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Calorie and Body Mass Index Prediction Using Machine Learning

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ABSTRACT—

Our Project mainly focuses on the health of the people to consume right quantity and quality of food in a day.

It will also predict the amount of calories present in the food items images also plans for the diet of a person in a day and it will also predicts the Body Mass Index of a person using height and weight of a person.

The proposed system will be based on Machine Learning, Artificial Intelligence to predict the required values needed by the system.

Keywords— *Big data, artificial intelligence*

I. Introduction

This Food and Liquid Quality Prediction using machine learning is a system that insures the people to take right amount of quantity and good quality of products to keep their body healthy and fit.

So, we have to maintain the correct calorie intake and perform physical activities in order to burn those calories and Our body mass index should be maintained as healthy as it leads to many problems. This particular system uses the different types of algorithms in order to provide the information about quantity and quality of food what people were taken.

1.1 Introduction of Project area/Domain

So in order solve is form of problem we came across with this Full stack web application machine learning System to provide the information of quantity and quality of the food.

To overcome the drawbacks of the previous methods of paper based and we introduce a project to track a vehicle using Traditional systems. This System can also be used for Body Mass Index Estimation, Calories Estimation in that particular system and many more, by just making few changes in hardware and software and widely prediction different types components not even food and liquid etc.

1.2 Existing System

In existing or previous system you can manually check the calorie consumption using the label mentioned on the food item

Body Mass Index will be calculated manually by mathematical formulae.

Disadvantages:

The Prediction of food will be done by manually and not effective prediction.

Does not providing the sufficient information about the Calories of that particular food and does not providing the about Body mass.

1.3 Proposed System

We are proposing a Full stack web application with machine learning prediction system that solves the problems of people to provide the information about that particular food and diet.

The project also helps parents to track their children heath by providing the age and weight then it will provide the heathy diet food for their children.

Features:

1. Home page

This dashboard can be accessed by People to Know about the different types of estimation of food quality.

This page contains different types of components so, that when a user clicks on the particular option then our application displays a list of information with different types estimations

2.Food Quality estimation Page:

In this Food Quality estimation Page we can provide the image of the food or we can provide the components that are involved in this food so, that our system will estimate and predict the quality of food by taking the inputs from the users

3. Body Mass Index Estimation Page:

On the Body Mass Estimation Page we can provide the Age and Weight of the user or Photo of the user so, that by taking the user inputs the prediction process will be done.

4. Diet Estimation of Food Page:

When we click on the Provided options of different kinds of food items then our application will predict the calories of that particular food what we have taken and also the diet formula will be generated automatically based on the above user inputs

1.4 Objectives of the Project

The present generation requires the information time to time. The use of technology has been increasing day by day. So, we are planning for the combination of present technology with the requirement of information transmission, we planned for the creative approach of "Food and Liquid Quality Prediction using machine learning".

This System is the technology used to determine the Prediction of a quality and many more using different algorithms like KNN and Random Forest other Image recognition systems operating through machine learning codes. This system is an important tool for predicting each and every component of food at a given period of time and now it is becoming increasingly popular for people having diet concern for healthy life.

1.5 Organization of Project

For effective development of project we used several tools to make the project successful and the development undergo several phases to release the final product.

To develop the project together by team members, we used various tools to make the work productive, faster and effective. The tools that we used are listed below

- HTML, CSS AND JAVASCRIPT AND FLASK (Frontend and Database management)
- GitHub (source code management)
- K-NN and Random Forest algorithms (Prediction Process)

Food and Liquid Quality Prediction using machine learning combines two modules the are Front End User Application and Backend Prediction Process of User Inputs.

For Frontend User Application we used the HTML, CSS and JavaScript frameworks which provide additional features than regular JavaScript and it makes website more dynamic.

Coming to the database we used Flask which is used to give the Predictions for user Based on the Pre-Trained Data. It is faster and we can retrieve the data in database faster to display in our application.

II. Literature survey

[An Improved Traceability System for Food Quality Assurance and Evaluation Based on Fuzzy Classification and Neural Network]

Authors: panel Jing Wang[a] Huili Yue[a] Zenan Zhou[b]

The system uses Artificial intelligence with the help of fuzzy classifications which is used in-order to Predict the Quality of Food which will be carried out by neutral networks. The exact prediction of the quality information is not shown, only an approximate quality information is shown based on the fuzzy classifications.

III. RELATED WORK

MODULES

User Module :

This dashboard can be accessed by People can select Provided Options in the dashboard page .

This page contains a Three Module when a user clicks Module, our application displays a list of Information about Prediction details where user can provide

Image of Food

Components of Food

Body Mass index Prediction

Diet control Prediction.

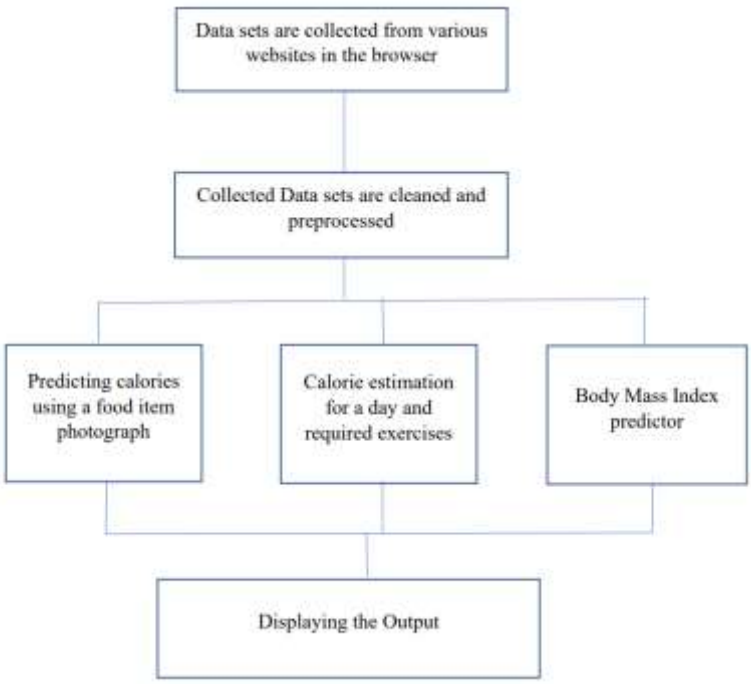
Web Interface :

First, we created a simple web application using HTML, CSS, and JavaScript. In that web application we introduced three sub modules, In the first module we will give a picture as an input and our algorithm will predict the number of calories in it. In the second module we have to give our weight as an input and we divided the diet into three parts i.e. Breakfast, Lunch, and Dinner based on the weight we provided and the items we selected it will check whether we consumed more or less calories. In the next module there are two parts, in the first part it will take weight and height as input and tells the Body Mass Index, in the next part it will take image as an input and predicts the BMI.CRUD (create , read , update , delete) operations performed by admin

Machine Learning : In this module first we collected the required data sets and kept them in the folder then we introduced Random Forest algorithm and KNN algorithm.

Using these algorithms our model will predict the output based on the previous data

DESIGN ARCHITECTURE AND ITS EXPLANATION

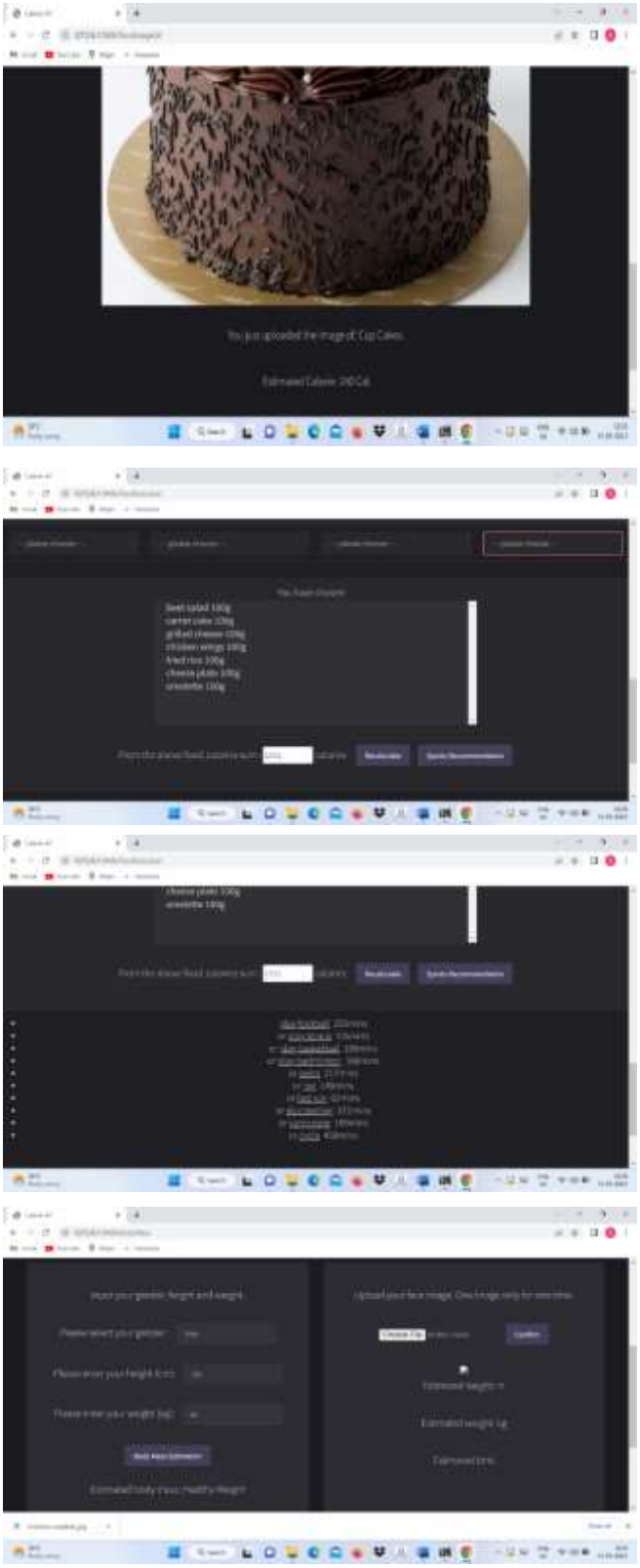


IV.TEST CASES REPORTS

S. No	Test case Passed	Expected Output	Actual Output	Result
1.	Calorie prediction using image	Calories Predicted	Calories Predicted	Pass

2.	Calorie estimation and physical activity	Calories estimated	Calories estimated	Pass
3.	BMI prediction	BMI predicted	BMI predicted	Pass

V. RESULT SCREENS



Output:

This application displays the value of calories of food items and liquid.

VI. CONCLUSION & FUTURE SCOPE

From this project we can conclude that consuming right quantity and quality of food can help people to stay fit and healthy.

Perform the physical activities as suggested by our algorithm will keep you healthy.

It is important to maintain your Body Mass Index healthy.

Consume only the good quality food available in the market

Technology

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