Diabetic Mellitus Prediction Using IBM AutoAI

Introduction:

1.1 Overview

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. There is no doubt that this alarming figure needs great attention. With the rapid development of machine learning, machine learning has been applied to many aspects of medical health for accurate predictions.

1.2 Purpose:

This project prevents the people from the avalanche by priory informing them there is a chance to the occurrence of avalanche or not. The model gets the data from the IOT based sensors. After that we want to process those data using a suitable algorithm, then our model display whether the avalanche occur or not and how strength it was. To analyse the data coming from different sensors we are applying various machine learning algorithms. If there is a chance of avalanche then the notification will be sent to people so that they can take decisions accordingly and the model is been built in Auto AI.

Literature Survey:

2.1 Existing Problem:

Diabetes mellitus, commonly known as diabetes, is a metabolic disease that causes high blood sugar. The hormone insulin moves sugar from the blood into your cells to be stored or used for energy. With diabetes, your body either doesn’t make enough insulin or can’t effectively use the insulin it does make.

Untreated high blood sugar from diabetes can damage your nerves, eyes, kidneys, and other organs.

There are a few different types of diabetes:

Type 1 diabetes is an autoimmune disease. The immune system attacks and destroys cells in the pancreas, where insulin is made. It’s unclear what causes this attack. About 10 percent of people with diabetes have this type.

Type 2 diabetes occurs when your body becomes resistant to insulin, and sugar builds up in your blood.

Prediabetes occurs when your blood sugar is higher than normal, but it’s not high enough for a diagnosis of type 2 diabetes.

Gestational diabetes is high blood sugar during pregnancy. Insulin-blocking hormones produced by the placenta cause this type of diabetes.

A rare condition called diabetes insipidus is not related to diabetes mellitus, although it has a similar name. It’s a different condition in which your kidneys remove too much fluid from your body.

Each type of diabetes has unique symptoms, causes, and treatments. Learn more about how these types differ from one another.

Symptoms of diabetes

Diabetes symptoms are caused by rising blood sugar.

General symptoms

The general symptoms of diabetes include:

increased hunger

increased thirst

weight loss

frequent urination

blurry vision

extreme fatigue

sores that don’t heal

Symptoms in men

In addition to the general symptoms of diabetes, men with diabetes may have a decreased sex drive, erectile dysfunction (ED), and poor muscle strength.

Symptoms in women

Women with diabetes can also have symptoms such as urinary tract infections, yeast infections, and dry, itchy skin.

Type 1 diabetes

Symptoms of type 1 diabetes can include:

extreme hunger

increased thirst

unintentional weight loss

frequent urination

blurry vision

tiredness

It may also result in mood changes.

Type 2 diabetes

Symptoms of type 2 diabetes can include:

increased hunger

increased thirst

increased urination

blurry vision

tiredness

sores that are slow to heal

It may also cause recurring infections. This is because elevated glucose levels make it harder for the body to heal.

Gestational diabetes

Most women with gestational diabetes don’t have any symptoms. The condition is often detected during a routine blood sugar test or oral glucose tolerance test that is usually performed between the 24th and 28th weeks of gestation.

In rare cases, a woman with gestational diabetes will also experience increased thirst or urination.

The bottom line

Diabetes symptoms can be so mild that they’re hard to spot at first. Learn which signs should prompt a trip to the doctor.

Causes of diabetes

Different causes are associated with each type of diabetes.

Type 1 diabetes

Doctors don’t know exactly what causes type 1 diabetes. For some reason, the immune system mistakenly attacks and destroys insulin-producing beta cells in the pancreas.

Genes may play a role in some people. It’s also possible that a virus sets off the immune system attack.

Type 2 diabetes

Type 2 diabetes stems from a combination of genetics and lifestyle factors. Being overweight or obese increases your risk too. Carrying extra weight, especially in your belly, makes your cells more resistant to the effects of insulin on your blood sugar.

This condition runs in families. Family members share genes that make them more likely to get type 2 diabetes and to be overweight.

Gestational diabetes

Gestational diabetes is the result of hormonal changes during pregnancy. The placenta produces hormones that make a pregnant woman’s cells less sensitive to the effects of insulin. This can cause high blood sugar during pregnancy.

Women who are overweight when they get pregnant or who gain too much weight during their pregnancy are more likely to get gestational diabetes.

The bottom line

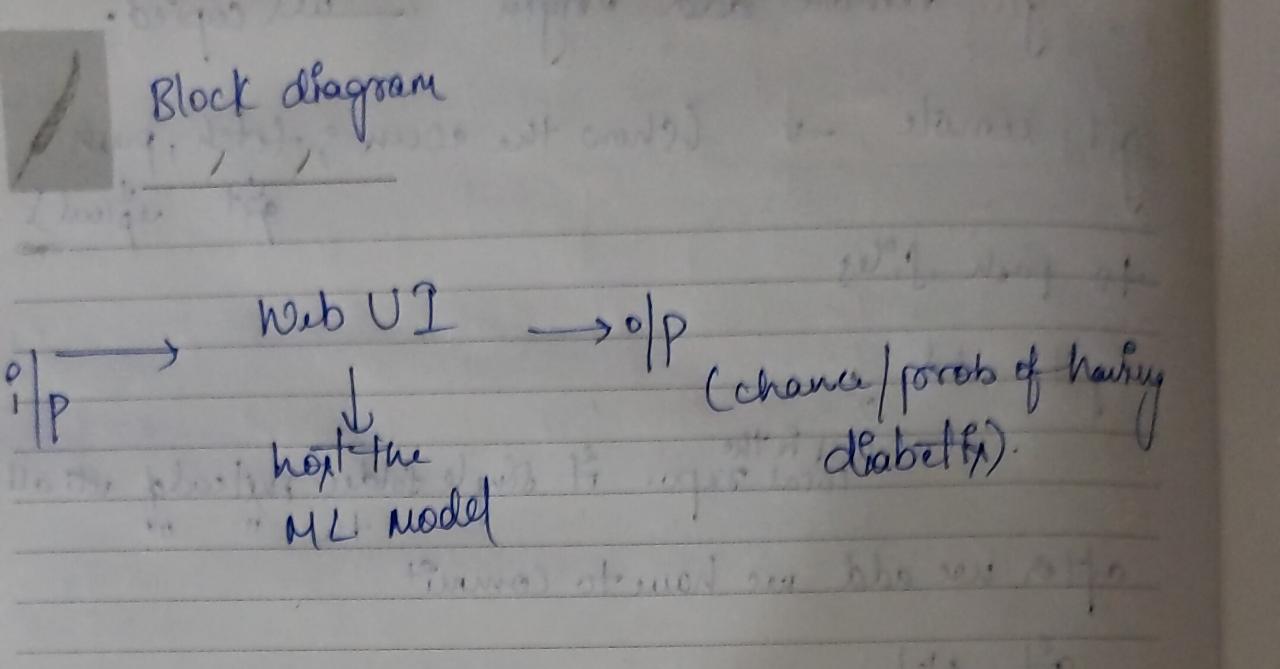
Both genes and environmental factors play a role in triggering diabetes. Get more information here on the causes of diabetes.

2.2 Proposed solution:

To detect diabetis by using existing data by use of a Machine learning Model deployed by using IBM watson.

3 THEORITICAL ANALYSIS

   3.1  Block diagram



3.2  Hardware / Software designing:

Was tested using the watson machine learning model on IBM cloud.

4 EXPERIMENTAL INVESTIGATIONS:

The model was said to be performing very consistently with a very decent accuracy.

5 FLOWCHART

6 RESULT:

The result desired was achieved and we have model deployed ath the url :

https://node-red-diaabetes-2020-08-27.eu-gb.mybluemix.net/ui

7 ADVANTAGES & DISADVANTAGES:

Available to all persons and can be used instead of panicking very quickly.

Easy to use.

Low Cost.

Large Reach.

Not Very Accurate

Requires doctor consultation

8 APPLICATIONS:

Python,Python For Data Analysis,Python For Data Visualization,Machine Learning,IBM Cloud,IBM Watson

9 CONCLUSION :

The project was successful and is very robust it does the functionlity it was intended to do when devised.

10 FUTURE SCOPE:

More data and more crucial parameters could be devised and thus we could hav better models in the future.

Also other metrics for accuracy which could lead to more accurate findings can also be used to test and train .

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12 APPENDIX

  A. Source code

global.set("preg",msg.payload.preg)

global.set("plas",msg.payload.plas)

global.set("pres",msg.payload.pres)

global.set("skin",msg.payload.skin)

global.set("test",msg.payload.test)

global.set("mass",msg.payload.mass)

global.set("pedi",msg.payload.pedi)

global.set("age",msg.payload.age)

var apikey="d34lxZu3-o4UcT9lZ2HPTVYQ3Ev8M1QthG9ZKg-JnFT-";

msg.headers={"content-type":"application/x-www-form-urlencoded"}

msg.payload={"grant\_type":"urn:ibm:params:oauth:grant-type:apikey","apikey":apikey}

return msg;

var preg = global.get('preg')

var plas = global.get('plas')

var pres = global.get('pres')

var skin = global.get('skin')

var test = global.get('test')

var mass = global.get('mass')

var pedi = global.get('pedi')

var age = global.get('age')

var token=msg.payload.access\_token

var instance\_id="e642fb3a-3614-4eb7-8cc7-40524503ceb8"

msg.headers={'Content-Type': 'application/json',"Authorization":"Bearer "+token,"ML-Instance-ID":instance\_id}

msg.payload={"input\_data": [{"fields": ["preg", " plas", "pres", "Skin ", "test", "mass", "pedi", "age"],"values": [[preg, plas, pres, skin, test, mass, pedi, age]]}]}

return msg;

https://eu-gb.ml.cloud.ibm.com/v4/deployments/296231294asa1d7-43e4-4c37-9ef4-36e90fec1e3a/predictions

msg.payload=msg.payload.predictions[0].values[0][1][1]

return msg;

  B. UI output Screenshot.

