GLA University, Mathura-2021
Diabetes Prediction
(Mini project Synopsis)

Under the supervision

Of

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1.1 GROUP DISCUSSION

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1.2 INTRODUCTION

Proposed Diabetes Prediction is a machine learning application which predicts whether the patient whose details have been entered is diabetic or not. There are various parameters on which this model will predict the condition. Some of them include the number of pregnancies the patient had, the BMI (Body Mass Index), the glucose intake, diastolic blood pressure, skin thickness, age etc.

1.3 OBJECTIVE

The aim of this project is to develop a system which can perform early prediction of diabetes for a patient with a higher accuracy by combining the results of different machine learning techniques. This project aims to predict diabetes via three different supervised machine learning methods including: SVM, Logistic regression.
This project also aims to propose an effective technique for earlier detection of the diabetes disease.

1.4 MOTIVATION

Diabetes is a group of metabolic disorders in which there are high blood sugar levels over a prolonged period. Symptoms of high blood sugar include frequent urination, increased thirst, and increased hunger. If left untreated, diabetes can cause many complications. Acute complications can include diabetic ketoacidosis, hyperosmolar hyperglycemic state, or death. Serious long-term complications include cardiovascular disease, stroke, chronic kidney disease, foot ulcers, and damage to the eyes.

So it is really important to predict diabetes before any of the disorders take place and this application can be easily implemented through various machine learning classification algorithms that have been discovered and this can be an further asset to medical sciences.

1.5 EXISTING SYSTEM

In this system, the researchers propose the use of algorithms like Bayesian to apply on diabetes patient's database and analyse them by taking various attributes of diabetes for prediction of diabetes disease. A researcher has proposed study on prediction of diabetes using machine learning algorithms in healthcare they applied six different machine learning algorithms

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. Diabetes Prediction is becoming the area of interest for researchers in order to train the program to identify the patient are diabetic or not by applying proper classifier on the dataset. Based on previous research work, it has been observed that the classification process is not much improved. Hence a system is required as Diabetes Prediction is important area in computers, to handle the issues identified based on previous research.

1.6 DATASET

This **dataset** is originally from the National Institute of Diabetes and Digestive and Kidney Diseases. The objective of the dataset is to diagnostically predict whether or not a patient has diabetes, based on certain diagnostic measurements included in the dataset. Several constraints were placed on the selection of these instances from a larger database. The datasets consists of several medical predictor variables and one target variable, Outcome. Predictor variables include the number of pregnancies the patient has had, their BMI, insulin level, age, and so on.

- **Pregnancies**: Number of times pregnant
- **Glucose**: Plasma glucose concentration a 2 hours in an oral glucose tolerance test
- **Blood Pressure**: Diastolic blood pressure (mm Hg)
- **Skin Thickness**: Triceps skin fold thickness (mm)
- **Insulin**: 2-Hour serum insulin (mu U/ml)
- **BMI**: Body mass index (weight in kg/(height in m)^2)
- **Diabetes Pedigree Function**: Diabetes pedigree function
- **Age**: Age (years)
- **Outcome**: Class variable (0 or 1)

1.7 TECHNOLOGY USED
- Technology used : Machine Learning
- Software used : Anaconda and Jupyter notebook
- Language Used : Python
- Cloud Platform: Heroku
- User Interface Design : HTML , CSS

1.8 HARWARE REQUIREMENT

- Processor: Intel i5 processor
- RAM: 8GB
- Operating System: Any O.S other than Window 7
- Hard disk: 256 GB

1.9 EXPECTED OUTCOME

After the building of this machine learning model, we will be able to detect whether the person is suffering from diabetes or not as it is necessary for a person to maintain proper health.

1.10 FUTURE SCOPE

Since this dataset is originally from the National Institute of Diabetes and Digestive and Kidney Diseases, this may be taken as a real time application to predict diabetes in a patient suffering from any of the symptoms and can be a contribution to the medical sciences.

A particular method to identify diabetes is not very sophisticated way for initial diabetes detection and it is not fully accurate for predicting diseases. That's why we need a smart hybrid predictive analytics diabetes diagnostic system that can effectively work with accuracy and efficiency. We can use data mining, neural network for exploring and utilizing to support medical decision, which improves in diagnosing the risk for pregnant diabetes. Due to the dataset we have till date are not up to the mark, we cannot predict the type of diabetes, so in future we aim to predicting type of diabetes and explore it, which may improve the accuracy of predicting diabetes.