

Title: Artificial neural networks for medical diagnosis using biomedical dataset

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Abstract: Artificial neural networks are a promising field in medical diagnostic applications. The goal of this study is to propose a neural network for medical diagnosis. A feed-forward back propagation neural network with tan-sigmoid transfer functions is used in this paper. The dataset is obtained from UCI machine learning repository. The results of applying the proposed neural network to distinguish between healthy patients and patients with disease based upon biomedical data in all cases show the ability of the network to learn the patterns corresponding to symptoms of the person. Three cases are studied. In the diagnosis of acute nephritis disease; the percent correctly classified in the simulation sample by the feed-forward back propagation network is 100% while in the diagnosis of heart disease; the percent correctly classified in the simulation sample by the feed-forward back propagation network is approximately 88%. On the other hand, in the diagnosis of disk hernia or spondylolisthesis; the percent correctly classified in the simulation sample is approximately 82%. Receiver operating characteristics (ROCs) curve are used to evaluate diagnosis for decision support.