A System for Diagnosis of Coronary Artery Disease based on Neural Networks and Machine Learning Algorithms

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Abstract

Today, computer aided systems play an important role in various fields of medical science such as diagnosis and treatment of diseases; therefore, selected tools should minimize error and maximize the confidence. In this study, considering the importance of cardiovascular disease in the world, the coronary artery disease is diagnosed by neural networks and machine learning algorithms. The proposed system employs three types of artificial neural networks, decision tree and Adaboost algorithm to distinguish people who suffer from heart disease and the healthy individuals using Cleveland's dataset. Among these algorithms, the multilayer perceptron neural network has the best performance and is able to predict coronary artery disease with the accuracy, sensitivity and specificity of 94.53%, 86.77%, and 99.39%, respectively. The superiority of the proposed system is obvious comparing to other existing studies because it diagnoses the disease with higher accuracy, sensitivity and more reliability.

References


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**Index Terms**

Computer Science  
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Keywords

Multi-layer Perceptron Neural Network (MLP), Self-Organizing Map Neural Network (SOM), Decision Tree, Adaboost, Coronary Artery Disease, Heart Disease.