

# Diabetes Mellitus Prediction

## Abstract:

Diabetes mellitus is a chronic disease characterized by hyperglycemia. It may cause many complications. According to the growing morbidity in recent years, in 2040, the world's diabetic patients will reach 642 million, which means that one of the ten adults in the future is suffering from diabetes. In this project, I have built a machine learning model that can efficiently discover the rules to predict diabetes mellitus of patients based on the given parameter about their health. The model has been deployed in the IBM cloud to get scoring endpoint which can be used as API in web app building. The model prediction has showcased on User Interface using Node-Red.

## 1. Initially we have collected the Diabetes dataset from Kaggle Web site.

Data set details:

1. Pregnancies describe the number of times the person has been pregnant.
2. Glucose describes the blood glucose level on testing.
3. Blood pressure describes the diastolic blood pressure.
4. Skin Thickness describes the skin fold thickness of the triceps.
5. Insulin describes the amount of insulin in a 2hour serum test.
6. BMI describes the body mass index.
7. DiabetesPedigreeFunction describes the family history of the person.
8. Age describes the age of the person
9. Outcome describes if the person is predicted to have diabetes or not.

Based on the above 8 parameters, we need to predict the class of 0 or 1.

1 -- Diabetes is Positive

0 -- Diabetes is Negative

## 2. Services Used:

1. IBM Watson Studio
2. Auto AI
3. IBM Watson Machine Learning
4. Node-RED
5. IBM Cloud Object Storage

## 3. Project Description:

In this project, our machine learning model predicted class 0 or 1, based on the 8 parameters given in the dataset. Here we have used 3 folds cross validation method to split training and test data. Our data set split in to Training data - 90% and Test data - 10%.

Our machine learning model has chosen Binary Classification as Prediction type and Accuracy as Optimized metric based on the output parameter 'class'. Once the Experiment Results completed we saved two models of XGBClassifierEstimator with less accuracy and high accuracy. After that we deployed our model using the 'online' deployment type and test our predicted data.

In addition, we started Node-Red service and imported the Json file as new flow. We have installed Node-Red dashboard for unavailable nodes. Here we have designed the form for User Interface and changed the API key and variables in the pre-token node. As well as, we have given Endpoint in the http request node. Then, we deployed our flow, checked the debug messages. Finally, we have tested our data in User Interface and predicted the class successfully.

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Home

Diabetes Mellitus Prediction

Pregnancies \*  
1

Glucose \*  
115

BloodPressure \*  
70

SkinThickness \*  
30

Insulin \*  
96

BMI \*  
34.6

DiabetesPedigreeFunction \*  
0.529

Age \*  
32

SUBMIT

CANCEL

Diabetes Prediction 1-YES, 0-NO  
1

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4