*Abstract*— **This paper helps in predicting diabetes by applying machine learning technique. Thus, the most important issue is the prediction to be very accurate and to use a reliable method for that. Three different machine learning algorithms are used in this research work. For experiment purpose, a dataset of patient's medical record is obtained and three different machine learning algorithms are applied on the dataset. Performance and accuracy of the applied algorithms is discussed and compared. Comparison of the different machine learning techniques used in this study reveals which algorithm is best suited for prediction of diabetes. The results show that the machine learning algorithms can able to produce highly accurate diabetes predictive healthcare systems.**

Keywords— Machine learning algorithms, Diabetes prediction, Neural network, Logistic regression, Prediction, Data classification.

**Proposed Solution**

Here we are proposing the algorithm using the neural network with feed-forward network. Backpropagation algorithm is used for learning procedure and for training the multilayer feed-forward network. It can be utilized for purpose like medical diagnosis, pattern classification, image processing, character recognition etc. But Traditional approach of this algorithm is need to be determined the number of units in the hidden layer before training is started in the neural network. To overcome this difficulty many algorithms, that construct a network dynamically, had been proposed.

Out of them, the well-known constructive algorithms are dynamic node creation (DNC), feed-forward neural network construction (FNNC) algorithm. In first step, we are creating and initializing neural network with one hidden layer and attributes of dataset and give random weight to all the feature and hidden layer nodes links. We made 80% of data for training and 20% of data for testing. Then Split the data into independent’X’(the features) and dependent 'y' variables (the target). Then we build model of Neural network. Here we use “relu” for hidden layers and “hard sigmoid”. We use an optimizer “adam”. Then we train the model with 200 epochs. Then we use another two models. Those are logistic regression classifier and decision tree classifier. Finally, we get the final accuracy of these three models.

Result:

|  |  |
| --- | --- |
| Models | Accuracy |
| Neural Network | 0.76 |
| Decision Tree | 1.0 |
| Logistic Regression | 0.767 |

So, Here Decision tree works better.

**Conclusion and Future Work**

In this paper, the issue of current medical diagnosis system and various machine learning algorithms are used for the medical prediction is explained. The focus is on using different algorithms and consolidation of certain target attributes to predict lung cancer effectively using machine learning algorithms. For predicting lung cancer, significantly 6 attributes are listed and give priories using information gain and using hidden layer of neural network we tried to improve the accuracy and result of current working system, we have already apply the machine learning techniques like CNN, decision tree, logistic regression on diabetes actual data to get the optimal outputs. The proposed work will be further increased developed for the automation of the diabetes disease prediction more accurately.