

Design and development of wearable human activity recognition for healthcare monitoring

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ABSTRACT

This research deals with development of a wearable sensing system for human activity recognition focusing on hand and leg assessments. The research attempts to sufficiently recognize the motion to provide physiotherapist about the patient condition in the remote area. The system is designed by applying Arduino as the main controller with the help of accelerometer to identify human movements and then classifying them into soft, medium and hard motions categories. From the research, data acquired from the assessment is then imported into Microsoft Excel by using Guino software to describe the human motions. The accelerometer sensors are placed as follows; the on the right hand for three positions which are on the wrist, on the elbow, and on the shoulder. Meanwhile on right leg for three position which is in thigh, calf and ankle. Experimental results show that the proposed system is capable to provide reliable information to both patient and physiotherapist about the motions. The recognition for the activity is based on physiotherapist consultation which provides early descriptions of human various activities using hands and legs. The proposed system can be applied for rehabilitation and monitoring system to realize a home-based smart monitoring and assessment system.

KEYWORDS

Activity recognition; Wearable system; Accelerometer; Hand and leg assessment

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