



# A NOVEL AI BASED SYSTEM TO PROVIDE DIET PLAN FOR OLDER HOSPITALIZED PATIENTS

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**Abstract:** Individuals in present era cannot focus on one's wellbeing because of busy schedules. As a result, a meal plan should be suggested to manage the health. We need to eat well in order to grow. AI nutritionist is indeed a machine intellect health professional that supplies its users with an appropriate eating strategy depending on some evaluation parameters. This AI powered technology could really design a nutrition strategy focused on healthy and balanced diet. Vegetables, cereals, fruits, skim milk or minimal fat milk items, legumes, lean protein, chicken, as well as tuna are among the meals recommended by specialists. Nevertheless, because every user seems to have a distinctive eating intake & varying medical problems, a nutritionist generates an eating plan tailored to each individual. The web - based virtual nutritionist is a human diet-related ai - powered implementation. It functions as a nutrition advisor, much like an actual health professional. To get a nutrition plan, a participant must provide a few details such as their form of physique, BMI, tallness, and work schedules. The device captures all of this information from the subscriber and performs in order to deliver the nutrition strategy to the subscriber. Thereby, the subscriber is not required to consult a nutritionist that also allows for faster, as well as the subscriber can obtain the necessary nutrition plan with a single click.

**Index terms:** AI technology, diet evaluation, intelligent health management, smart diet plan

## I. INTRODUCTION

Lack of exercise plus poor eating habits remain significant causes for benign ailments such as heart disorder, insulin resistance, and fatness. These sorts of problems are responsible for seventy percent global mortality and impose a significant monetary load. To decrease such losses, gainful and workable standards of living are sorely required. Comprehensive way of living Programmes for comprehensive way of living have developed gradually in perfect sync with new virtual and advanced tools. Ai technology and related analytical modelling are now the major breakthrough in widening the terrain of medical services and initiatives in current history. Individuals in present era consume unhealthy foods and suffer from serious illnesses of one's incautious conduct. Such ailments seem to be treatable; however the patient's fitness declines. As a result, everyone should follow a healthy diet for their own good. This practise perfectly fulfils the criteria. The proposed methodology presents the client with a necessary nutrition plan by taking into account numerous parameters. The method computes the patient's Body fat percentage based on his or her age and build. It gives a person an appropriate nutrition program based on age, sex, tallness, muscle mass, and illness.

Likewise, this strategy generates crash diet based upon the data provided by the client. It includes an authentication server in which the subscriber must sign up before using the plug-in. A risk of service interruption will be a drawback as the system entirely depends on the internet connectivity. The framework provides better accuracy because it recognises the patient's information and processes it based upon certain formulations by now defined to the implementation, mostly on core principle of which a proposed action is created and confirms with the client if the nutrition scheme is acceptable. In case the food chart is not acceptable by the client then framework will propose a different regimen.

## II. LITERATURE SURVEY

[1]Cancer is a deadly sickness which is becoming more common today. There are a few schemes available that recommend cancer diets, however they are insufficient. These schemes will recommend maximum of two or three food categories that aid in disease prevention. This scheme offers a comprehensive meal intake for cancer. Cancer is a fatal disease that cannot be cured.

Chemo treatment is needed, that has complications. As a result, just one remedy is to follow a decent food intake to avoid contracting one such illness. [2]The paper proposes the idea of a computer generated nutritionist. A chat automation that acts as a dietician is being developed. This system provides the background and perspective of the chat bot system. This chat bot provides diabetic patients with a diet plan. This framework serves as a link among humans and robots. [3] This article explains a weight management strategy as well as a healthier plan for losing weight. A nutritionist and an individual have a face-to-face counselling. As a result, practitioners receive clientele instantly, and users receive correct guidance without losing time travelling to nutritionist. [4]This research includes a comprehensive diet that is specific to every individual. The subscriber must input details regarding his way of life, and the amount of feed will be displayed accordingly. [5] The said research is a webpage description. This webpage provides the details on severe medical problems and one's treatments. The webpage contains all of the needed data regarding preventive care. This webpage is readily available to individuals of all ages, from young to old. Two of the most crucial terms used are account holder and client. The client is a regular person who wishes to obtain data. Also every user has access to a special user account id with which to visit the internet. The webpage is connected to various fitness centres.

### III. SYSTEM ANALYSIS

#### 3.1 Existing System

In the present system we will have to search and select the personal dietician in order to take counselling from them. Appointing a nutritionist would also further end up wasting ones effort and time in dialling, taking an appointment, visiting their place and waiting in large queues and so on, together with high monthly fees. There will also be times when they are unavailable and the patient need to find another nutritionist quickly. In this approach the health professional will collect customer data for way of eating. It consumes a large amount of time to approve the profile information. If some data is required, the health professional and the client must communicate straight. If a fresh member requests a nutrition timetable, the health professional and his employees must seek the customer's data and locate the dietician's routine for just that specific diet. It demands more time to find a qualified regimen in this. In addition, a few clients' information could well be overlooked.

- As per fitness related research in our country, over 70% of population is suffering with any of the disease.
- This is due to a lack of knowledge about appropriate meal intake
- Individuals ignore health professionals and meal planners owing to the increased fees.
- Ignorant about the quantity of carbohydrates the body requires.

#### 3.2 Proposed System

A specific time span is declared in this approach to carry out checking of the software's directories. The software later on computes the checksum for entire system files, regardless of it was sourced or not. The fresh hash algorithm values are then especially compared with the early reference checksum data to estimate whether or not the document in the framework has been altered.

Virtual assistants elevate biological fitness by suggesting proper nutriment. They are aimed to accomplish habitual transition priorities like taking a walk at specific times and adhering to nutritious food strategy. Various assessments attempt to solve diseases ranging from psychological help and cigarettes withdrawal to medical assessment. Depending upon variations in targeted features, some chat bots were modelled primarily to deliver data and insights, while many of them were structured based on developed psychological wellness programmes such as behavioural therapy.

#### 3.3 Hardware and Software Requirements

##### 3.3.1 Hardware Requirements

- Any processor with clock speed above 500MHz
- 4GB RAM memory
- A hard disk of 250 GB
- Standard keyboard and mouse as the input devices
- High resolution monitor used as output device

##### 3.3.2 Software Specification

- Windows 7 or higher version of Operating System
- Python programmer 3.6 with related libraries

### IV. Implementation and Working Principle

#### 4.1 Creating User Account

Subscribers will have to generate a sign up and mention their requirements to the meal planner system. These requirements can be altered as and when desired by the client later on. Thereby the system can be a lot flexible improving the chances of maximum subscribers for the system.

## 4.2 Working Principle

Designed application suggests a nutritious meal plan according to the given client data.

TDEE, total daily energy expenditure, defines the proportion of vitality lost every day on account of lost calories daily. TDEE can be obtained by applying factoring method to the BMR and the level of activeness. Basal metabolic rate represents the total calorie burn during the resting hours.

- Applying Harris-Benedict formula:

Male: Basal Metabolic Rate =  $66 + (13.7 W) + (5 H) - (6.8Y)$

Female: BMR =  $655 + (9.6W) + (1.8H) - (4.7Y)$

TDEE can be obtained by computing basal metabolic rate along with activity factor on the basis of physical activeness.

W= weight in kilograms

H= height in centimetres

Y=age in years

- Activity Multiplier:

Inactive = 1.2 (little or no exercise, desk job) x BMR

Slightly active = 1.375 (light exercise/ sports 1-3 days/week) x BMR

Medium active = 1.55 (moderate exercise/ sports 6-7 days/week) x BMR

Super active = 1.725 (hard exercise every day, or exercising 2 xs/day) x BMR

Extremely active = 1.9 (hard exercise 2 or more times per day) x BMR

- Each food is categorised in the following categories:

- \* Protein
- \* Fruit
- \* Vegetable
- \* Grains
- \* Protein Snack

## V. Simulation results

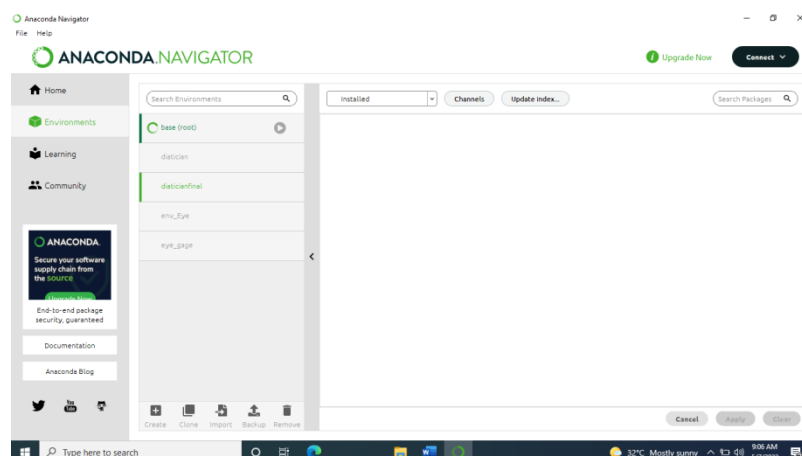


Figure 1: Code execution in anaconda environment

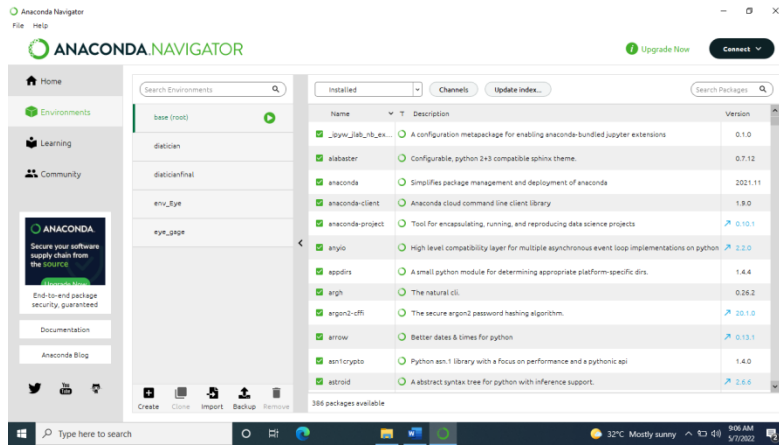


Figure 2: Dependency files in anaconda environment

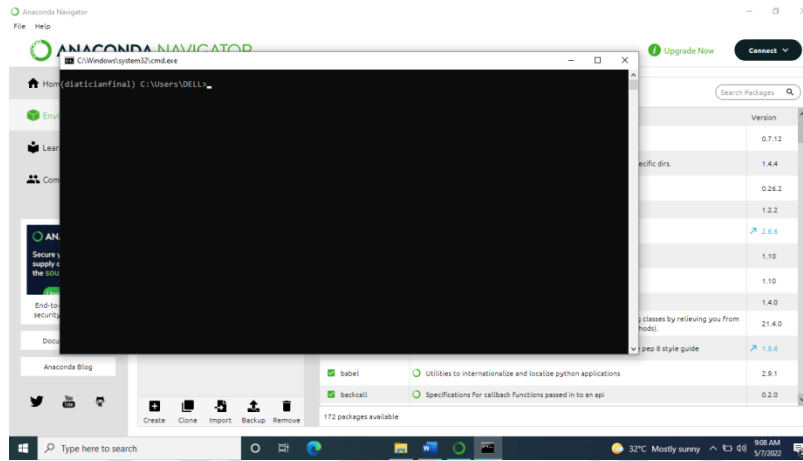


Figure 3: Linux commands executing the code

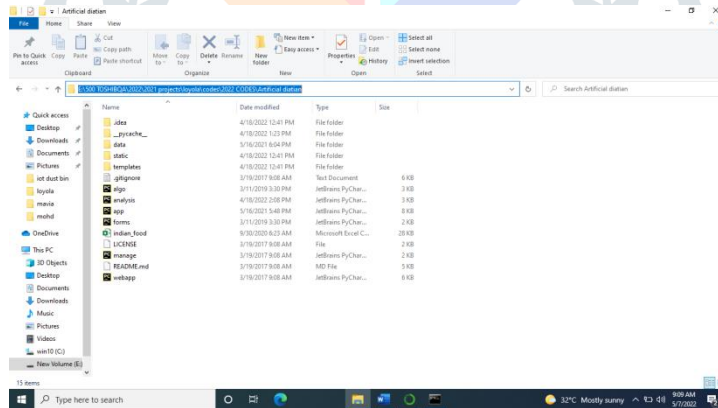


Figure 4: Store the code in program files

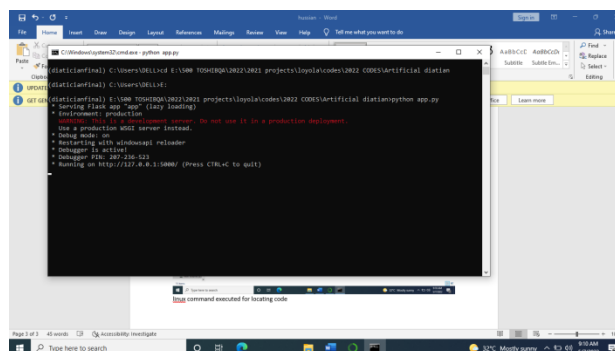


Figure 5: Locating the code

Figure 6: Smart diet plan environment

Code running on web server with all needed details to be given as input for prediction about best diet for a person based on age, height, diet etc.

Figure 7: Specific meal plan

The kind of food to be taken in particular is displayed in the figure 7.

## VI. ADVANTAGES AND DISADVANTAGES

### 6.1 Salient features

- No more taking appointments from the dietician
- Less expensive with greater efficiency and correct results.
- If the subscriber does not like a particular meal plan, the alternative plans will be provided.

### 6.2 Limitations

If inaccurate details are given to the system the output generated might be irrelevant to the user's health condition.

## VII. CONCLUSION AND FUTURE WORK

### ➤ Conclusion

AI powered virtual dietician based on android technology is implemented. Presented system includes a login page for client, nutritionist and administrator respectively. Users should perform a sign up and generate their respective profiles. The necessary information regarding health condition as well as BMI should be entered in the system. The work of administrator is to monitor the client data and discard invalid database. Various nutritionists can visit the application and access data via dietician login page.

➤ **Future work**

- In future if this method is implemented, as per patient there nutrient intake will be suggested by the Machine Learning (ML) system automatically.
- Also, activity and workout information to spend the calories according to the consumption can be included.

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