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Aljaaf, A.J.^a, Al-Jumeily, D.^a, Hussain, A.J.^a, Dawson, T.^b, Fergus, P.^a, Al-Jumaily, M.^c

Predicting the likelihood of heart failure with a multi level risk assessment using decision tree

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^a Applied Computing Research Group, Liverpool John Moores University, Byrom Street, Liverpool, United Kingdom

^b Rescon Limited, Hampshire, United Kingdom

^c Sulaiman Al Habib Medical Center, Dubai Healthcare City, Dubai, United Arab Emirates

Abstract

Heart failure comes in the top causes of death worldwide. The number of deaths from heart failure exceeds the number of deaths resulting from any other causes. Recent studies have focused on the use of machine learning techniques to develop predictive models that are able to predict the incidence of heart failure. The majority of these studies have used a binary output class, in which the prediction would be either the presence or absence of heart failure. In this study, a multi-level risk assessment of developing heart failure has been proposed, in which a five risk levels of heart failure can be predicted using C4.5 decision tree classifier. On the other hand, we are boosting the early prediction of heart failure through involving three main risk factors with the heart failure data set. Our predictive model shows an improvement on existing studies with 86.5% sensitivity, 95.5% specificity, and 86.53% accuracy. © 2015 IEEE.

Author Keywords

data mining; decision tree; heart failure; prediction and classification

Index Keywords

Artificial intelligence, Cardiology, Data mining, Decision trees, Forecasting, Heart, Learning systems, Risk assessment, Trees (mathematics); C4.5 Decision tree classifier, Causes of death, Developing hearts, Early prediction, Heart failure, Machine learning techniques, Predictive modeling, Predictive models; Safety engineering

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