An Experimental Study on Early Prediction of Heart Disease Using Machine Learning and Deep Learning Approaches

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ABSTRACT

Human body prioritizes the heart as the second most important organ after the brain. Any disruption in the heart ultimately leads to disruption of the entire body. Being the members of modern era, enormous changes are happening to us on a daily basis that impact our lives in one way or the other. A major disease among top five fatal diseases i.e., the heart disease which has been consuming lives worldwide. Therefore, the prediction of this disease is of prime importance as it will enable one to take a proper and needful approach at a proper time. Data mining and machine learning are taking out and refining of useful information from a massive amount of data. It is a basic and primary process in defining and discovering useful information and hidden patterns from databases. The flexibility and adaptability of optimization algorithms find its usein dealing with complex non-linear problems. Machine Learning and deep learning techniques find its use in medical sciences in solving real health-related issues by early prediction and treatment of various diseases. In this paper, five machine learning algorithms are used and a deep learning algorithm is used which are then compared accordingly based on the evaluation of performance. The primary aim of this research study is to analyse comparatively the various machine learning algorithms and a deep learning algorithm for heart disease prediction. The various algorithms used for the study are: Support Vector Machine (SVM), Linear Regression (LR), Naïve Bayes (NB), Decision Tress (DT), Artificial Neural Networks (ANN) and Convolutional neural networks (CNN). After analysis, CNN outperforms over other algorithms with a testing accuracy of 98.24%.

Keywords: machine learning; deep learning; machine learning algorithms; heart disease.

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