Personal Nutritionist using FatSecret API

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Abstract- *In today's fast-paced life people are being casual towards their health and fitness and many of us can not afford personal nutritionists who can guide our calorie intake in order to be healthy and active. So we thought to develop an application that will help people to recommend food based on their body type and calorie intake capacity. The classification of the user and based on this classification recommendation of the food according to their eating habits, these are the two important tasks done in this project. The user is classified into different body types like Normal, Overweight, Underweight and Obese by using Naive Bayes algorithm. For this classification, we are considering factor-like BMI & Fat-percentage. BMR and Fat-percentage are other important factors to calculate calorie intake. Based on the calorie intake and body type food is recommended to the user with the help of Fatsecret API. The system is developed for the adaptive delivery of the nutrient contents food to be fit and healthy. This system recommends not only the nutrient content food but also the recipes regarding that food. We have developed the website for this project for user interaction.*

Key Words: **FatSecret API, BMI, BMR, fat-percentage, food recommendation, Naive bayes algorithm**

1. INTRODUCTION

Health is an important factor in life. Healthy food has a great impact on lifestyle quality. Unhealthy food leads to many health issues. So one should know about what kind of food items they should eat so that they can live a healthy life. Every person has a different body structure and a different living lifestyle. We are considering the different factors like BMI, BMR and Body Fat-percentage to recommend food to the user. We are considering the factor BMI provides the information needed to successfully manage your weight. Hence it is not a sufficient factor to recommend food to the user. Every person possesses a different kind of metabolism i.e. BMR. BMR suggests the intake of calories. Metabolism is calculated according to your different living habitats. Different living habitats like some people are living sedentary lifestyle that they do little or no exercise, some are lightly active that they do light exercise or play sports 1-3 days in a week, some are moderately active that they do moderate exercise or play sports 3-5 days in a week, some are very active that they do hard exercise or play sports 6-7 days in a week. Based on these different living habits person possesses the different metabolism. With the help of this we can find the accurate calorie intake of that person and suggests the proper nutrient content food do them.

1.1 Why BMI and Body Fat-percentage

BMI is used to classify the user into different body types such as normal, overweight, underweight and obese. But BMI does not work for everyone. Some people's weight and height measurements put them in the overweight or even obese category while in reality, they are lean and muscular. On the other hand, some people's BMI indicates that they are healthy, when they are actually overweight, with little lean tissue and to much fatty tissue. So, it is important to find out the Body Fat-percentage with the BMI to classify the user into a correct body type.

1.2 Why FatSecret API

Recommendation of the appropriate food with their nutrition value is very essential for the user. FatSecret API is the best food and nutrition database. It consists of various food items and their nutrition values. FatSecret API provides "customer key" and "customer secret "for user authentication but only for developers. FatSecret provides different types of API's like python, Java, REST, PHP, for developer's convenience we have used python API. Python has a fatsecret module which includes many methods such as Food-search(), Recipe-get(),Food-entries-copy() etc.

2. Methodology

This section discusses what are the requirements of this project, system architecture and the required technologies to create it. The first step is to create the user interface. So, for user interaction, we have developed a website. We have used Bootstrap for the front end of the website and for the backend purpose we have used the flask and MySQL for the database connection. User inserts information like weight(kg), height(cm), gender , daily-routine and age. Based on this information the user's BMI, BMR and Fat-percentage are calculated and based on these factors the user is classified as normal, overweight, underweight and obese This process is diagrammatically is represented as shown in the fig. To Calculate BMI, we have taken the height and weight of the user.
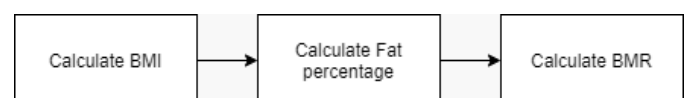

Fig-1: Flow of Calculation

Calculate BMR, for determining the calories intake of a person. For more accuracy of classification, we calculated fat

percentage. BMI is calculated by the equation. Based on the above information user is classified as normal, over-weight, under-weight and obese using the Naive Bayes algorithm and overall calorie intake of a user is also calculated using formulas. The lifestyle of the user is also considered for calculating calorie intake.

To find Calorie intake another factor considered is the Activity level of the user. The table for the Activity level and based on its calorie intake value is given in the table 1.

Table -1: Calorie intake based on activity level

| Activity Level	Calorie (kcal)
Without workout	2,000 -2,050 kcal
For Less physical activities	2,050-2,500 kcal
For moderate level of physical activities	2,500-2,605 kcal
For the extreme level of physical activity.	2,605-2,670 kcal
Very intensive physical activity.	2,800-3,000 kcal

2.1 Recommendation of Food

Based on the recommended calorie intake, food is suggested to the user. In our project based on the user body requirements of the nutrients such as protein, carbohydrates and fats food are recommended. The following is the flowchart that shows how calorie intake will divide into nutrients requirements for a particular user.
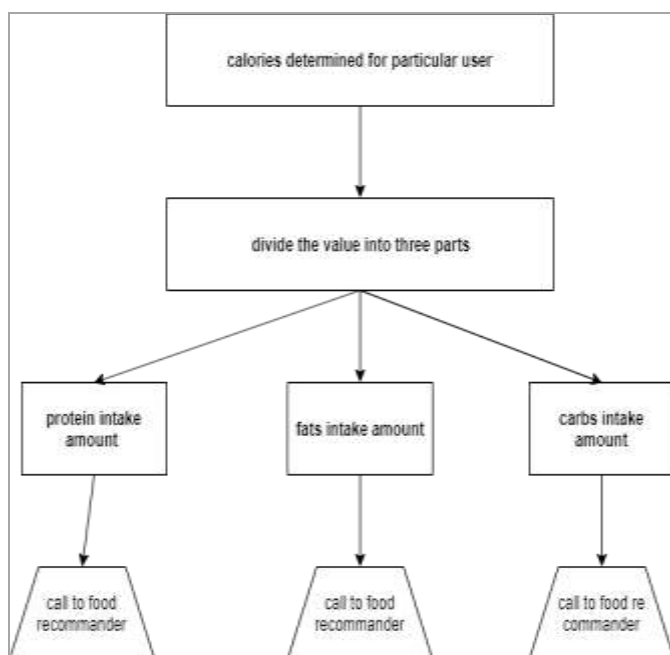
Fig-2: Flow of division of calories

Fat secrete API plays an important role in the process of the recommendation of the food to the user. The food dataset is available in fat secrete API useful for the food recommendation. The general food dataset is generated by referring the "Food and Nutrition" book provided by the government. Based on generic food data food is classified as high-protein, high-fat, high-carbohydrates. Further with the help of FatSecret API more variety of food recommended based on user calorie intake. The following figure shows the detail food recommendation process.
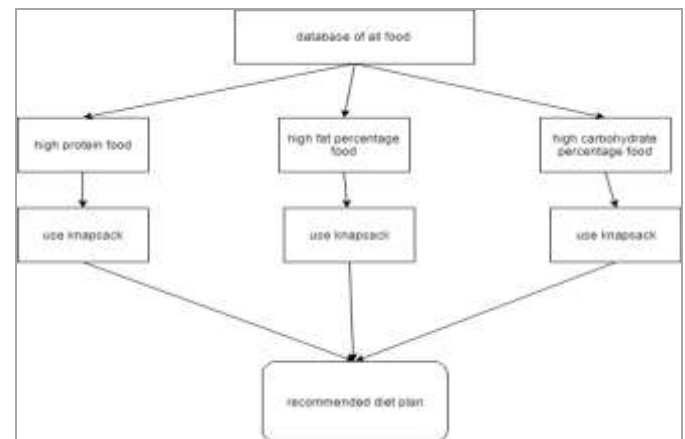
Fig-3: Flow of selection of foods

Website developed in this project for the user interface will keep the track of the user's fitness monthly. So that user can analyse themselves based on their body structure.

3. CONCLUSION

The working of the project is based on two main processes like Body-type Classification and Food-Recommendation. In Body-Type Classification we intend to classify the user more significantly and accurately by considering various aspects like BMI, BMR and Fat-percentage. Whereas in Food-Recommendation, the food based on user's calorie intake is recommended based on the generic food database created by referring the Book of Food and Nutrition values. Further, more varieties of the recommended food and it's nutritional values are provided to the user with the help of Fat-secret API.

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