Prediction of Cardiovascular Diseases Using Machine Learning Algorithms

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Cardiovascular diseases are among the leading causes of death worldwide. Cardiovascular diseases include both heart and blood vessel diseases. This research-based project focuses on the prediction of cardiovascular diseases using different machine learning algorithms. Before building the machine learning models, data preprocessing was done to make the prediction and analysis process easier. And then finally, the findings were compared to the previous related works to get the most accurate and valid machine learning algorithms.

In this project, 20 % of the dataset was used for testing and 80% of the dataset was used for training. And then one of the popular supervised machine learning algorisms which is classification was trained for the prediction of cardiovascular diseases. The target is to predict whether the patient has the probability of having cardiovascular disease or not. To get accurate results, the modeling, as well as the analysis processes, were done with a stepwise approach. Therefore, different types of binary classification algorithms were modeled. These binary classification algorithms were grouped into linear and non-linear models.

From linear binary classification models Supportive Vector Machine-Linear Classifier and Logistic Regression were the top two algorithms with 72.16% and 72.13% approximate accuracy respectively. And from binary non-linear classification models; Random Forest Classifier, Supportive Vector Machine-Radial Basis Function Classifier, and Multilayer Perceptron Classifier had the best performance with an approximate accuracy of 82.50%, 73.20%, and 72.67% respectively.

In conclusion, machine learning models have a significant role in the prediction of cardiovascular diseases. Therefore, researchers, healthcare experts, and computer scientists should work together to bring the application of machine learning to diagnose cardiovascular diseases in every healthcare setting worldwide.