Visualizing and Predicting Heart Diseases with an Interactive Dashboard

Aditi Gavhane et al. (2018) suggested a Neural Network model to predict heart diseases. It takes age, sex, blood pressure, heart rate, diabetes, cholestral and BMI as input into the Multilayer Perceptron algorithm. The sensors like AliveKor, MyHeart, HealthGear and Fitbit generate the parameters for the algorithm.

R. Valarmathi et al. (2021) proposed a prediction system to detect heart disease which involves hyper parameter tuning of Random Forest Classifier and XGBoost Classifier model. Cleveland Heart Disease dataset (CHD) and Z-Alizadeh Sani dataset is used for the evaluation process. The performance of the algorithm is analyzed using Bayesian Optimization based on the Gaussian process. The parameters are tuned using methods like Grid Search, Randomized Search and Tpot Classifier. The random forest model with TPOT classifier gives the highest accuracy of 97.52% for the CHD dataset.

Davide Chicco et al. (2020) used Gene Expression Omnibus dataset to predict heart disease. Random Forest Classifier with enhanced feature elimination method is used to identify the genes involved in heart failure. This system works well with an imbalanced dataset. Matthews Correlation Coefficient (MCC) and area under the receiver operating characteristic curve (ROC AUC) is used to evaluate the efficiency of the classifier model.

K.Mathan et al.(2018) suggested a decision tree data mining approach with a Neural network classifier for the prediction of heart disease.Among the various prediction models the Neural networks and Gini index prediction model results in accurate prediction.A multi-layer perceptron neural networks (MLPNN) is utilized.The calculation depends on the decision trees.The most noteworthy precision accomplished is 86.1% by the equivalent width Gain ratio decision tree.

Awais Mehmood et al.(2021) propose a method named CardioHelp which predicts the probability of the presence of cardiovascular disease in a patient by incorporating a deep learning algorithm called convolutional neural networks (CNN). The proposed method is concerned with temporal data modeling by utilizing CNN for HF prediction at its earliest stage.The heart disease dataset is compared with the results of state-of-the-art methods and achieved good results. Experimental results show that the proposed method outperforms the existing methods in terms of performance evaluation metrics. The achieved accuracy of the proposed method is 97% for the CHD dataset.

P.K. Anooj et al.(2011) suggested a weighted fuzzy rule-based clinical decision support system (CDSS) for the diagnosis of heart disease, automatically obtaining knowledge from the patient's

clinical data. It has two phases: (1) automated approach for the generation of weighted fuzzy rules and (2) developing a fuzzy rule-based decision support system. The first phase uses the mining technique, attribute selection and attribute weightage method to obtain the weighted fuzzy rules. Then, the fuzzy system is constructed in accordance with the weighted fuzzy rules and chosen attributes. Finally, the experimentation is carried out on the proposed system using the datasets obtained from the UCI repository and the performance of the system is compared with the neural network-based system utilizing accuracy, sensitivity and specificity.

Deepika D et al.(2021) suggested an optimized unsupervised technique for feature selection and novel Multi-Layer Perceptron for Enhanced Brownian Motion based on Dragonfly Algorithm (MLP-EBMDA) for classification of heart disease.approach.Classification has been performed by multi-layer perceptron incorporated with enhanced Brownian motion on the basis of dragonfly algorithm.The analytical results explored that the proposed system has shown effective results than the traditional methods in terms of accuracy for predicting the heart disease. The proposed system revealed prediction accuracy at the rate of 94.28% and sensitivity as 98.92%, thus resulting in better prediction of heart disease as normal or abnormal.

Md Mamun Ali et al.(2021) found that using a heart disease dataset collected from Kaggle three-classification based on k-nearest neighbor (KNN), decision tree (DT) and random forests (RF) algorithms the RF method achieved 100% accuracy along with 100% sensitivity and specificity.Thus the significant rate of incorrectly diagnosed cases which could be addressed by developing accurate and efficient early-stage heart disease prediction by analytical support of clinical decision-making with digital patient records.

C. Beulah Christalin Latha et al.(2019) improving the accuracy of prediction of heart disease risk based on ensemble classification techniques, to improve the performance, weak classifiers and ensemble algorithms are used, this work has used ensemble algorithms such as bagging, boosting, voting, and stacking. Some of the techniques used for such prediction problems are the Support Vector Machines (SVM), Neural Networks, Decision Trees, Regression and Naive Bayes classifiers. This work has used ensemble algorithms such as bagging,boosting, voting, and stacking.

Ashok Kumar Dwivedi et al.(2018) performance evaluation of different machine learning techniques for prediction of heart disease, six machine learning techniques have been applied including artificial neural network (ANN), support vector machine (SVM), logistic regression, k-nearest neighbor (KNN), classification tree and Naive Bayes. Moreover, the performance was compared using receiver operating characteristic (ROC) and calibration graph, the highest classification accuracy of 85% was reported using logistic regression with sensitivity and specificity of 89 and 81%.