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A Computer-Aided System for Detection and Classification of Liver Cirrhosis

Authors : Abdel Hadi N. Ebraheim, Eman Azomi, Nefisa A. Fahmy

Abstract : This paper designs and implements a computer-aided system (CAS) to help detect and diagnose liver cirrhosis in patients with Chronic Hepatitis C. Our system reduces the required features (tests) the patient is asked to do to tests to their minimal best most informative subset of tests, with a diagnostic accuracy above 99%, and hence saving both time and costs. We use the Support Vector Machine (SVM) with cross-validation, a Multilayer Perceptron Neural Network (MLP), and a Generalized Regression Neural Network (GRNN) that employs a base of radial functions for functional approximation, as classifiers. Our system is tested on 199 subjects, of them 99 Chronic Hepatitis C.The subjects were selected from among the outpatient clinic in National Herpetology and Tropical Medicine Research Institute (NHTMRI).

Keywords : liver cirrhosis, artificial neural network, support vector machine, multi-layer perceptron, classification, accuracy
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