Design of an intelligent diagnostic system for detection of knee injuries

Abstract

Knee injuries is quite common in sport injuries and one of the most frequent happen are anterior cruciate ligament (ACL) knee injuries. There are two types of ACL injuries which are partial tear and complete tear. Currently physical tests, MRI image interpretation from expert and arthroscopy method are used to diagnoses the injuries. These procedures somehow are time consuming, invasive and operator dependent. To overcome these limitations, the intelligent diagnostic system using artificial neural network (ANN) has been proposed as an alternate way to give an early detection and also to classify the types of ACL injuries. We have used BP ANN and k-NN for the classification purpose. From these both classifiers, BP ANN give the higher accuracy which is 94.44% compared to k-NN classifier which the highest accuracy only up to 87.8333%.

Keywords

ACL; Diagnostic system; Knee injuries; Mri images; Neural network