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Diabetes Disease Prediction Using Machine Learning Algorithms

ABSTRACT

Diabetes is among critical diseases and lots of people are suffering from this disease. Age, obesity, lack of exercise, hereditary diabetes, living style, bad diet, high blood pressure, etc. can cause Diabetes. People having diabetes have high risk of diseases like heart disease, kidney disease, stroke, eye problem, nerve damage, etc. Current practice in hospital is to collect required information for diabetes diagnosis through various tests and appropriate treatment is provided based on diagnosis. Big Data Analytics plays a significant role in healthcare industries. Healthcare industries have large volume databases. Using big data analytics one can study huge datasets and find hidden information, hidden patterns to discover knowledge from the data and predict outcomes accordingly. In existing method, the classification and prediction accuracy are not so high.

This project deals with the prediction of Diabetes Disease by performing an analysis of five supervised machine learning algorithms, i.e., K-Nearest Neighbours, Naïve Baye, Decision Tree Classifier, Random Forest and Support Vector Machine. Further, by incorporating all the present risk factors of the dataset, we have observed a stable accuracy after classifying and performing cross-validation. We managed to achieve a stable and highest accuracy of 76% with KNN classifier and remaining all other classifiers also give a stable accuracy of above 70%. We analysed why specific Machine Learning classifiers do not yield stable and good accuracy by visualizing the training and testing accuracy and examining model overfitting and model underfitting. The main goal of this project is to find the most optimal results in terms of accuracy and computational time for Diabetes disease prediction.

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