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**AI POWERED NUTRITION ANALYZER FOR
FITNESS ENTHUSIASIST**

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INTRODUCTION: PROJECT OVERVIEW:

In this project we are going to deal with the nutrition analysis in order to help the fitness enthusiast. The major problem all the enthusiast feel is that they can't able to afford all the facility in same app or in the same website or same interface. Through this project we can able to help the enthusiast to get all the site access and all calculation on body measure and all diet plan, fitness plan expert advice, etc.

In this project we get the current condition of the person through the app and then through the inbuilt function we can able to calculate the BMI of the body and through that they will see the advisory diet plan and exercise chart and then they will provide with dietician details in order to clear the doubts. In this way we can able to make the people to get all the things in single place.

PURPOSE:

Through this app we can also make sure that all the available fitness center near by them and they can able to provide the details where they can buy the fitness food with the cheap cost.

We can use the convolutional neural network with the hidden layer in order to provide the value with the layer dimension and more diet plan with the proper advantage.

The most wondering thing is that the robot operates based on this and through this process we can make sure that we will get 99.9% efficiency because no one will produce 100% perfect result.

LITERATURE SURVEY:

ABSTRACT:

Over the past two decades nutrition became the serious issue in news that is around 2 million children all around the world is suffering from various diseases because of malnutrition. In some places like Namibia, Tanzania, Somalia, Zambia, etc., the reason may be the environment and natural problem in the geographical location of that place. But in some places people don't get aware of the nutrition problems that the world encounter. Even though some one came to know about this means they don't know what to do and where to find the solution. As I said before the countries in African region were poor at vegetation thus results in the loss of habitat and produce so many

diseases to the children and more old people also get problem because of the improper diet. All the solution to this problem is that we need to create an awareness about this problem and make the people to know about this and made them to live a happy life.

Now through what way we can answer for the question above. Firstly, we should create an API that is having the feature of nutrition chart based on age and how much calories they need to intake. Then there should be calculator working based on the AI to track whether he take proper diet. The reason why we use AI is to get better accuracy through the neural networks option. Then at last it should say the tips that food with lower cost which is having high protein and nutrition. Thus, help people to afford it easily. The main reason for developing the API is all the people to get good physical health in order to live a happy life.

ANALYSIS

S.NO.	AUTHOR	YEAR	TITLE	METHODOLOGY
1.	Raciel yera toledo , ahmad a. Alzahrani2 , and luis martínez	2019	A Food Recommender System Considering Nutritional Information and User Preferences	Nutrition recommendation system and IOT for continuous monitoring
2.	Arnel B. Ocay Jane M.fernandez Thelma p palaoag	2017	Android-based Food Recognition App for Nutrition Awareness	Data analysis on level of nutrition analysis.

3.	J. Aravind, J. Dhalia Sweetlin	2017	Nutrient Facts Analysis using Supervised Learning Approaches	Data retrieval, Data cleaning, Classification, Accuracy prediction.
4.	Meng-Lin Chiang, Chia-An Wu, Jian-Kai Feng, Chiung-Yao Fang, Sei-Wang Chen	2019	Food Calorie and Nutrition Analysis System based on Mask R-CNN	Mask R CNN, Food image input, Food identification, Food weight estimation, Calorie and nutrition analysis and output.
5.	Raza yunus , omar arif , hammad afzal , muhammad faisal amjad , haider abbas, hira noor bokhari , syeda tazeen haider , nauman zafar , and raheel nawaz	2019	A Framework to Estimate the Nutritional Value of Food in Real Time Using Deep Learning Techniques	Deep learning, CNN, Data preprocessing
6.	Ms Swapnil Verma Dr.Sushopti D.Gawade	2021	A machine learning approach for prediction system and analysis of nutrients uptake for better crop growth in the Hydroponics system	CGR using machine learning

7.	Mahmoud Y. Shams , Omar M. Elzeki , , Lobna M. Abouelmagd , Aboul Ella Hassanien ,f, Mohamed Abd Elfattah , Hanaa Salem	2021	A Healthy Artificial Nutrition Analysis model during COVID-19 pandemic	Preprocessing, Normalization, Regression prediction models
8.	Ya Lu, Thomai Stathopoulou, Maria F. Vasiloglou, Stergios Christodoulidis, Zeno Stanga, and Stavroula Mougialakou	2020	An Artificial Intelligence-Based System to Assess Nutrient Intake for Hospitalised Patients	RGB D pairs Food segmentation, Food identification, weight entry and nutrition estimation

REVIEW OF LITERATURE

From the above references we came to know that all the existing model in the market for nutrition analysis is made for a singular task performing system.

The common thing among them is, they get an input for the food in the form of weight and picture and they are calculating based on the data available on the database and then they are producing the number of calories and protein that the person intaking. Through this we can't able to solve this nutrition problem that occurring in that society.

They are using various technology such as

1.IOT

2.CNN

3.Machine Learning

4.Deep learning

5.Data Preprocessing

Etc. in order to develop the application or website or API.

Through the above methodologies we came to know that various mechanism which will be useful in order to prepare the project.

RESEARCH GAP:

The reason why the above researchers choose this topic is to demolish the malnutrition problems among the children and old people. But they don't listen about the plants and vegetation malnutrition. One of the reasons for the malnutrition is that the plant grown based on may artificial chemical and manmade fertilizers. This not only affect the plant but also the people who are eating those. The farmers also don't have the knowledge how to cultivate the crops naturally.

They may be well good at the olden day crops but the current hybrid or modified seeds are completely different. So, they should be provided the knowledge about the proper cultivation mechanism and usage of what natural fertilizer that the crops will accept.

They also provide only the data for the given input. But the people still don't know what to eat and how to eat those foods that is cooking style.

They also want to think about the cost of the food item they are recommending can be affordable by the people or not. Whatever the food they recommend is costly or not available in their region or not. for those things they are using another social media such as YouTube, etc.

In order to fill the above gaps in the problem we are here to explain you our project by filling all the above gaps in our product.

SOLUTION THROUGH OUR PROJECT:

As I have already said that the gaps in the project above done. Simply we recall those problem.

The problems are:

1. Not details about the plantation nutrition.
2. Lack of details about the availability of food.
3. cost about the food that the user can afford or not.
4. optional food menu is not available.

Let us deeply discuss about the problems above and the overcome solution.

Firstly, lack of details about plantation nutrition in order to fill that gap we are introducing the separate column in our app and then we can able to fill that gap by providing details about the plants type and what kind of fertilizers we should us for them in order to grow in the proper manner, etc., are available in that column.

Secondly, lack of details about the availability of food. This can be solved by the column in which the available market places or shops can be placed with the help of the location we can able to access. The users need not go for other apps to find those. The search option will be given on the top of that column.

Thirdly, the cost of the food or medication or nutrition suppliers that user or customer can able to buy or not. Because the nutrition suppliers and product are costly and not available in the market easily. So, in that column we can give the rates of the food materials and which shop it will be available is also given with the details that too in lower rate with the best quality.

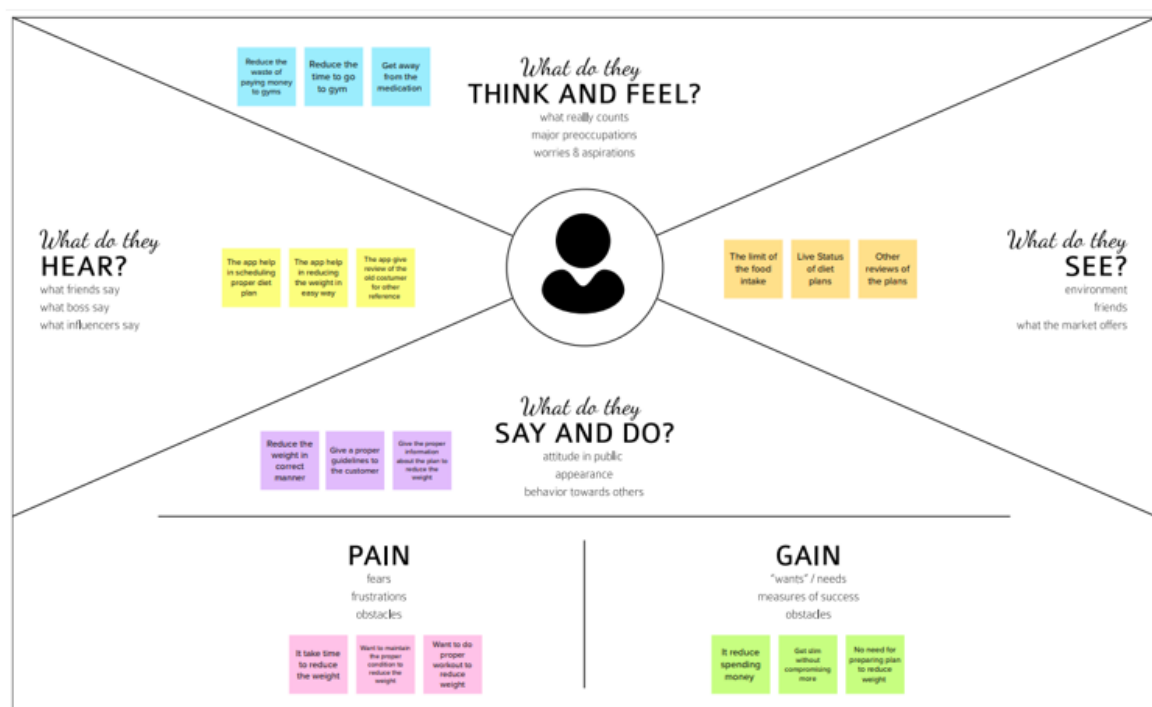
At last problem we encounter is eating the food. The food cannot be accepted by their body due to some allergies examples is dry grapes. For that kind of people, we should give alternative food. For Examples if we ask people to take dry grapes or apples, they can't

eat it or can't buy we can provide the name of amla that provide same nutrition.

CONCLUSION:

Thus, the problems already said can be solved by the solution given above which will be definite part in our product. I conclude my survey and give you the promising word that this product will be the key to demolish the malnutrition problems all over the world and this will help the people to live long with better physical health and without any diseases.

EMPATHY MAP:



PROBLEM SOLUTION FIT:

SOLUTION:

The user can able to get the proper diet chart based on their credential given and proper checking message will be generated on pre-set time and the result will be given as promised through the app we designed using the artificial intelligence and neural networks.

SOLUTION FIT TEMPLATE:

CUSTOMER SEGMENT:	CUSTOMER PROBLEMS:	TRIGGERS:
People who are in age between 15 to 70 can come under this. Children below 15 are not need this because naturally the body will get attached to all food. In case the child having an issue like long term disease	The problem and pains of the user are obesity, fear of getting healthrelated issues. Theywill get frustratedof not getting immediate result and difficult to do tedious work. Lack of confidence due to appearance.	Desire to live a healthy lifestyle. By knowing the success story of people whoachieved theirgoal. By seeingpeople who are fit and healthy.

like diabetes, etc, can use this as separate and special care.		
EMOTIONS: Some one will fond of some food they need to avoid in the diet. In that way we need to motivate them or advise him through the health diet and healthy life benefits they will get in the future.	AVAILABLE SOLUTION: Although the food charts and diet charts available in the market are good but there is a special diet for separate body condition so that they can get good results.	CUSTOMER CONSTRAINTS: The customer should give their proper height and weight and their proper timing to follow the diet. If there is any constraint in the value then the app will give the result for that value only.
BEHAVIOUR: The changes will be reflected in their day-to-day life such that they will have the proper	CHANNELS OF BEHAVIOUR: The application will provide the user-friendly environment that enable the user to ask doubt to the dietician in the respected time. connecting all the user through a general meeting and share their experience and their new ideas to each other will help them to get a new idea and mentally free	PROBLEM ROOT CAUSE: It is easy to fall into a trap of eating unhealthy foods which is heavy in calories. Once the nutritional value is replaced by foods high in sugar, bad fats and salt it leads to various health issues so users need to control their daily calorie intake to lead a healthy lifestyle.

diet and it will show the output slowly because in this proper we are using natural diet which will be side effects free.	when they get motivation among themselves.	
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PROPOSED SOLUTION:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	
2.	Idea / Solution description	<p>The solution can be brought by the model of calculate credentials and image analysis app to give the proper output which is health.</p> <p></p> <p></p> <p></p>
3.	Novelty / Uniqueness	<p>Providing a user-friendly environment to access the details of diet chart by</p> <ol style="list-style-type: none"> 1. entering the details of weight, age, height 2. calculate the BMI of the user 3. provide the diet chart options 4. choose the timing they can follow 5. so diet chart can be altered based on their requirements.
4.	Social Impact / Customer Satisfaction	<p>By providing custom diet and meal plans to the user, getting user feedbacks for the product</p> <p>Enhancement and further support for future products.</p>

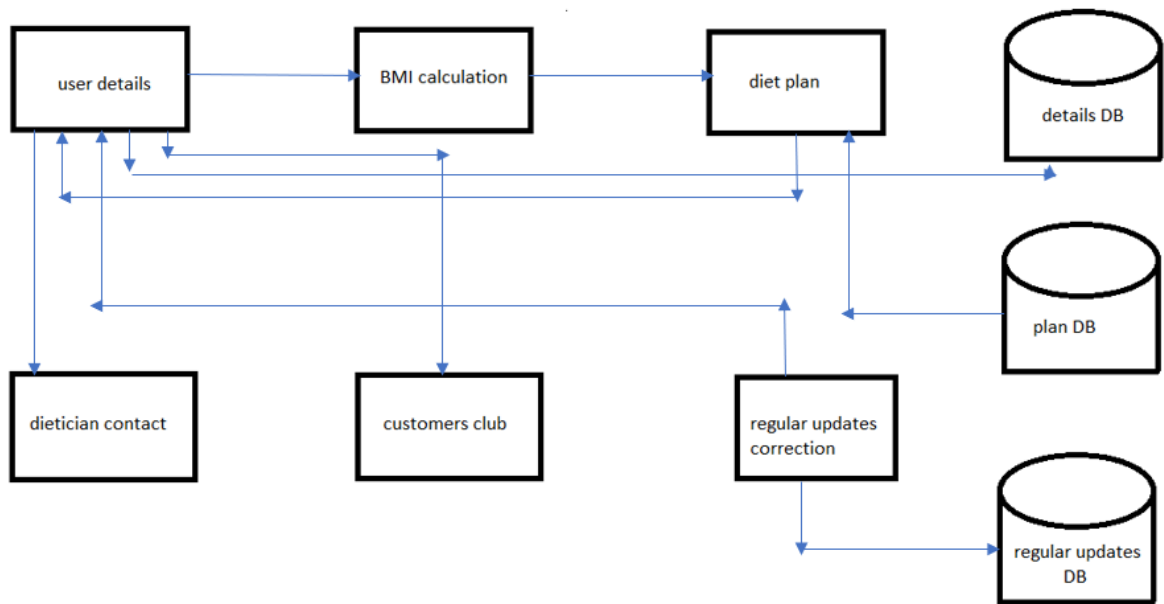
5.	Business Model(Revenue Model)	1.By introducing various plans and schemes we can acquire customer from all category. 2.By giving various advertisements we can able to get mor clients. 3.social media marketing will help us in this.	
6.	Scalability of the Solution	1.	Providing regular updates
		2.	Making the application userfriendly
		3.	Further plans for shaping their body

SOLUTION ARCHITECTURE:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

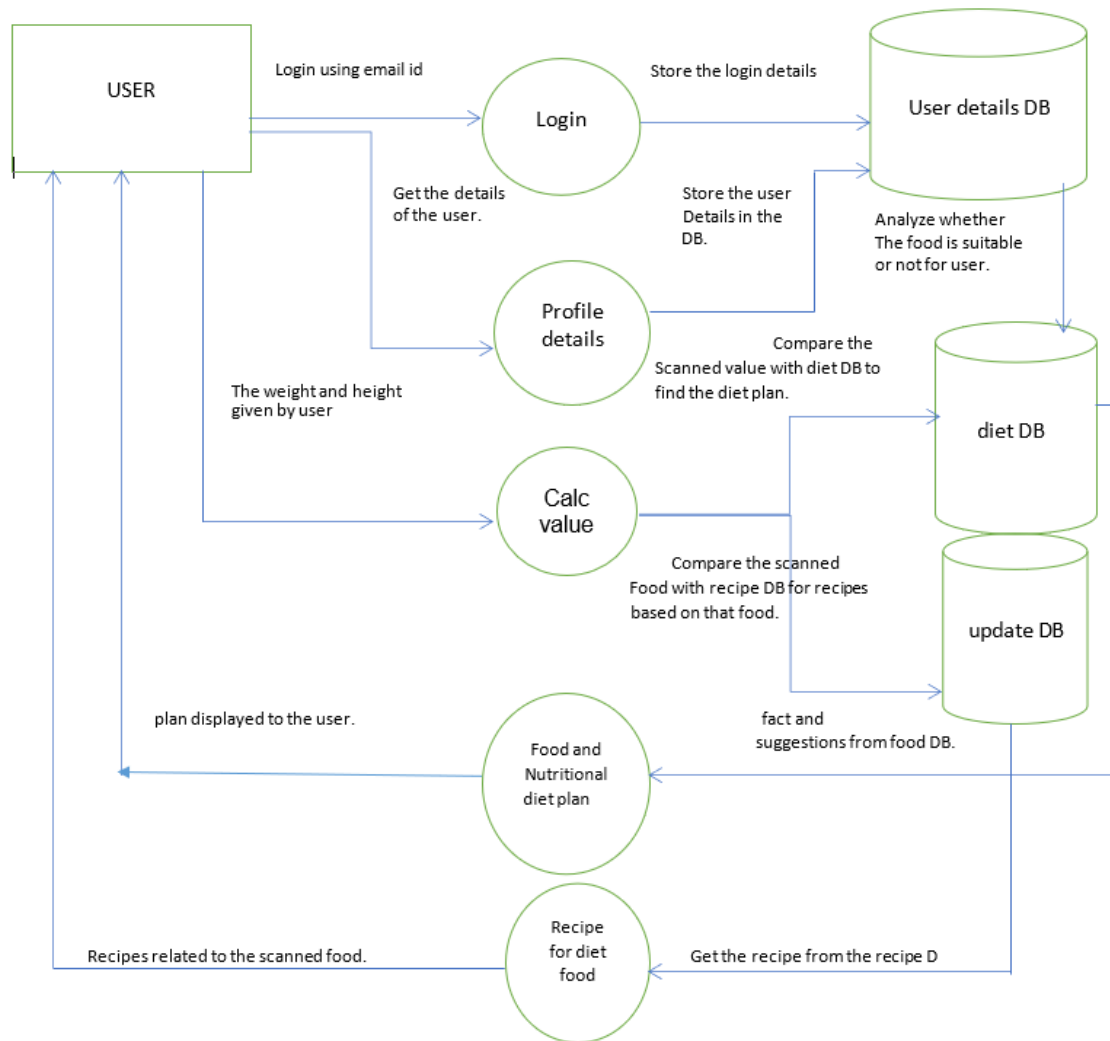
- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behavior of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

ARCHITECTURE:



DATA FLOW DIAGRAM:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



CUSTOMER JOURNEY MAP



Steps

What does the person (or group) typically experience?



Interactions

What interactions do they have at each step along the way?

- **People:** Who do they see or talk to?
- **Places:** Where are they?
- **Things:** What digital touchpoints or physical objects would they use?



Goals & motivations

At each step, what is a person's primary goal or motivation? ("Help me..." or "Help me avoid...")



Positive moments

What steps does a typical person find enjoyable, productive, fun, motivating, delightful, or exciting?



Negative moments

What steps does a typical person find frustrating, confusing, angering, costly, or time-consuming?



Areas of opportunity

How might we make each step better? What ideas do we have? What have others suggested?



Entice

How does someone initially become aware of this process?

Creating a profile.

The user has to create a profile.

Use search option.

The search option will be helpful to learn about the foods.

save data.

User can able to save the searched data for the future reference.

The user details will be entered in the dashboard of website, iOS app or android app.

The google search engine will be incorporated user to search.

In data section the user can store the data in the database.

	<p>It helps me to define a overview about myself.</p>	<p>It helps me to clarify the doubts and learn new things.</p>	<p>It helps me to store the data which i might need later.</p>
	<p>Helps me to be physically fit.</p>	<p>It helps me to be aware of nutrition.</p>	<p>Improves the immunity.</p>
	<p>Mental health and feelings of isolation can lead to intakes of low dietary quality with increased comfort eating and/or lack of mealing.</p>		<p>Unrealistic expectations may lead to frustation.Set practical goals to lose weight.</p>
	<p>Allegry details can also be stored.</p>	<p>The search engine will help the user to search if they have any doubt.</p>	<p>In data section the user can store the data whatever they want.</p>



Enter

What do people experience as they begin the process?

Scan the food.

The food which nutritional facts has to be known has to be scanned.

The food should be scanned through the camera in the website, IOS app or android app.

Display nutritional fact .

The nutritional fact will be displayed.

The nutritional fact will be displayed in the website, IOS app or android app.

recipe

The recipe based on the scanned food will be recommended.

The recipe section will display the recipe in the website, IOS app or android app.

It makes my work easier by just scanning the food, instead of typing them manually.

It helps me to know about the food and whether it is suitable for me or not.

It helps me to explore new cuisines and recipes.

Helps to have better mood and energy levels.

Helps me to have healthy and tasty meals.

There are a number of reasons why fear of foods develop, including: Comments and views of family and friends about that food; message from media and cultural ideas.

Distractions to junk foods.

The food which nutritional fact has to be known should be scanned through the camera.

The nutritional fact of the scanned food will be displayed.

The recipe of the scanned food will be categorized into different cuisines and displayed.



Engage

In the core moments
in the process, what
happens?

Going through facts.

The user has to go through the facts displayed regarding the food.

Water intake.

The intake of water has to be checked and the goal has to be attained.

Shopping list organizer.

This has to be used while going to the shopping to organize the list.

Fitness tracker.

The fitness tracker will track all your physical activity and store them.

It gives suggestion in the website, iOS app or android app.

Reminds the water intake in the website, iOS app or android app.

The organized shopping list will be displayed in the website, iOS app or android app.

The fitness tracker records will be displayed in the website, iOS app or android app.

It reminds me about the intake of water.

It helps me to have a clear and balanced shopping list.

it helps me to have a complete record of my activity.

Helps to have glowing skin.

Helps me to loose weight.

Spending on pills / potions/detox teas for fat loss.

Not keeping track of what you eat.

The user has to read the fact manually whether the food suits them or not.

In water intake section the people can note the amount of water in taken and the amount they have to intake.

Whenever the user is going to shopping they can use this section to organize their shopping list with balanced food.

The user can wear a fitness tracker which is incorporated with this app, through which the complete activity of the user can be determined.



Exit

What do people typically experience as the process finishes?

Turn on the mobile notification.

You have to turn on the notification of the app to get notified.

keep the fitness tracker sync

The fitness tracker has to be synced with the application to have all the data.

Follow the suggestions properly.

You have to follow the suggestions properly to maintain a balanced diet.

The mobile notification should be remained On in the mobile.

The fitness tracker will be synced to the website, IOS app or android app.

The suggestions has to be implemented in their daily life.

It helps me to be aware of the suggestions.

The helps me to completely keep track of all my activity.

It helps me to choose which food is better for my balanced diet.

Prevent your metabolism from slowing down.

Proper intake of fruits and vegetable may boost serotonin (Happy hormone).

Persona's main priority is reaching a number on the scales or certain body fat percentage , rather than health or well being.

Eating too much fat on a low carb diet.

The notification has to be given at the proper time.

Even if the synchronization cuts for a while, every details has to reach the app when it is resynchronized.

The suggestions has to be suitable to the users.



Extend

What happens after the experience is over?

Nutritionist Suggestion.

The Nutritionist will be suggested based on their location.

The nutritionist will be suggested in the website,iOS app or android app.

Notifying food.

Notifying a single must have nutritious food for everyday.

This section will suggest a single food in the website,iOS app or android app.

Weekly statistics.

A statistics will be made every week based on their activity.

This section will display the complete statistics of the user in the website,iOS app or android app.

It helps me to find the best nutritionist around me.

This section will ease the stress of choosing the food for the day.

This section will help us to have a complete statistics about our week.

Improves Heart health.

Having a routine and consistency.

Craving sugary beverages.

Not eating whole single ingredient food.

The nutritionist suggestion section will suggest the best nutrition for the user nearer to their location.

This section will give a single food suggestion to ease the stress of choosing the food for the day.

This section will give a complete statistics of the user activity based on the food they have taken and the physical activity record from their fitness tracker.

FUNCTIONAL REQUIREMENTS:

Following are the functional requirements of the proposed solution.

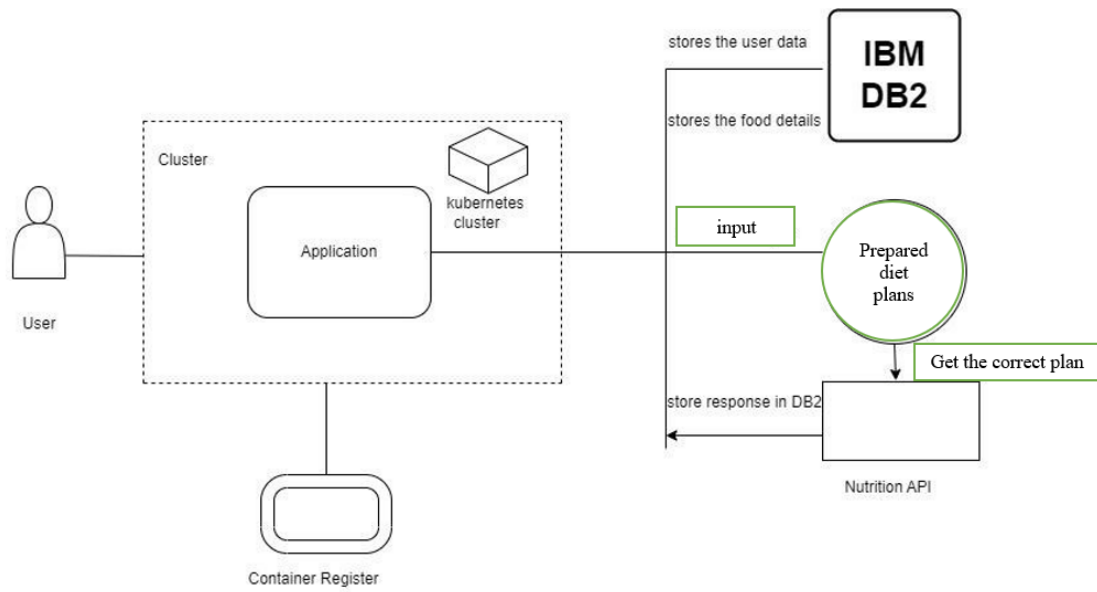
FR No.	Functional Requirement (Epic)	Sub Requirement (Story/ Sub-Task)
FR-1	User Registration	Registration through create profile page
FR-2	User Confirmation	Confirmation via OTP
FR-3	Providing Healthy Diet Plan	Add Diet plans based on their BMI and amount of fat content taken by user.
FR-4	Recommend Exercises	Track how much fat content does user eat in that day.
FR-5	Set Reminder	User will be able to set reminder to schedule their exercises.

NON-FUNCTIONAL REQUIREMENTS:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The app helps to estimate the amount of Calorie intake in order to maintain our health.
NFR-2	Security	This app effectively manages the security of its application systems, protecting information from unauthorized access, modification or destruction in order to provide integrity, confidentiality and availability.
NFR-3	Reliability	This application operates without failure while in a specified environment.
NFR-4	Performance	User wants to know how much calories they take in a day. BMI based diet plans will be recommended.

TECHNOLOGY ARCHITECTURE:



SPRINT PLANNING:

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Collection	USN-1	Download Food Nutrition Dataset	2	Medium	Arun prasath.k
Sprint-1	Data Preprocessing	USN-2	Importing The Dataset into Workspace	1	Low	Vinoth kumar
Sprint-1		USN-3	Handling Missing Data	3	Medium	Dinesh kumar m
Sprint-1		USN-4	Feature Scaling	3	Low	Guruchandhar k.s
Sprint-1		USN-5	Data Visualization	3	Medium	Vinoth kumar
Sprint-1		USN-6	Splitting Data into Train and Test	4	High	Dinesh kumar m
Sprint-1		USN-7	Creating A Dataset with Sliding Windows	4	High	Arun prasath.k
Sprint-2	Model Building	USN-8	Importing The Model Building Libraries	1	Medium	Arun prasath.k
Sprint-2		USN-9	Initializing The Model	1	Medium	Vinoth kumar

Sprint-2		USN-10	Adding LSTM Layers	2	High	Vinoth kumar
Sprint-2		USN-11	Adding Output Layers	3	Medium	Dinesh kumar m
Sprint-2		USN-12	Configure The Learning Process	4	High	Arun prasath.k
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-2		USN-13	Train The Model	2	Medium	Vinoth kumar
Sprint-2		USN-14	Model Evaluation	1	Medium	Arun prasath.k
Sprint-2		USN-15	Save The Model	2	Medium	Vinoth kumar
Sprint-2		USN-16	Test The Model	3	High	Arun prasath.k
Sprint-3	Application Building	USN-17	Create An HTML File	4	Medium	Guruchandhar k.s
Sprint-3		USN-18	Build Python Code	4	High	Dinesh kumar m
Sprint-3		USN-19	Run The App in Local Browser	4	Medium	Vinoth kumar
Sprint-3		USN-20	Showcasing Prediction On UI	4	High	Vinoth kumar
Sprint-4	Train The Model On IBM	USN-21	Register For IBM Cloud	4	Medium	Arun prasath.k
Sprint-4		USN-22	Train The ML Model On IBM	8	High	Arun prasath.k
Sprint-4		USN-23	Integrate Flask with Scoring End Point	8	High	Vinoth kumar

COMPONENTS AND TECHNOLOGY:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. WebUI, Mobile App, Chatbot etc.	HTML, CSS, Javascript, Flask, Python
2.	Application Logic-1 – Creating an account	User registers their personal details such as name, age, current weight etc. These details are stored in the IBM cloud DB2.	Flask App running using Kubernetes Cluster, IBM DB2
3.	Application Logic-2 – Logging in	Verify credentials and land the user to their home page. Perform OTP authentication if needed.	Flask App running using Kubernetes Cluster, IBM DB2
4.	Application Logic 3 – Creating a custom meal	User enters details/ingredients and amount required to make a certain meal. The total calorie count is shown once the user clicks 'finish meal'.	Flask App running using Kubernetes Cluster, IBM DB2
5.	Application Logic 4 – Purchasing Premium Subscription	User is redirected to payment portal to complete the purchase.	Flask App running using Kubernetes Cluster, IBM DB2
6.	Application Logic 5 – Image recognition	User can take or upload a picture to automatically detect a food item which is already available in the database.	Flask App running using Kubernetes Cluster, IBM DB2
7.	Application Logic 6 – Viewing Dashboard	User can track their past records and visualize their calorie consumption and analyze their trends.	Flask App running using Kubernetes Cluster, IBM DB2
8.	Application Logic 7 – Daily Reminders	Notification is sent to the User on a daily basis to remind them to add their daily consumption of food and track calories.	Flask App running using Kubernetes Cluster, IBM DB2
9.	Application Logic 8 – In-App Social Network	Users can add friends and set goals together. User can also post their progress and view others progress.	Flask App running using Kubernetes Cluster, IBM DB2
10.	Application Logic 9 – Blogs and Articles of Nutrition Experts	Articles and blogs by Nutrition experts are added periodically to the app for users to view.	Flask App running using Kubernetes Cluster, IBM DB2
11.	Application Logic 10- Setting a daily calorie limit	User is alerted if they under or over consume calories.	Flask App running using Kubernetes Cluster, IBM DB2
12.	Database	Data Type, Configurations etc.	MySQL
13.	Cloud Database	Database Service on Cloud	IBM DB2.
14.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem

15.	External API-1- SendGrid	The SendGrid service will be used to alert users of various notification etc. as defined by the user.	SendGrid
16.	External API-2- Nutrition API	The service will be used for image recognition.	Nutrition API
17.	Machine Learning Model	Pre trained model available through the API to recognize food items.	Object Recognition Model.
18.	Deployment	Application Deployment on Local System / Cloud Local Server Configuration: The application will run on the local server/client side to allow user to interact with Web UI. Cloud Server Configuration: The application will be hosted on the cloud for the user to user. This is done through containerization of the application using Docker, stored in the container registry, and will be run by Kubernetes.	IBM Cloud Registry, IBM Cloud Object Storage, IBM DB2, Docker, Kubernetes

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Flask	Backend Framework built on python.
2.	Security Implementations	TLS- Transport Layer Security	All external communications is encrypted and user data is protected.
3.	Scalable Architecture	The container app can be scaled easily to a large user base.	IBM DB2, IBM Cloud Object Storage, Kubernetes
4.	Availability	IBM Cloud guarantees availability with very minimal downtime. The app loses minimal functionality if the external APIs are not available	IBM Cloud Object Storage, Kubernetes, Docker Images, IBM DB2, SendGrid
5.	Performance	Performance depends on the availability of compute power in the cloud.	IBM Cloud Object Storage, Kubernetes, Docker Images, IBM DB2, SendGrid

SOURCE CODE

Data Collection

Download the dataset [here](#)

```
[ ] from google.colab import drive
    drive.mount('/content/drive')
```

Mounted at /content/drive

```
[ ] cd/content/drive/MyDrive/Colab Notebooks
```

/content/drive/MyDrive/Colab Notebooks

```
[ ] # Unzipping the dataset
    !unzip 'Dataset.zip'
```

Image Preprocessing

```
[ ] from keras.preprocessing.image import ImageDataGenerator
```

Image Data Augmentation

```
[ ] train_datagen = ImageDataGenerator(rescale=1./255, shear_range=0.2, zoom_range=0.2, horizontal_flip=True)
    test_datagen = ImageDataGenerator(rescale=1./255)
```

Applying Image DataGenerator Functionality To Trainset And Testset

```
▶ x_train = train_datagen.flow_from_directory(
    r'/content/drive/MyDrive/Colab Notebooks/Dataset/TRAIN_SET',
    target_size=(64, 64), batch_size=5, color_mode='rgb', class_mode='sparse')
x_test = test_datagen.flow_from_directory(
    r'/content/drive/MyDrive/Colab Notebooks/Dataset/TEST_SET',
    target_size=(64, 64), batch_size=5, color_mode='rgb', class_mode='sparse')
```

Model Building

1. Importing The Model Building Libraries

```
[ ] import numpy as np
import tensorflow as tf
from tensorflow.keras.models import Sequential
from tensorflow.keras import layers
from tensorflow.keras.layers import Dense, Flatten
from tensorflow.keras.layers import Conv2D, MaxPooling2D, Dropout
```

2. Initializing The Model

```
[ ] classifier = Sequential()
```

3. Adding CNN Layers

```
[ ] classifier = Sequential()
classifier.add(Conv2D(32, (3, 3), input_shape=(64, 64, 3), activation='relu'))
classifier.add(MaxPooling2D(pool_size=(2, 2)))
classifier.add(Conv2D(32, (3, 3), activation='relu'))
classifier.add(MaxPooling2D(pool_size=(2, 2)))
classifier.add(Flatten())
```

4. Adding Dense Layers

```
[ ] classifier.add(Dense(units=128, activation='relu'))
classifier.add(Dense(units=5, activation='softmax'))
```



```
classifier.summary()
```

Model: "sequential_1"

Layer (type)	Output Shape	Param #
=====		
conv2d (Conv2D)	(None, 62, 62, 32)	896

5. Configure The Learning Process

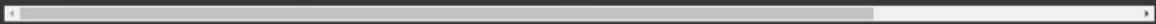
```
[ ] classifier.compile(optimizer='adam', loss='sparse_categorical_crossentropy', metrics=['accuracy'])
```

6. Train The Model

```
[ ] classifier.fit_generator(generator=x_train, steps_per_epoch = len(x_train), epochs=20, validation_data=x_test, validation_steps = len(x_test))
```

/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:2: UserWarning: "Model.fit_generator" is deprecated and will be removed in a future version. Pl

Epoch 1/20
494/824 [=====>.....] - ETA: 6:52 - loss: 0.7194 - accuracy: 0.7174



7. Saving The Model

```
[ ] classifier.save('nutrition.h5')
```

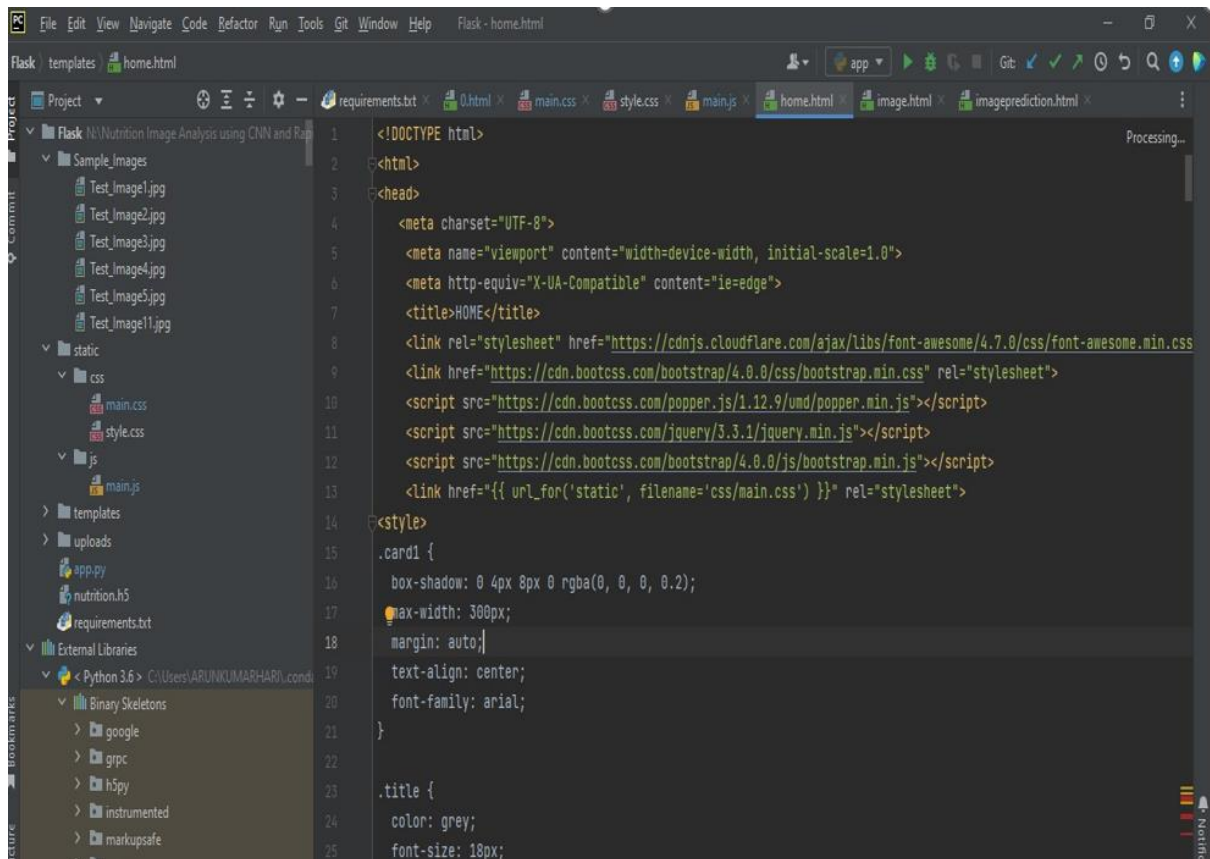
8. Testing The Model

```
[ ] from tensorflow.keras.models import load_model  
from keras.preprocessing import image  
model = load_model("nutrition.h5")
```

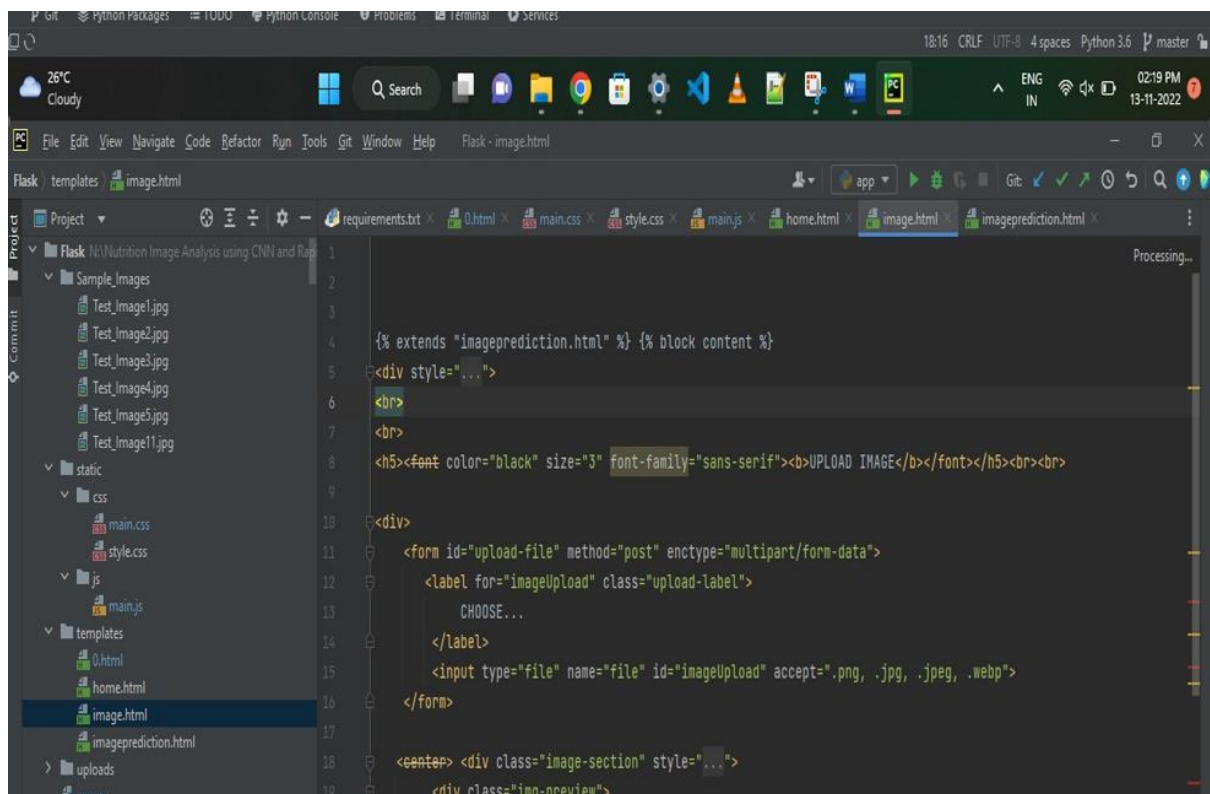
```
from tensorflow.keras.models import load_model  
from tensorflow.keras.preprocessing import image  
model = load_model("nutrition.h5")  
img = image.load_img(r'/content/drive/MyDrive/Colab Notebooks/Sample_Images/Test_Image1.jpg', grayscale=False, target_size= (64,64))  
x = img_to_array(img)  
x = np.expand_dims(x, axis = 0)  
predict_x=model.predict(x)  
classes_x=np.argmax(predict_x,axis=-1)  
classes_x
```

1/1 [=====] - 0s 62ms/step
array([0])

```
[ ] index=['APPLES', 'BANANA', 'ORANGE', 'PINEAPPLE', 'WATERMELON']  
result=str(index[classes_x[0]])  
result
```



```
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <meta charset="UTF-8">
5   <meta name="viewport" content="width=device-width, initial-scale=1.0">
6   <meta http-equiv="X-UA-Compatible" content="ie=edge">
7   <title>HOME</title>
8   <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css">
9   <link href="https://cdn.bootcss.com/bootstrap/4.0.0/css/bootstrap.min.css" rel="stylesheet">
10  <script src="https://cdn.bootcss.com/popper.js/1.12.9/umd/popper.min.js"></script>
11  <script src="https://cdn.bootcss.com/jquery/3.3.1/jquery.min.js"></script>
12  <script src="https://cdn.bootcss.com/bootstrap/4.0.0/js/bootstrap.min.js"></script>
13  <link href="{{ url_for('static', filename='css/main.css') }}" rel="stylesheet">
14 </head>
15 <body>
16   <div class="card">
17     <div class="card-body">
18       <div class="text-align: center">
19         <h1>HOME</h1>
20         <h2>WELCOME</h2>
21       </div>
22     </div>
23   </div>
24 </body>
25 </html>
```

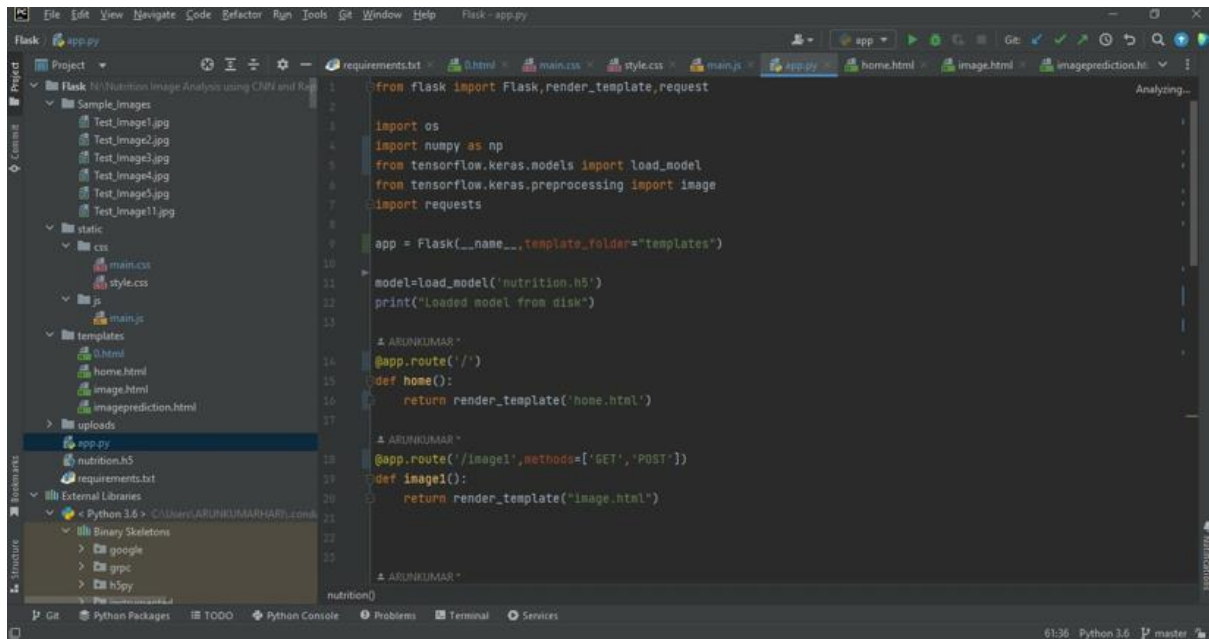


```
1 {% extends "imageprediction.html" %}
2
3
4
5 <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;>
6   <div style="text-align: center; margin-bottom: 10px;>
7     <h2>UPLOAD IMAGE</h2>
8   </div>
9   <div>
10     <form id="upload-file" method="post" enctype="multipart/form-data">
11       <div style="text-align: center;>
12         <div style="display: inline-block; border: 1px solid black; padding: 5px; margin: 5px 10px;>
13           CHOOSE...
14         </div>
15         <input type="file" name="file" id="imageUpload" accept=".png, .jpg, .jpeg, .webp">
16       </div>
17     </form>
18   </div>
19   <div style="text-align: center; margin-top: 10px;>
20     <div class="image-section" style="display: inline-block; width: 40%;>
21       <div class="img-preview">
22         <img src="" alt="Image Preview">
23       </div>
24     </div>
25   </div>
26 </div>
```



```
Flask N Nutrition Image Analysis using CNN and Ra
Project
  Sample_Images
    Test_image1.jpg
    Test_image2.jpg
    Test_image3.jpg
    Test_image4.jpg
    Test_image5.jpg
    Test_image11.jpg
  static
    css
      main.css
      style.css
    js
      main.js
  templates
    0.html
    home.html
    image.html
    imageprediction.html
  uploads
    app.py
    nutrition.h5
    requirements.txt
  External Libraries
    Python 3.6
      Binary Skeletons
        google
        grpc
        h5py
requirements.txt
0.html
main.css
style.css
main.js
home.html
image.html
imageprediction.html
uploads
app.py
nutrition.h5
requirements.txt
External Libraries
Python 3.6
Binary Skeletons
  google
  grpc
  h5py
html body
190 <body>
191 <div class="header">
192 <div style="...">NUTRITION IMAGE ANALYSIS</div>
193 <div class="topnav-right" style="...">
194
195 <a href="{{ url_for('home') }}"><b>HOME</b></a>
196 <a class="active" href="{{ url_for('image1') }}"><b>CLASSIFY</b></a>
197 </div>
198 </div>
199 <br>
200
201
202 </div>
203 <div class="container">
204 <center>
205 <div id="content" style="...">{% block content %}{% endblock %}</div></center>
206 </div>
207 </body>
208
209 <footer>
210 <script src="{{ url_for('static', filename='js/main.js') }}" type="text/javascript"></script>
211 </footer>
212
213 </html>
214
```

```
requirements.txt
0.html
main.css
style.css
main.js
home.html
image.html
imageprediction.html
uploads
app.py
nutrition.h5
requirements.txt
External Libraries
Python 3.6
Binary Skeletons
  google
  grpc
  h5py
html
4 <style>
5
6 </style>
7
8 <meta charset="utf-8">
9 <title>NUTRITION IMAGE ANALYSIS</title>
10 <link rel="shortcut icon" href="{{ url_for('static', filename='diabetes-favicon.ico') }}">
11 <link rel="stylesheet" type="text/css" href="{{ url_for('static', filename='style.css') }}">
12 <script src="https://kit.fontawesome.com/5f3f547070.js" crossorigin="anonymous"></script>
13 <link href="https://fonts.googleapis.com/css2?family=Pacifico&display=swap" rel="stylesheet">
14 </head>
15
16 <div class="results">
17 <p style="..."><h4 style="...">IMAGE CLASSIFIED IS : <h4><b><u>{{showcase1}}</u></b></h4><br>
18
19 </div>
20 <br>
21 <br>
22 </div>
23 </body>
24 </html>
```



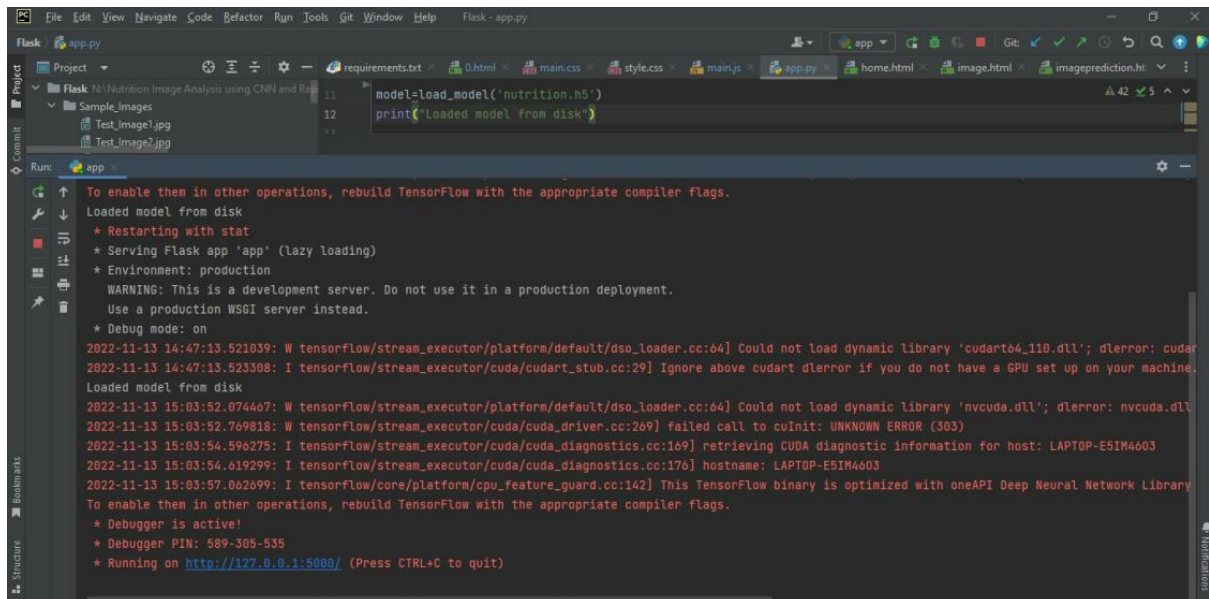
TESTING:



User acceptance testing:



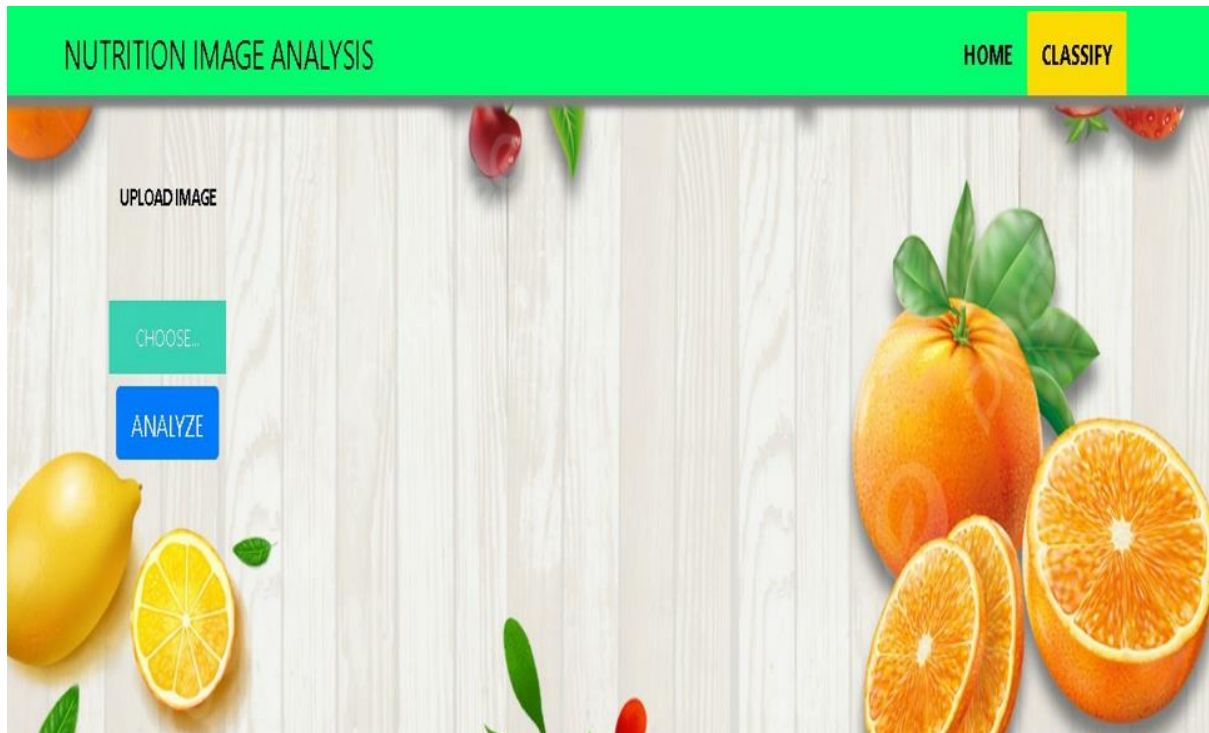
PERFORMANCE METRIC:



```
Flask - app.py
Project
  Flask N Nutrition Image Analysis using CNN and ResNet
    Sample_Images
      Test_Image1.jpg
      Test_Image2.jpg
    requirements.txt
    0.html
    main.css
    style.css
    main.js
    app.py
    home.html
    image.html
    imageprediction.ht

Run: app
To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
Loaded model from disk
* Restarting with stat
* Serving Flask app 'app' (lazy loading)
* Environment: production
WARNING: This is a development server. Do not use it in a production deployment.
Use a production WSGI server instead.
* Debug mode: on
2022-11-13 14:47:13.521039: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cudart64_110.dll'; dLError: cudart
2022-11-13 14:47:13.523308: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dLError if you do not have a GPU set up on your machine.
Loaded model from disk
2022-11-13 15:03:52.074467: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'nvcuda.dll'; dLError: nvcuda.dll
2022-11-13 15:03:52.769818: W tensorflow/stream_executor/cuda/cuda_driver.cc:269] failed call to cuInit: UNKNOWN ERROR (303)
2022-11-13 15:03:54.596275: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:169] retrieving CUDA diagnostic information for host: LAPTOP-E5IM4603
2022-11-13 15:03:54.619299: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:176] hostname: LAPTOP-E5IM4603
2022-11-13 15:03:57.062699: I tensorflow/core/platform/cpu_feature_guard.cc:142] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library
To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
* Debugger is active!
* Debugger PIN: 589-305-535
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
```

OUTPUT:



PREDICT x +

127.0.0.1:5000/image1

HOME EDITOR STUDIES MEDIA PREMIUM GOVT WEB MOVIES BANK WEB NEWS CHANNELS HOSTING FREE TOOL HACK ONLINE MONEY Quizizz

NUTRITION IMAGE ANALYSIS

HOME CLASSIFY

UPLOAD IMAGE

CHOOSE...




IMAGE CLASSIFIED IS :
APPLES

[('sugar_g': 2.6, 'fiber_g': 1.2, 'serving_size_g': 100.0, 'sodium_mg': 4, 'name': 'tomato', 'potassium_mg': 23, 'fat_saturated_g': 0.0, 'fat_total_g': 0.2, 'calories': 18.2, 'cholesterol_mg': 0, 'protein_g': 0.9, 'carbohydrates_total_g': 3.9)]

ADVANTAGES:

- This app is based on convolutional neural network that will give better result.
- This app consist of better user interface design that will give user the better experience.
- This app will work on intermediate level storage that will give the output in the proper speed and manner.
- This app will give better solution as compared to other options in the market on on the internet.
- This application will be free and yet will be useful by all people.

DISADVANTAGES:

- This application will be used in order to known by the result such as english language will barrier for the people.
- This will be lower graphics work content that will not give more attraction towards the site

FUTURE SCOPE:

Since we developed the application using

- Flask
- IBM cloud
- Python, etc.,

For the fitness enthusiast in order to maintain their health and in order to provide the proper guidance we have missed one thing which is the monitoring.

The proper food with the capture of the image and the analysis using the convolutional neural network is done properly by the image analysis this data can be done over by the upload the data in the html page.

So, the item will be found with a already test cases that we have followed but the problem over the data is not that much important but the real problem is that the user is properly intaking the diet or not.

For that in future we are planning to add the module that will work with the artificial intelligence that guide the user to take the diet in the proper time and in the correct manner.

If the user doesn't take the food in the proper manner, then the AI will give the intimation to the user in order to take the diet.

In case user refused to take the diet, it will change the diet plan according to the user convenience.

Because this application is designed in such a manner that will take care of the user sophistication and also provide the proper health.

CONCLUSION:

Through this project I came to know to how to use the flask, cloud, etc., and also the project development requirement and phases.

This project will provide the user a proper diet and health and body condition and physique.

This application will be available on free for the user and special guidance will be given for the paid members.

Through this project everyone will get the proper diet and health once they start using this application.

This will be send to every people notification through the digital marketing and with help of fitness centers.

VIDEO DEMO LINK:

https://drive.google.com/file/d/1yMmWtF-DUU71VBQFAwuKgbqSJ-wba8Q4/view?usp=share_link

GITHUB LINK:

<https://github.com/IBM-EPBL/IBM-Project-2705-1658481531>

SOURCE CODE:

IPYNB FILES: those are shown above in the document as pictures.

HTML FILES:

main.css:

```
.img-preview {  
  width: 256px;  
  height: 256px;  
  position: relative;  
  border: 5px solid #F8F8F8;  
  box-shadow: 0px 2px 4px 0px rgba(0, 0, 0, 0.1);  
  margin-top: 1em;  
  margin-bottom: 1em;  
}
```

```
.img-preview>div {  
  width: 100%;  
  height: 100%;  
  background-size: 256px 256px;  
  background-repeat: no-repeat;  
  background-position: center;  
}
```



```
input[type="file"] {  
    display: none;  
}
```

```
.upload-label{  
    display: inline-block;  
    padding: 12px 30px;  
    background: #39D2B4;  
    color: #fff;  
    font-size: 1em;  
    transition: all .4s;  
    cursor: pointer;  
}
```

```
.upload-label:hover{  
    background: #34495E;  
    color: #39D2B4;  
}
```

```
.loader {  
    border: 8px solid #f3f3f3;  
    border-top: 8px solid #3498db;  
    border-radius: 50%;  
    width: 50px;  
    height: 50px;  
    animation: spin 1s linear infinite;  
}
```

```
@keyframes spin {  
    0% { transform: rotate(0deg); }  
    100% { transform: rotate(360deg); }  
}
```

```
style.css:  
body{  
    background-image:url(bg.jpg);  
    background-size: 400% auto;  
    background-repeat: no-repeat;  
    background-position:center;  
    color:#555;  
    font-family:Arial, Helvetica, sans-serif;  
    font-size:16px;  
    line-height:1.6em;  
    margin:0;  
}
```

```
.container{
```

```

        width:80%;
        margin:auto;
        overflow:hidden;
    }

    .justify{
        text-align:justify;
        text-justify: auto;
    }

    .parallax {
        /* The image used */
        background-image: url("doc.jpg");

        /* Set a specific height */
        min-height: 750px;

        /* Create the parallax scrolling effect */
        background-attachment: fixed;
        background-position: center;
        background-repeat: no-repeat;
        background-size: cover;
    }

    html {
        scroll-behavior: smooth;
    }
    #section2 {
        height: 500px;
        background: ;
    }
    div.background {
        background: url("static/bgg2.jpg");
        min-height: 5px;
        background-attachment: fixed;
        background-position: center;
        background-repeat: no-repeat;
        background-size: cover;
    }

    #navbar{
        background-color:#fff;
        color:#333;
    }

    #navbar ul{
        padding:0;

```

```
        list-style: none;
    }

    #navbar li{
        display:inline;
    }

    #navbar a{
        color:#fff;
        text-decoration: none;
        font-size:18px;
        padding-right:15px;
    }

    #showcase{
        min-height:300px;
        margin-bottom:30px;
    }

    #showcase h1{
        width: 100%;
        color:#333;
        font-size:40px;
        text-align: center;
        line-height: 1em;
        padding-top:10px;
    }
    #showcase h2{
        width: 100%;
        color:#333;
        font-size:30px;
        text-align: center;
        line-height: 1.6em;
        padding-top:10px;
    }

    #main{
        float:left;
        color:#fff;
        width:65%;
        padding:0 30px;
        box-sizing: border-box;
    }

    #sidebar{
        float:right;
        width:35%;
```

```
background-color: #ffcccc;
color: #000;
padding-left: 10px;
padding-right: 10px;
padding-top: 1px;
box-sizing: border-box;
}
```

```
.img-preview {
width: 10px;
height: 10px;
position: relative;
border: 5px solid #F8F8F8;
box-shadow: 0px 2px 4px 0px rgba(0, 0, 0, 0.1);
margin-top: 1em;
margin-bottom: 1em;
}
```

```
.img-preview>div {
width: 10%;
height: 10%;
background-size: 100px 10px;
background-repeat: no-repeat;
background-position: center;
}
```

```
input[type="file"] {
display: none;
}
```

```
.upload-label{
display: inline-block;
padding: 12px 30px;
background: #39D2B4;
color: #fff;
font-size: 1em;
transition: all .4s;
cursor: pointer;
}
```

```
.upload-label:hover{
background: #34495E;
color: #39D2B4;
}
```

```
.myButton {
border: none;
```

```

text-align: center;
cursor: pointer;
text-transform: uppercase;
outline: none;
overflow: hidden;
position: relative;
color: #fff;
font-weight: 700;
font-size: 12px;
background-color: #ff0000;
padding: 10px 15px;
margin: 0 auto;
box-shadow: 0 5px 15px rgba(0,0,0,0.20);
}

.myButton span {
position: relative;
z-index: 1;
}

.myButton:after {
content: "";
position: absolute;
left: 0;
top: 0;
height: 310%;
width: 150%;
background: #f2f2f2;
-webkit-transition: all .5s ease-in-out;
transition: all .5s ease-in-out;
-webkit-transform: translateX(-98%) translateY(-25%) rotate(45deg);
transform: translateX(-98%) translateY(-25%) rotate(45deg);
}

.myButton:hover:after {
-webkit-transform: translateX(-9%) translateY(-25%) rotate(45deg);
transform: translateX(-9%) translateY(-25%) rotate(45deg);
}

.loader {
border: 8px solid #f3f3f3; /* Light grey */
border-top: 8px solid #ff0000; /* Red */
border-radius: 50%;
width: 50px;
height: 50px;
animation: spin 1s linear infinite;
}

```

```
@keyframes spin {
  0% { transform: rotate(0deg); }
  100% { transform: rotate(360deg); }
}
```

```
#main-footer{
  background: #333;
  color:#fff;
  text-align: center;
  padding:1px;
  margin-top:0px;
}
```

```
@media(max-width:600px){
  #main{
    width:100%;
    float:none;
  }

  #sidebar{
    width:100%;
    float:none;
  }
}
```

main.js:

```
$(document).ready(function () {
```

```
  $('.image-section').hide();
  $('.loader').hide();
  $('#result').hide();
```

```
  function readURL(input) {
    if (input.files && input.files[0]) {
      var reader = new FileReader();
      reader.onload = function (e) {
        $('#imagePreview').css('background-image', 'url(' + e.target.result + ')');
        $('#imagePreview').hide();
        $('#imagePreview').fadeIn(650);
      }
      reader.readAsDataURL(input.files[0]);
    }
  }
  $("#imageUpload").change(function () {
    $('.image-section').show();
    $('#btn-predict').show();
```

```

    $('#result').text("");
    $('#result').hide();
    readURL(this);
});

```

```

$('#btn-predict').click(function () {
    var form_data = new FormData($('#upload-file')[0]);

```

```

    $(this).hide();
    $('#loader').show();

```

```

$.ajax({
    type: 'POST',
    url: '/predict',
    data: form_data,
    contentType: false,
    cache: false,
    processData: false,
    async: true,
    success: function (data) {

        $('#loader').hide();
        $('#result').fadeIn(600);
        $('#result').html(data);
        console.log('Success!');
    },
});
});
});

```

app.py:

```

from flask import Flask,render_template,request

```

```

import os

```

```

import numpy as np

```

```

from tensorflow.keras.models import load_model

```

```

from tensorflow.keras.preprocessing import image

```

```

import requests

```

```

app = Flask(__name__,template_folder="templates")

```

```

model=load_model('nutrition.h5')

```

```

print("Loaded model from disk")

```

```

@app.route('/')
def home():
    return render_template('home.html')

@app.route('/image1',methods=['GET','POST'])
def image1():
    return render_template("image.html")

@app.route('/predict',methods=['GET', 'POST'])
def launch():
    if request.method=='POST':
        f=request.files['file']
        basepath=os.path.dirname('__file__')
        filepath=os.path.join(basepath,"uploads",f.filename)
        f.save(filepath)

        img=image.load_img(filepath,target_size=(64,64))
        x=image.img_to_array(img)
        x=np.expand_dims(x,axis=0)

        pred=np.argmax(model.predict(x), axis=1)
        print("prediction",pred)
        index=['APPLES','BANANA','ORANGE','PINEAPPLE','WATERMELON']

        result=str(index[pred[0]])

        x=result
        print(x)
        result=nutrition(result)
        print(result)

        return render_template("0.html",showcase=(result),showcase1=(x))
def nutrition(index):
    url = "https://calorieninjas.p.rapidapi.com/v1/nutrition"

    querystring = {"query": "tomato"}

    headers = {
        "X-RapidAPI-Key":
"f2179b0ee2msh46dd220682815e1p1e6122jsnaea9bb30dd96",
        "X-RapidAPI-Host": "calorieninjas.p.rapidapi.com"
    }

    response = requests.request("GET", url, headers=headers, params=querystring)

    print(response.text)
    return response.json()['items']

```



```
if __name__ == "__main__":
```

```
    app.run(debug=True)
```

home.html:

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
    <meta charset="UTF-8">
```

```
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
```

```
    <meta http-equiv="X-UA-Compatible" content="ie=edge">
```

```
    <title>Home</title>
```

```
    <link href="https://cdn.bootcss.com/bootstrap/4.0.0/css/bootstrap.min.css"
rel="stylesheet">
```

```
    <script
```

```
src="https://cdn.bootcss.com/popper.js/1.12.9/umd/popper.min.js"></script>
```

```
    <script src="https://cdn.bootcss.com/jquery/3.3.1/jquery.min.js"></script>
```

```
    <script
```

```
src="https://cdn.bootcss.com/bootstrap/4.0.0/js/bootstrap.min.js"></script>
```

```
    <link href="{{ url_for('static', filename='css/main.css') }}" rel="stylesheet">
```

```
<style>
```

```
body
```

```
{
```

```
    background-image: url("https://www.livingproofnyc.com/wp-
content/themes/livingproof/assets/img/hero-background.jpg");
```

```
    background-size: cover;
```

```
}
```

```
.bar
```

```
{
```

```
margin: 0px;
```

```
padding:20px;
```

```
background-color:white;
```

```
opacity:0.6;
```

```
color:black;
```

```
font-family:'Roboto',sans-serif;
```

```
font-style: italic;
```

```
border-radius:20px;
```

```
font-size:25px;
```

```
}
```

```
h3
```

```
{
```

```

margin: 0px;
padding:20px;
background-color:#9ACD32;
width: 800px;
opacity:0.6;
color:#000000;
font-family:'Roboto',sans-serif;
font-style: italic;
border-radius:20px;
font-size:25px;
}
a
{
color:grey;
float:right;
text-decoration:none;
font-style:normal;
padding-right:20px;
}
a:hover{
background-color:black;
color:white;
border-radius:15px;0
font-size:30px;
padding-left:10px;
}
.div1{
background-color: lightgrey;
width: 500px;
border: 10px solid peach;
padding: 20px;
margin: 20px;
height: 500px;
}

```

```

.header {
    position: relative;
        top:0;
        margin:0px;
        z-index: 1;
        left: 0px;
        right: 0px;
        position: fixed;
        background-color: #8B008B ;
        color: white;

```

```

        box-shadow: 0px 8px 4px grey;
        overflow: hidden;
        padding-left: 20px;
        font-family: 'Josefin Sans'
        font-size: 2vw;
        width: 100%;
        height: 8%;
        text-align: center;
    }
    .topnav {
        overflow: hidden;
        background-color: #FCAD98;
    }

    .topnav-right a {
        float: left;
        color: black;
        text-align: center;
        padding: 14px 16px;
        text-decoration: none;
        font-size: 22px;
    }

    .topnav-right a:hover {
        background-color: #FF69B4;
        color: black;
    }

    .topnav-right a.active {
        background-color: #DA70D6;
        color: black;
    }

    .topnav-right {
        float: right;
        padding-right: 100px;
    }
</style>
</head>
<body>

<!--Brian Tracy-->

<div class="header">
<div style="width:50%;float:left;font-size:2vw;text-align:left;color:black; padding-
top:1%;padding-left:5%;">Nutrition Image Analysis</div>
    <div class="topnav-right" style="padding-top:0.5%;">

```



```

        <script src="https://kit.fontawesome.com/5f3f547070.js"
crossorigin="anonymous"></script>
        <link
href="https://fonts.googleapis.com/css2?family=Pacifico&display=swap"
rel="stylesheet">
    </head>

```

```

        <!-- Result -->
        <div class="results">
            <p style="padding-top: 150px; color:blue;"><h4
style="color:blue;">Food Classified is: <h4><b><h4
style="color:red;"><u>{{showcase1}}<h4><br><h4
style="color:red;"><u>{{showcase}}<h4></p>

            </div>
            <br>
            <br>

```

```

        </div>
    </body>
</html>

```

image prediction:

```

<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <meta http-equiv="X-UA-Compatible" content="ie=edge">
    <title>Predict</title>
    <link href="https://cdn.bootcss.com/bootstrap/4.0.0/css/bootstrap.min.css"
rel="stylesheet">
    <script
src="https://cdn.bootcss.com/popper.js/1.12.9/umd/popper.min.js"></script>
    <script src="https://cdn.bootcss.com/jquery/3.3.1/jquery.min.js"></script>
    <script
src="https://cdn.bootcss.com/bootstrap/4.0.0/js/bootstrap.min.js"></script>
    <link href="{{ url_for('static', filename='css/main.css') }}" rel="stylesheet">
</style>
body
{
    background-image:
url("https://i.pinimg.com/originals/be/21/1a/be211ad5043a8d05757a3538bdd8f45
0.jpg");
    background-size: cover;
}
.bar

```

```

{
margin: 0px;
padding:20px;
background-color:white;
opacity:0.6;
color:black;
font-family:'Roboto',sans-serif;
font-style: italic;
border-radius:20px;
font-size:25px;
}
a
{
color:grey;
float:right;
text-decoration:none;
font-style:normal;
padding-right:20px;
}
a:hover{
background-color:black;
color:white;
border-radius:15px;0
font-size:30px;
padding-left:10px;
}
.div1{
background-color: lightgrey;
width: 500px;
border: 10px solid peach;
padding: 20px;
margin: 20px;
height: 500px;
}

```

```

.header {
position: relative;
top:0;
margin:0px;
z-index: 1;
left: 0px;
right: 0px;
position: fixed;
background-color: #8B008B ;
color: white;

```

```

        box-shadow: 0px 8px 4px grey;
        overflow: hidden;
        padding-left: 20px;
        font-family: 'Josefin Sans';
        font-size: 2vw;
        width: 100%;
        height: 8%;
        text-align: center;
    }
    .topnav {
        overflow: hidden;
        background-color: #FCAD98;
    }

    .topnav-right a {
        float: left;
        color: black;
        text-align: center;
        padding: 14px 16px;
        text-decoration: none;
        font-size: 18px;
    }

    .topnav-right a:hover {
        background-color: #FF69B4;
        color: black;
    }

    .topnav-right a.active {
        background-color: #DA70D6;
        color: black;
    }

    .topnav-right {
        float: right;
        padding-right: 100px;
    }
</style>
</head>
<body>
<div class="header">
<div style="width: 50%; float: left; font-size: 2vw; text-align: left; color: black; padding-top: 1%; padding-left: 5%;">Nutrition Image Analysis</div>
    <div class="topnav-right" style="padding-top: 0.5%;">

        <a href="{{ url_for('home')}}">Home</a>
        <a class="active" href="{{ url_for('image1')}}">Classify</a>
    </div>

```

```

</div>
<br>

</div>
<div class="container">
  <center>
<div id="content" style="margin-top:2em">{% block content %}{% endblock
%}</div></center>
  </div>
</body>

<footer>
  <script src="{{ url_for('static', filename='js/main.js') }}"
type="text/javascript"></script>
</footer>

</html>

```

image:

```

{% extends "imageprediction.html" %} {% block content %}
<div style="float:left">
<br>
<br>
<h5><font color="black" size="3" font-family="sans-serif"><b>Upload image to
classify</b></font></h5><br><br>

<div>
  <form id="upload-file" method="post" enctype="multipart/form-data">
    <label for="imageUpload" class="upload-label">
      Choose...
    </label>
    <input type="file" name="file" id="imageUpload" accept=".png, .jpg, .jpeg">
  </form>

  <center> <div class="image-section" style="display:none;">
    <div class="img-preview">
      <div id="imagePreview">
    </div></center>
  </div>
  <center><div>
    <button type="button" class="btn btn-primary btn-lg " id="btn-
predict">Classify</button>
  </center></div>

```


</div>

<div class="loader" style="display:none;margin-left: 450px;"></div>

<h3 id="result">

 <p style="padding-top: 25px;"><h4>Food Classified is :
<h4><u>{{showcase}}{{showcase1}}</p>
 </h3>

</div>

</div>

{% endblock %}