface. POSTURECHECK extracts unique features from the person's upper body during the exercise, and classifies the sequence of postures as correct or incorrect using Bayesian estimation and majority voting. If POSTURECHECK recognizes an incorrect posture, it specifies what the user can do to correct it. The result of our experiment shows that POSTURECHECK is capable of recognizing the incorrect postures in real time while the user is performing an exercise.

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