

Industrial Practical Training – II
On

Diabetes Prediction

*submitted in partial fulfilment of the requirements
for the award of the degree.
of*

Bachelor of Technology

in

Computer Science and Engineering

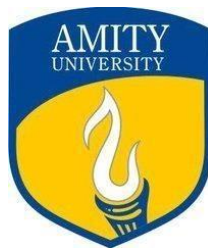
By

Aniruddh Jha

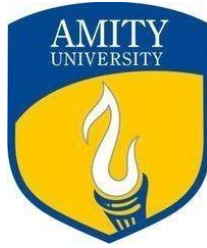
Enrolment No. A60205220160

Under the guidance of

Dr. Deepak Motwani
Associate Professor



Department of Computer Science and Engineering
Amity School of Engineering & Technology
Amity University Madhya Pradesh, Gwalior
December 2023



**Department of Computer Science and Engineering Amity School of Engineering & Technology Amity
University Madhya Pradesh, Gwalior**

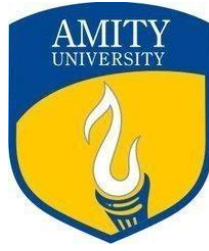
DECLARATION

I, **Aniruddh Jha** student of Bachelor of Technology in Computer Science and Engineering hereby declare that the Industrial Training Report - II entitled "**Diabetes Prediction**" which is submitted by me to Department of Computer Science Engineering, Amity School of Engineering & Technology, Amity University Madhya Pradesh, in partial fulfilment of the requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering, has not been previously formed the basis for the award of any degree, diploma or other similar title or recognition.

Date:-

Aniruddh Jha

(Enrollment No. – A60205220188)



CERTIFICATE

**Department of Computer Science and Engineering Amity School of
Engineering & Technology Amity University Madhya Pradesh, Gwalior**

This is to certify that **Aniruddh Jha** (Enrolment No. A60205220160), student of B.Tech (CSE) VII semester, Department of Computer Science and Engineering, ASET, Amity University Madhya Pradesh, has done his Industrial Practical Training II (for VII semester) entitled “**Diabetes Prediction**” under my guidance and supervision during “1 July to 31st July”.

The work was satisfactory. He has shown complete dedication and devotion to the given project work.

Date:-

(Dr. Deepak Motwani)

Associate Professor
Supervisor

External Examiner

(Dr. Vikas Thada)

Head of the Department

ACKNOWLEDGMENT

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Aniruddh Jha
A60205220160

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ABSTRACT

A system that may monitor calories and nutrients at meals each day will be immensely helpful for keeping our health, as people all over the world are becoming more interested in controlling their weight, feeding better foods, and avoiding food. This system gathers basic information about the user's height, weight, and age to calculate BMR and estimate the likelihood of developing diabetes. This information can then be shown on the system through the use of activities and bound food products that are high in fat and calories. As a user and administrator, log in. An online artificial specialist might be a larva that can calculate diets for humans. It functions as a diet authority in the same way as a real specialist.

Chapter 1

1.1 INTRODUCTION

Nowadays, a person's personality can be impacted by a number of health problems, such as a fitness setback, etc. As a result, we tend to square measure building this method for giving traditional people accurate workout facts and unique specialist data. Effective personalized diet advice is crucial for maintaining our health and preventing chronic illnesses; as a result, interactive diet planning enables users to better control their setup. The user and the admin are the two people measured in this square. After completing the registration form, the user logs in to the system. Users must enter their personal information after logging in, including their age, gender, height, weight, and level of exercise. After the user responds to a series of questions, the system calculates the user's BMR, calories burned, and predicts whether or not the user will get diabetes in the future. and will recommend a daily meal plan to the user based on that method. Artificial specializer can display the appropriate specializer for the login user based on the concept of estimated BMR (Basal Metabolic Rate). This software makes recommendations to the user about things to try, like workouts and nutrition plans. The user will receive a diet plan tailored to their BMR, calories, and diabetes prediction here.

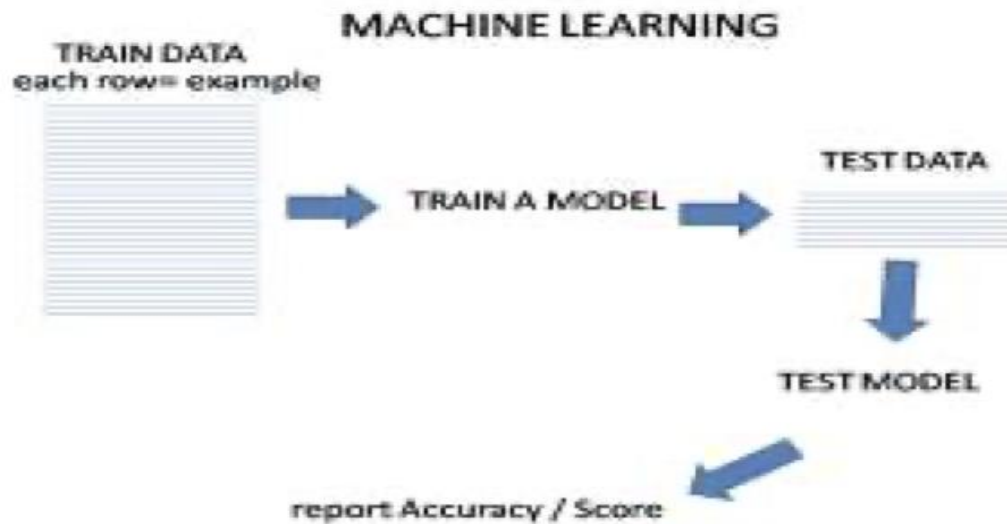
Chapter 2

2.1 PROPOSED APPROACH

Wherever users are required to register and log in as a result, the system can provide them with computer programs. The customer will then individually log in to the website. In the unlikely event when the customer has formally listed, the customer must typically create a record using the registration form. The customer will enter information such as their name, email address, password, and so on. By using their username and password, they will be able to log in to the system. Once successfully logged in, the user must enter personal information such as age, height, and weight on the BMR count structure. By weight, neither BMI nor BMR are inherited. Upon logging in, the user will be prompted with questions about age, height, weight, and activity level, including how much they exercise regularly. Next, the user will be asked about their goals, such as weight loss or gain, and the system will generate their BMR and calculate their caloric intake based on their responses. Additionally, it will forecast whether or not the user will get diabetes in the future. And this method will produce a daily nutrition plan based on everything. Our project's goal is to offer a diet system that creates detailed food diet charts based on an individual's age, weight, and medical conditions. The diet that the system recommends is described in depth by the system. It enables the user to comprehend their actual diet data, i.e., the percentage of calories they actually consumed, from which the system generates recommendations for foods and physical activity. This software technology shortens the duration and value of expert dietary recommendations. The eudemonia caring system is incredibly beneficial to dieticians.

Chapter 3

3.1 METHEDOLOGY



Machine learning is a kind of artificial intelligence that gives computers the capacity to learn automatically and get better over time without having to be specifically programmed. The focus of machine learning is on the development of computer programs that can access data and use it to further their own learning. The primary goal is to allow computers to learn automatically without human intervention or to facilitate and alter actions as a result. The learning tactic starts with observations or information, such as examples, direct experience, or instruction. From there, it looks for patterns in the information and periodically makes higher selections. The field of study known as "machine learning" gives computers the ability to tell stories without having to be specifically programmed.

One of the most fascinating technologies that people will ever come upon is machine learning. Because the naming makes it obvious, it gives the computer the ability to tell stories, which makes it a lot more like humans. These days, machine learning is being actively used, possibly in more contexts than one might think.

3.2 ALGORITHM USED

As the name suggests, random forest is made up of an excessive number of distinct call trees that function as an associate degree ensemble. Each tree in the random forest produces a category prediction; hence, our model predicts the class that receives the most votes.

VISUALIZATION OF A RANDOM FOREST MODEL MAKING A PREDICTION

The knowledge of crowds may be the simple yet effective fundamental idea of random forest. The following is the knowledge science explanation for why the random forest model performs well:

The secret lies in the low correlation amongst models. As low-correlated investments, such as stocks and bonds, tend to accumulate into a portfolio greater than the sum of its parts, unrelated models will produce ensemble predictions that are more accurate than any one of the individual projections. The reason for this amazing outcome is because the trees protect one other from each other's mistakes (as long as they don't always make the same mistakes). As a group, the trees are able to progress in the right direction even though some trees may also be incorrect. This is because several trees will always be accurate. The requirements for random forests to function well are :

1. For models built using our options to outperform random estimation, there must be some real signal in those options.
2. The separate trees' predictions—and hence, their errors—became less correlated with one another.

Chapter 4

4.1 HOW ALGORITHM IS USED

Suppose training set is given as: [X1, X2, X3, X4] with corresponding labels as [L1, L2, L3, L4], the random forest might produce three decision trees taking input of subset for example,

1. [X1, X2, X3]
2. [X1, X2, X4]
3. [X2, X3, X4]

In the end, it makes predictions by using the majority vote from each decision tree.

On our website, how does it operate?

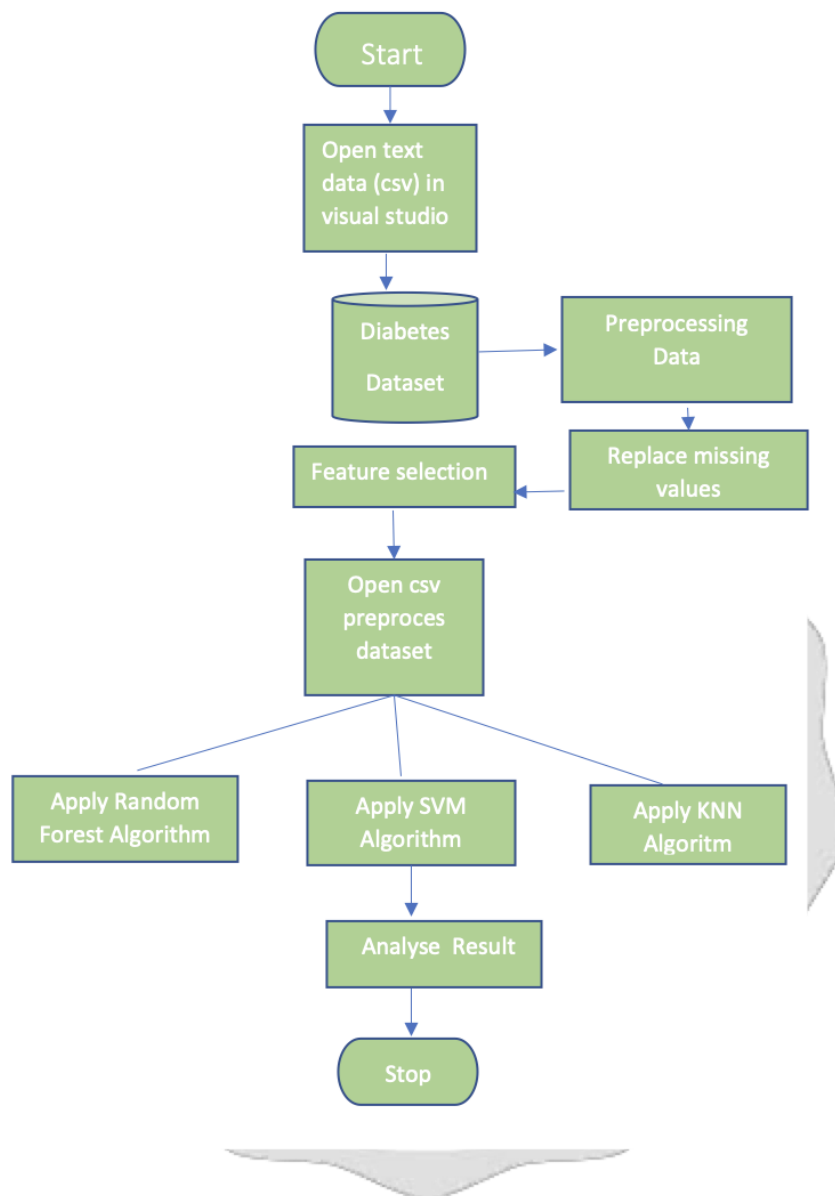
With the provided data set, we created accurate data using TensorFlow and Kaggle.

All potential possibilities will be measured by the dataset.

Example: Their age, gender, height, weight, and amount of exercise. How much weight a person can put on or take off, as well as their potential BMI, diabetes prediction, etc.

Chapter 5

5.1 BLOCK DIAGRAM



Chapter 6

RESULT AND DISCUSSION

DIABETES PREDICTION BASED ON LIFESTYLE

Pregnancy

Glucose

Blood Pressure

Skin thickness

Insulin

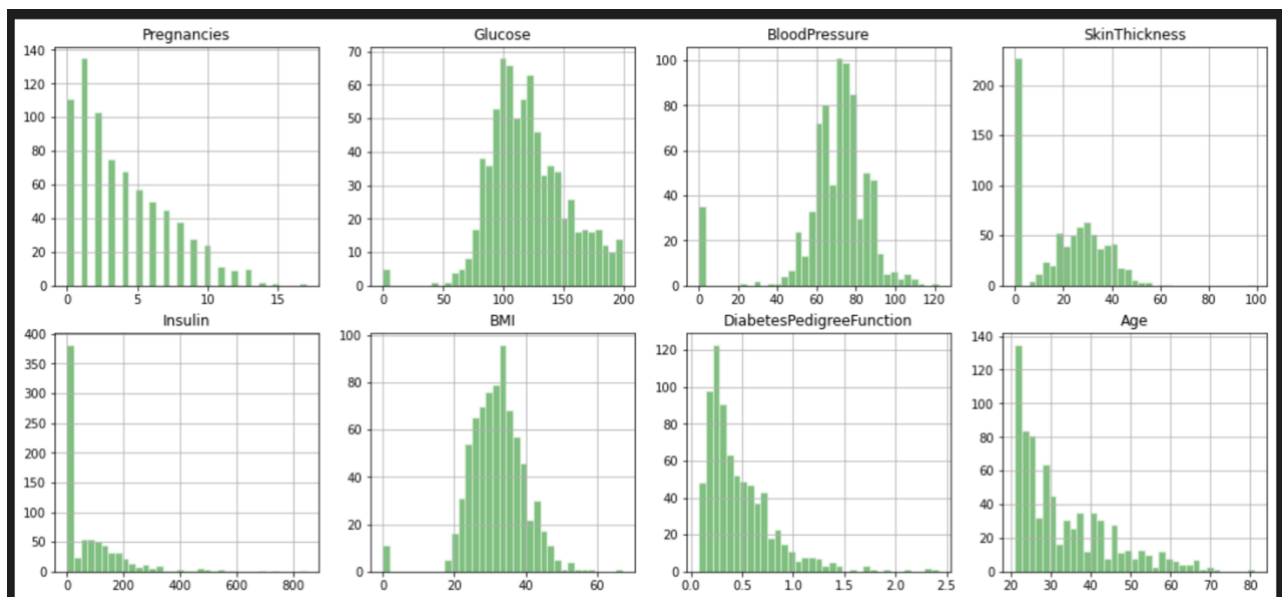
BMI

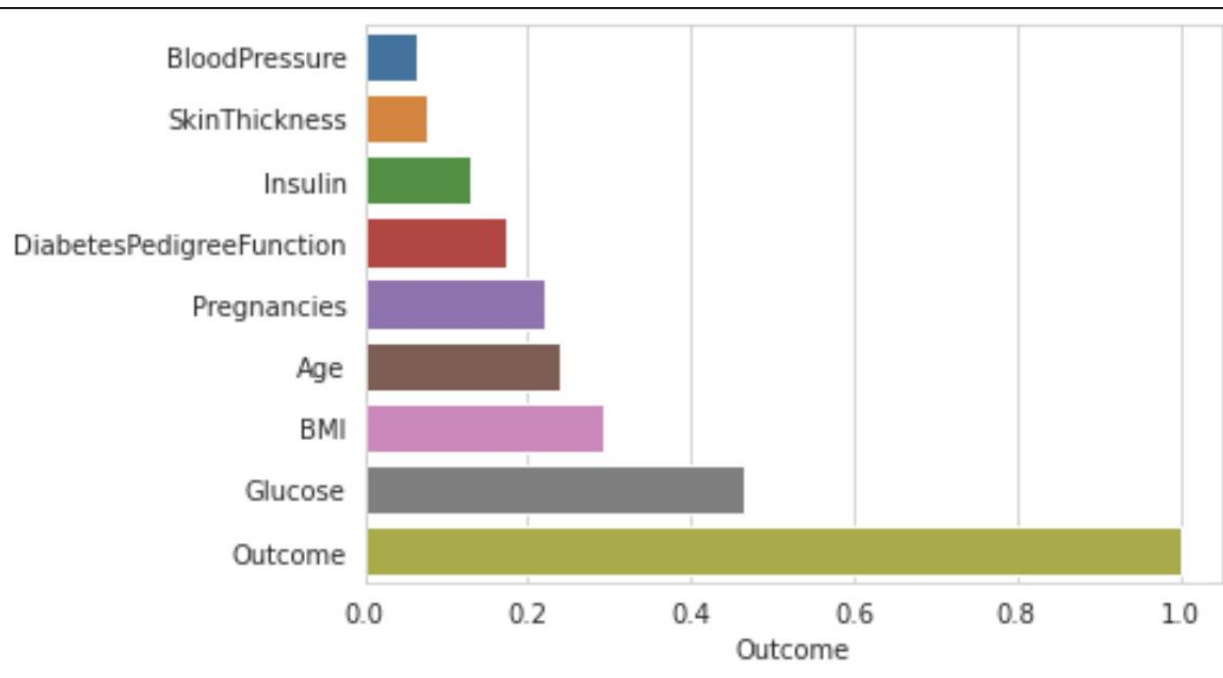
DPF

Age

{{prediction}}

SUBMIT





We have implemented BMR by entering our age, height, and weight. The system then inquires about the amount of regular activity we engage in. It then computes BMR, calorie consumption, and fat intake using this information. It makes predictions about the likelihood of diabetes in users. After training on datasets for around 48 hours, when accuracy reaches at least 80%, the encoded files will be decrypted, transformed into CSV files, and utilized on the website.

Chapter 7

Conclusion

This program is a good way to inform users about organic systems and encourage the usage of an excessive amount of accurate information provided with the help of nutritionists. Our actions are frequently those of adjuncts; people shouldn't go see the elite. The plan will help those who are struggling with their diets because they are getting closer to not needing to see dieticians. Because the services offered by our system are free of charge, unlike other options on the market right now, consumers are able to avoid spending time or money by having diets supplied directly to their screens. The best user applications have an easy-to-use and affordable human-device interface, and they are developed on an internet and automation platform. Since our application uses artificial intelligence, every user will receive a customized diet based on their needs and preferences.

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