TEAM ID : PNT2022TMID25013

PROJECT NAME : AI-POWERED NUTRITION ANALYZER FOR FITNESS ENTHUSIAST

PROJECT REPORT FORMAT

1. INTRODUCTION

1.1 PROJECT OVERVIEW

Food is essential for human life and has been the concern of many healthcare conventions. Nowadays new dietary assessment and nutrition analysis tools enable more opportunities to help people understand their daily eating habits, exploring nutrition patterns and maintain a healthy diet. Nutritional analysis is the process of determining the nutritional content of food. It is a vital part of analytical chemistry that provides information about the chemical composition, processing, quality control and contamination of food.

1.2 PURPOSE

The main aim of the project is to building a model which is used for classifying the fruit depends on the different characteristics like colour, shape, texture etc. Here the user can capture the images of different fruits and then the image will be sent the trained model. The model analyses the image and detect the nutrition based on the fruits like (Sugar, Fibre, Protein, Calories, etc.).

2. LITERATURE SURVEY

2.1 EXISTING PROBLEM

Neutrino delivers nutrition-based data services and analytics to its users and wants to turn into a leading source of the nutrition-related platform. The platform employs NLP and mathematical models from the optimization theory as well as predictive analysis to enable individualized data compilation. The application relies on Artificial Intelligence to produce custom data related to smart calorie counter powered by AI. Their artificial intelligence learns an individual's tastes, preferences, and body type. All of this is packaged in a comprehensive nutrition and activity tracker.

2.2 **References** https://www.nutrinohealth.com/

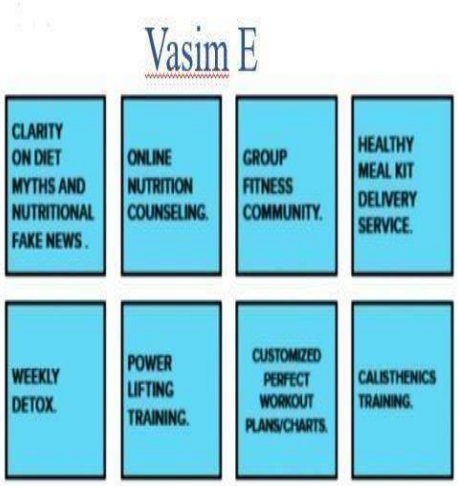
2.3 PROBLEM STATEMENT DEFINITION

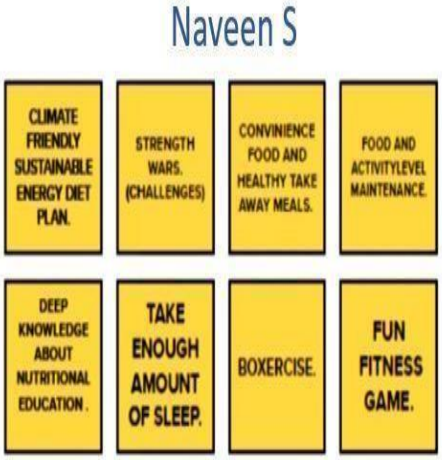
The main aim of the project is to building a model which is used for classifying the fruit depends on the different characteristics like colour, shape, texture etc. Here the user can capture the images of different fruits and then the image will be sent the trained model. The model analyses the image and detect the nutrition based on the fruits like (Sugar, Fibre, Protein, Calories, etc.).

3. IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS

3.2 IDEATION & BRAINSTORMING





3.3 Proposed Solution

S.NO	PARAMETER	DESCRIPTION
1	Problem Statement (Problem to be solved)	How to intake suitable nutrition with correct guidance and weight level should be manage through tracking our day to day fitness.
2	Idea / Solution Description	To track fitness level and Analyze the nutrition level of foods like fruits , vegetables . It helps to identify the proportion of vitamins.
3	Novelty/Uniqueness	Giving a individual Food/health Schedule According to their body conditions
4	Social impact/Customer Satisfaction	Low expenditure ,easy to follow without affecting their personal time.
5	Business model (Revenue Model)	Free platform for all users. For specific guidance users want to pay
6	Scalability of the solution	Notifying motivational quote's to lead a healthy routine

3.4 PROBLEM SOLUTION FIT\

• The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem. It helps entrepreneurs, marketers and corporate innovators identify behavioral patterns.

Purposes:

• Solve complex problems in a way that fits the state of your customers.

• Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.

• Sharpen your communication and marketing strategy with the right triggers and messaging

. • Increase touch-points with your company by finding the right problem-behavior fit and building trust by solving frequent annoyances, or urgent or costly problems.

Problem-Solution fit canvas 2.0

Purpose / Vision

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) — CS

Who is your customer?
i.e. working parents of 0-5 y.o. kids

- People who want to fit their body and maintain proper or balanced diet in a proper way

6. CUSTOMER CONSTRAINTS — CC

What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices.

- constraints may contribute to the unhealthy food choices observed among low socioeconomic groups i n industrialized countries.

5. AVAILABLE SOLUTIONS — AS

Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking

- Try to eat more protein and fat, and less simple sugars.
- Ask your doctor or dietitian about nutritional supplements.
- Avoid non-nutritious beverages

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS — J&P

Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one, explore different sides.

- Being a holistic wellness coach, registered dietitian nutritionist,Food scientists,nutrition educator are the job can successfuly done in this field

9. PROBLEM ROOT CAUSE — RC

What is the real reason that this problem exists?
What is the back story behind the need to do this job?
i.e. customers have to do it because of the change in regulations.

- Lack of appetite, or decreased hunger
- A sore mouth or throat can make eating difficult
- Undiet plan in untime eating

7. BEHAVIOUR — BE

What does your customer do to address the problem and get the job done?
i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)

- the sum of all planned, spontaneous, or habitual actions of individuals or social groups to procure, prepare, and consume food as well as those actions r elated to storage and clearance.

Focus on J&P, tap into BE, understand RC

Identify strong TR & EM

3. TRIGGERS — TR

What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.

- Antigens are substances that the body labels as foreign and harmful, which triggers immune cell activity.

4. EMOTIONS: BEFORE / AFTER — EM

How do customers feel when they face a problem or a job and afterwards?
i.e. lost, insecure > confident, in control - use it in your communication strategy & design.

Before : Initially they felt inferiority complex by their own. And felt more negative thoughts and underestimate themselves.

After : After the correct session they had a great confidence among themself. And achive their Healthy diet.

10. YOUR SOLUTION — SL

If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.
If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.

- In our plateform we provide a individual healthy chart for subscribers
- Normally Common health diet plan was allocated
- Seek your way on organic side amd stay healthy

8. CHANNELS of BEHAVIOUR — CH

8.1 ONLINE
What kind of actions do customers take online? Extract online channels from #7

- Refer journal through online applications, attending some online session, following healthy remedies.

8.2 OFFLINE
What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.

- Taking proteins, visit gym, doing aerobic exercise, consume huge water.

Extract online & offline CH of BE

Created by Daria Neprokhina / Amaltama.com

AMALTAMA

4. REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENT

• It will generate the diet plan as well as monitor the user's health to classify the category of the disease and to create the diet plan. It will also reduce the cost of consulting the person nutritionist.

• The task of food detection/classification is not easy as it seems. All possible options related to the given Image.

• Image classification, object detection, segmentation, face recognition. • Classification of crystal structure using a convolutional neural network

• Nutrition is vital to the growth of the human body. Nutritional analysis guarantees that the meal meets the appropriate vitamin and mineral requirements, and the examination of nutrition in food aids in understanding the fat proportion, carbohydrate dilution, proteins, fiber, sugar, and so on. Another thing to keep in mind is not to exceed our daily calorie requirements.

• Computer-Assisted Nutritional Recognize Food Images – In order to solve this issue, a brand new Convolutional Neural Network (CNN)- based food picture identification system was created, as described in this study. We utilized our suggested strategy on two sets of actual food picture data.

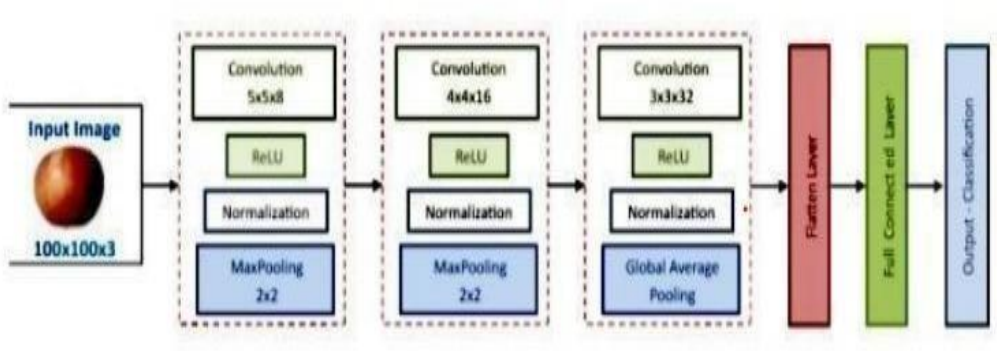
• Here the user can capture the images of different fruits and then the image will be sent to the trained model. The model analyzes the image and detects the nutrition based on the fruits like (Sugar, Fiber, Protein, Calories, etc.)

• The Ultimate Workout at Home Solution This fitness AI software is designed with personalized training regimens for each individual. It began as "gym only software," but has now improved its system to satisfy "at home fitness" expectations.

• You take a picture, dial in data such as whether you are eating breakfast or lunch and add a quick text label, and the app estimates the calorie content.

• This software collaborated with IBM's natural language capability to provide 24-hour assistance and dietary recommendations.

For Example:



- The comparison of the proposed model with the conventional models shows that the results of this model are exceptionally good and promising to use in real-world applications.

- This sort of higher accuracy and precision will work to boost the machine's general efficiency in fruit recognition more appropriately.

- A generic model for the dietary protein requirement (as with any nutrient) defines the requirement in terms of the needs of the organism,

- i.e. metabolic demands, and the dietary amount which will satisfy those needs, i.e. efficiency of utilization, thus: dietary requirement = metabolic demand/efficiency of utilization

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Users can create an account to use the application. This can be done by creating a persona on the application with a username and password or by making use of an existing email ID.
FR-2	User Confirmation	Once a user registers onto the application, they receive a confirmation to their email id which they provide for registration. OTP authentication is integrated to ensure identity theft does not occur.

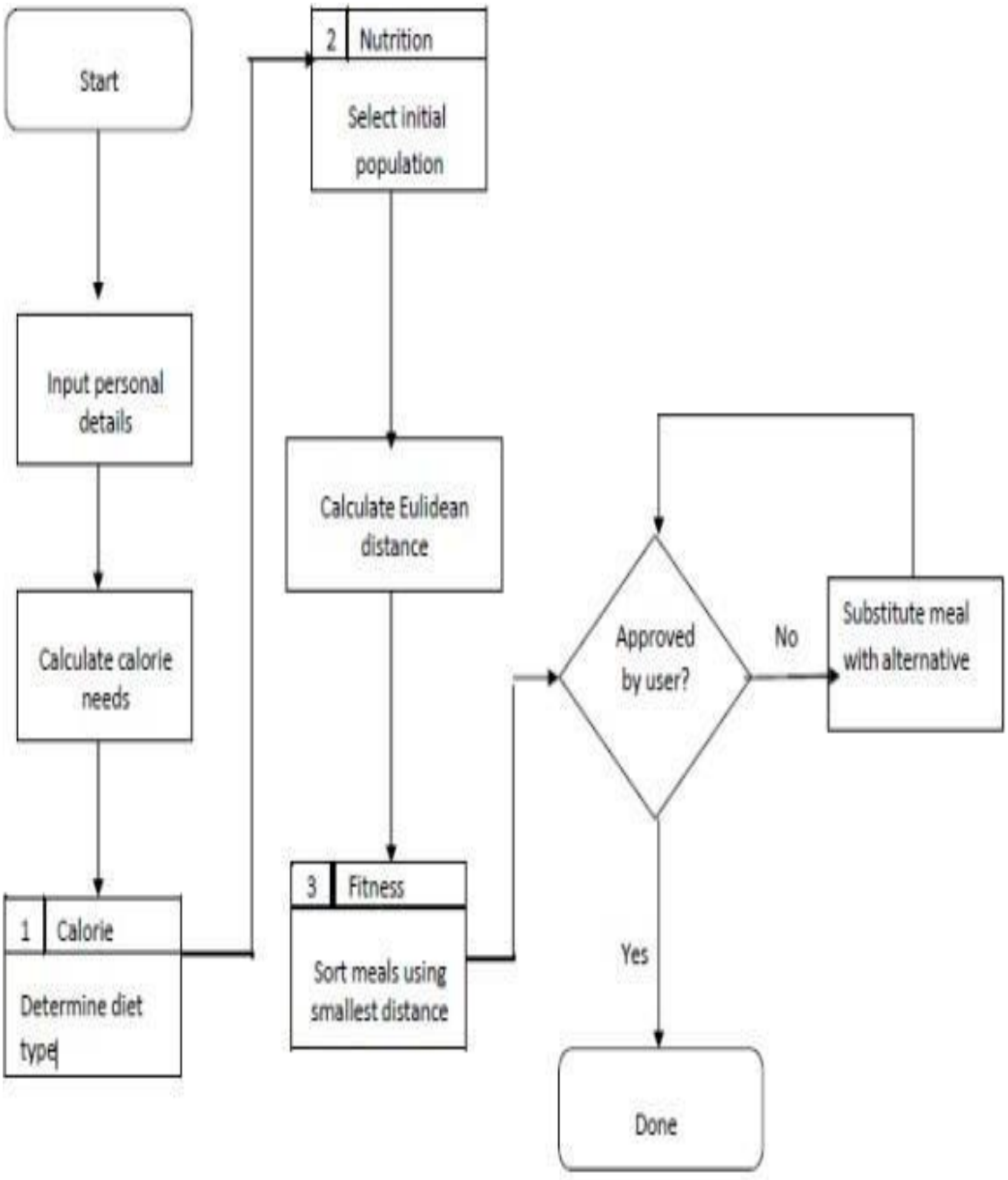
FR-3	Calorie Calendar Creation	On creation of a user profile, a calendar is generated in association with the account. This calendar is private to the user and keeps track of the calories consumed in a day and related statistics.
FR-4	Image Capturing and Processing	The application allows users to capture images of the ingredients they consume. These are given to the model for predicting their labels, i.e. identify the fruits. Further, the quantity of the fruits should be discerned. The application should be able to work with images of low quality and low resolution as well.
FR-5	Calorie Value Computation	Once the labels of the ingredients and their quantity have been found, the net calorie value of the meal is calculated by summing up the calories of each ingredient in their respective amounts. The calorie values are fetched from the internet while that of frequently used items are fetched from a database.
FR-6	Storage of Data	Data about the user and their log in details are stored in a backend database. Apart from these, calorific information of frequently consumed ingredients are also stored to minimize overhead and complexity.
FR-7	Calorie Over-Consumption Notification	When a user exceeds their permissible calorie consumption amount for the day, the application issues a notification for the same. The application then suggests lowcalorie diets to ensure minimum over-consumption.
FR-8	Diet Plan Specification.	Users can select the kind of diet plan they want to follow with a target in mind such as weight loss, muscle building, etc. The application sources diet plans and food items that supplement their goals from the internet to help them achieve their goal.

4.2 NON-FUNCTIONAL REQUIREMENTS

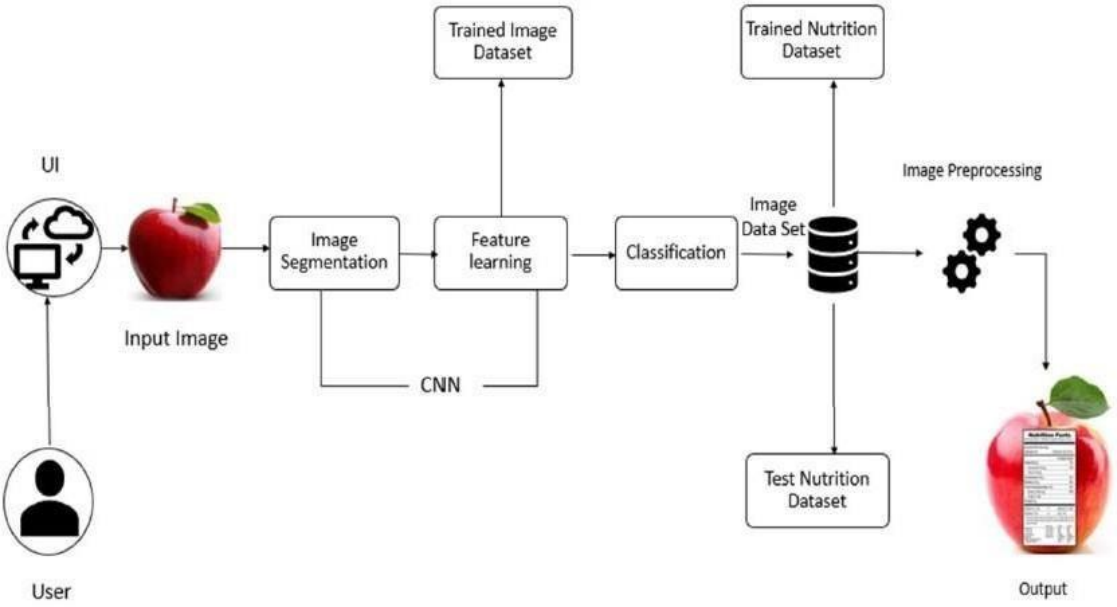
FR No.	Non-Functional Requirement (Epic)	Description
NFR-1	Usability	The users should be able to use the application without any difficulties. The interface should be easy to use and understand. The image capture process should be smooth and not tedious.
NFR-2	Security	Details of the users and their personal calories calendar should not be disclosed or shared to other users. Privacy of data should be ensured.
NFR-3	Reliability	The application should correctly identify the fruits from the captured image and fetch its nutritional value. The count and calculation of the calories should be done accurately.
NFR-4	Performance	The application should be built on a highly efficient prediction model such that the results are accurate. It should keep in mind time and space complexity.
NFR-5	Availability	The application should be available to its users at all times and should work efficiently. It should not suffer from issues such as application crashes.
NFR-6	Scalability	The application should be able to support updates in terms of features and functionality. The system should be built such that it can upgrade using the existing underlying architecture.

5. PROJECT DESIGN

5.1 Data Flow Diagrams



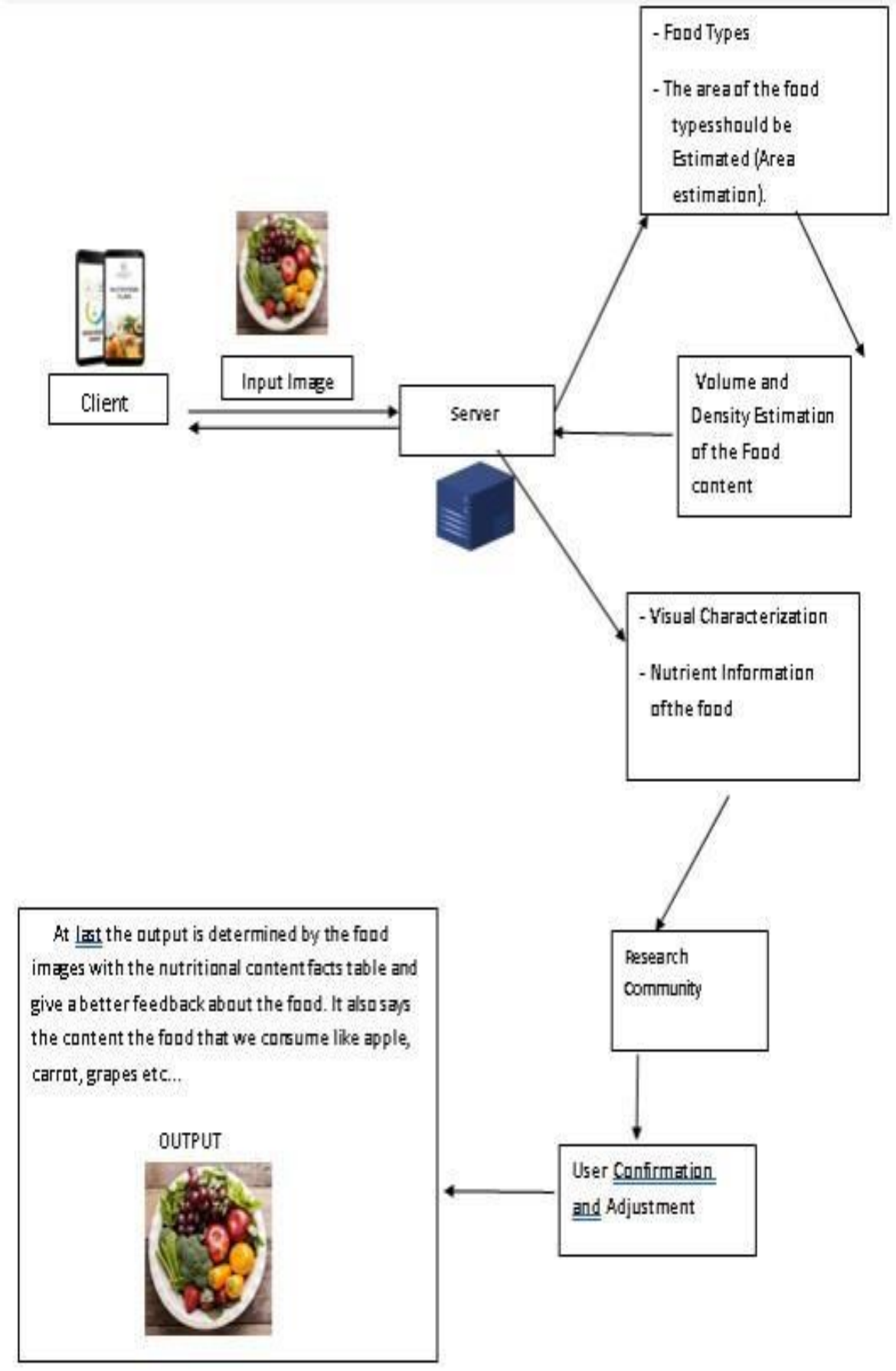
5.2 Solution & Technical Architecture



S.No	Component	Description	Technology
1	App	User interacts with application for the prediction of Nutrition	Python, Java, HTML, SQLite, Android studio
2	Database	Data Type, Configuration and data will be stored	MySQL,JS
3	Cloud Database	Database Service on Cloud	IBM DBM, IBM Cloudant etc.
4	File Storage	File storage requirements	Cloud-->drive
5	Machine Learning Model	Purpose of Machine Learning Model	ANN,CNN,RNN
6	Notification	Notification will be sent from the server	SendGrid

Application Characteristics:

S.No	Component	Description	Technology
1	Open-Source Frameworks	Open-source frameworks used	SendGrid, Python, JQuery
2	Security	Request authentication using encryption	Encryption, SSL certs
3	Scalable Architecture	The scalability of architecture consists of 3 tiers	Web Server-HTML, CSS, Javascript Application Server-Python Flask Database Server-IBM Cloud
4	Availability	Availability is increased by loads balancers in cloud VPS	IBM Cloud hosting
5	Performance	The application is expected to handle up to 4000 predications per second	IBM Load Balance


- Food Types
- The area of the food typesshould be Estimated (Area estimation).
Client
Input Image
Server
Volume and Density Estimation of the Food content
- Visual Characterization
- Nutrient Information ofthe food
Research Community
User Confirmation and Adjustment
At last the output is determined by the food images with the nutritional content facts table and give a better feedback about the food. It also says the content the food that we consume like apple, carrot, grapes etc...
OUTPUT

5.3 User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirmingmy password.	I can access my account /dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation emailonce I have registered for the application	I can receive confirmationemail & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the applicationthrough Facebook	I can register & access thedashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the applicationthrough Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application byentering email & password		High	Sprint-1
	Dashboard	USN-5	As a user, I can Access my Dashboard		Medium	Sprint - 1
Customer (Webuser)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirmingmy password.	I can access my account /dashboard	High	Sprint -1
Customer Care Executive	Solution	USN-5	Responding to each email you receive canmake a lasting impression on customers.	Offer a solution for owyour company can improve the customer experience	High	Sprint-1
Administrator	Manage	USN-5	Do-it yourself service for delivery Everything	Set of predefined requirements that must bemet to mark a user story complete	High	Sprint-1

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Sprint	Functional Requiremental (Epic)	User Story Number	User Story/Task	Story Points	Priority	Team Members
Sprint-1	Data Collection	USN-1	Download Food Nutrition Dataset	2	Medium	VASIM E
Sprint-1	Data Preprocessing	USN-2	Importing The Dataset into Workspace	1	Low	NAVEEN S
Sprint-1		USN-3	Handling Missing Data	3	Medium	SURYA SIVARAJ M
Sprint-1		USN-4	Feature Scaling	3	Low	GOKUL B
Sprint-1		USN-5	Data Visualization	3	Medium	NAVEEN S
Sprint-1		USN-6	Splittimg Data into Train and Test	4	High	VASIM E
Sprint-1		USN-7	Creating A Dataset with Sliding Windows	4	High	SURYA SIVARAJ M
Sprint-2	Model Building	USN-8	Imprting The Model Building Libraries	1	Medium	GOKUL B

Sprint-2		USN-9	Initializing The Model	1	Medium	VASIM E
Sprint-2		USN-10	Adding LSTM Layers	2	High	GOKUL B
Sprint-2		USN-11	Adding Output Layers	3	Medium	NAVEEN S
Sprint-2		USN-12	Configure The Learning Process	4	High	SURYA SIVARAJ M
Sprint.	**Functional Requirement(Epic)**	**User Story Number**	**User Story/Task**	**Story Points**	**Priority**	**Team Members**
Sprint-2		USN-13	Train The Model	2	Medium	VASIM E
Sprint-2		USN-14	Model Evaluation	1	Medium	NAVEEN S
Sprint-2		USN-15	Save The Model	2	Medium	GOKUL B
Sprint-2		USN-16	Test The Model	3	High	SURYA SIVARAJ M
Sprint-3	Application Building	USN-17	Create An HTML Fille	4	Medium	GOKUL B

Sprint-3		USN-18	Build Python Code	4	High	NAVEEN S
Sprint-3		USN-19	Run The App in Lo4cal Browser	4	Medium	SURYA SIVARAJ M
Sprint-3		USN-20	Showcasing Prediction On UI	4	High	VASIM E
Sprint-4	Train The Model On IBM	USN-21	Register For IBM Cloud	4	Medium	NAVEEN S
Sprint-4		USN-22	Train The ML Model On IBM	8	High	VASIM E
Sprint-4		USN-23	Integrate Flask with scoring End Point	8	High	GOKUL B

6.2 Sprint Delivery Schedule

Project Tracker,Velocity & Burndown Chart:(4 Marks)

Sprint	**Total Story Points**	**Duration**	**Sprint Start Date**	**Sprint End Date (Planned)**	**Story Points Completed(as on Planned End Date)**	**Sprint Release Date (Actual)**
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	03 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	10 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	14 Nov 2022	20	17 Nov 2022

6.3 Reports from JIRA

7. CODING & SOLUTIONING (Explain the features added in the project along with code)

7.1 Feature 1

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'
```

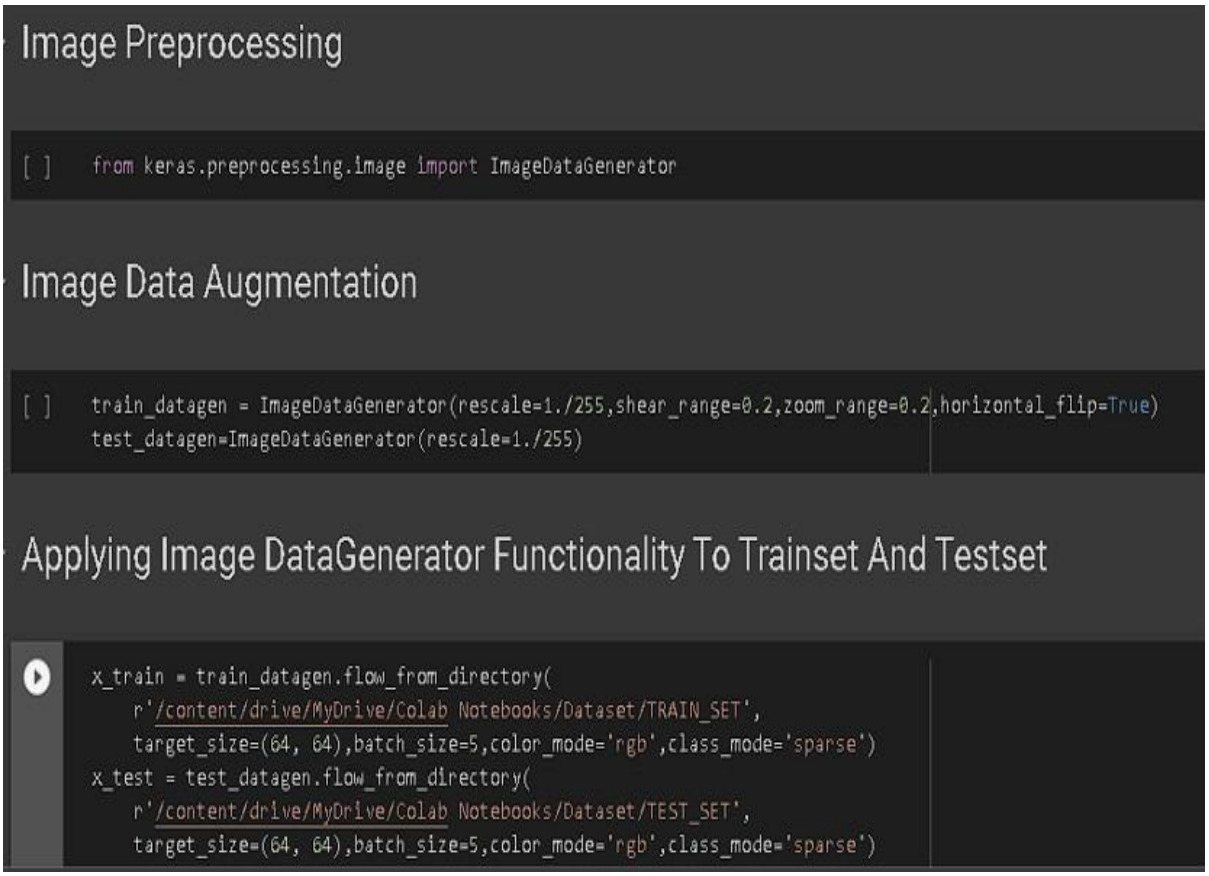


Image Preprocessing

```
[ ]   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

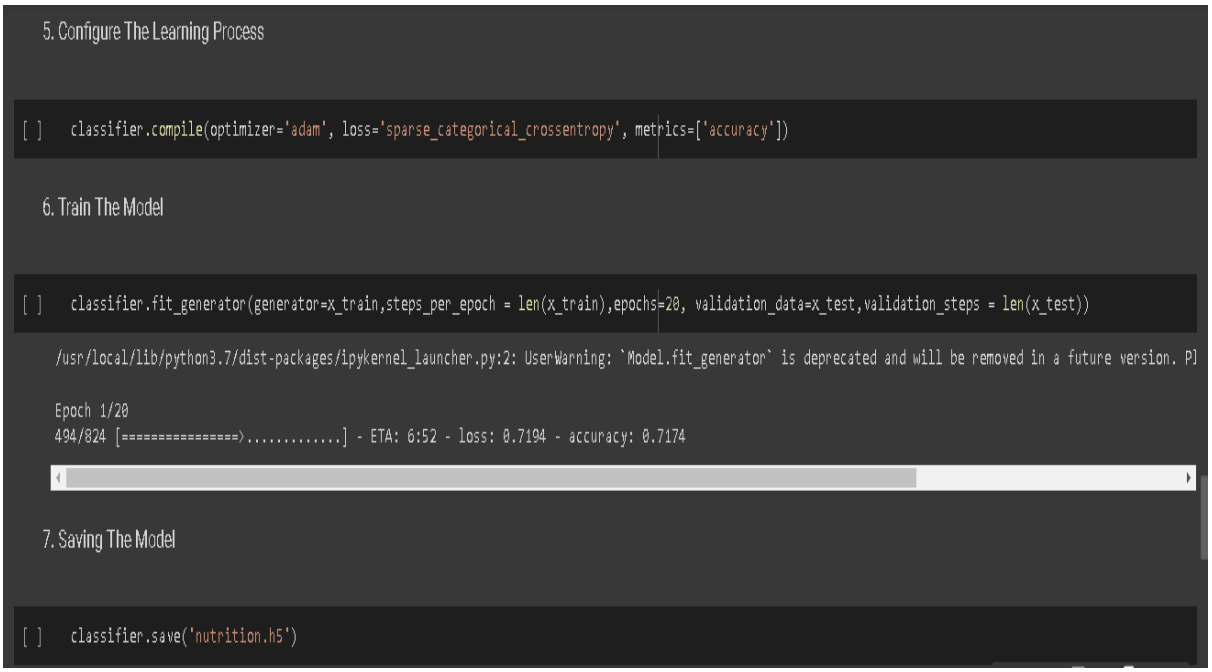
```
[ ]  classifier = Sequential()
     classifier.add(Conv2D(32, (3, 3), input_shape=(64, 64, 3), activation='relu'))
     classifier.add(MaxPooling2D(pool_size=(2, 2)))
     classifier.add(Conv2D(32, (3, 3), activation='relu'))
     classifier.add(MaxPooling2D(pool_size=(2, 2)))
     classifier.add(Flatten())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

4. Adding Dense Layers

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

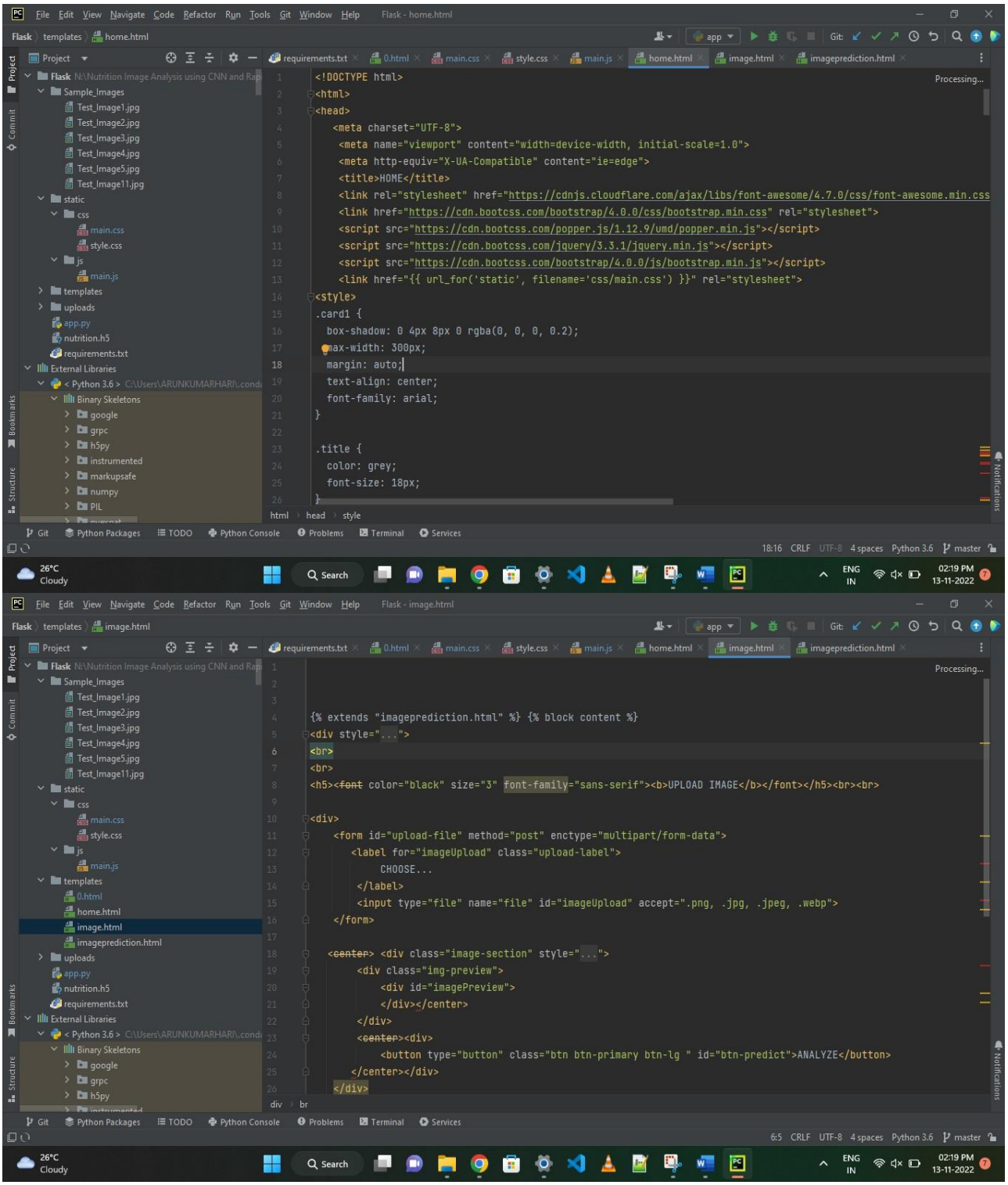
```
classifier.summary()
```

```
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')

SOURCE CODE

7.2 Feature 2

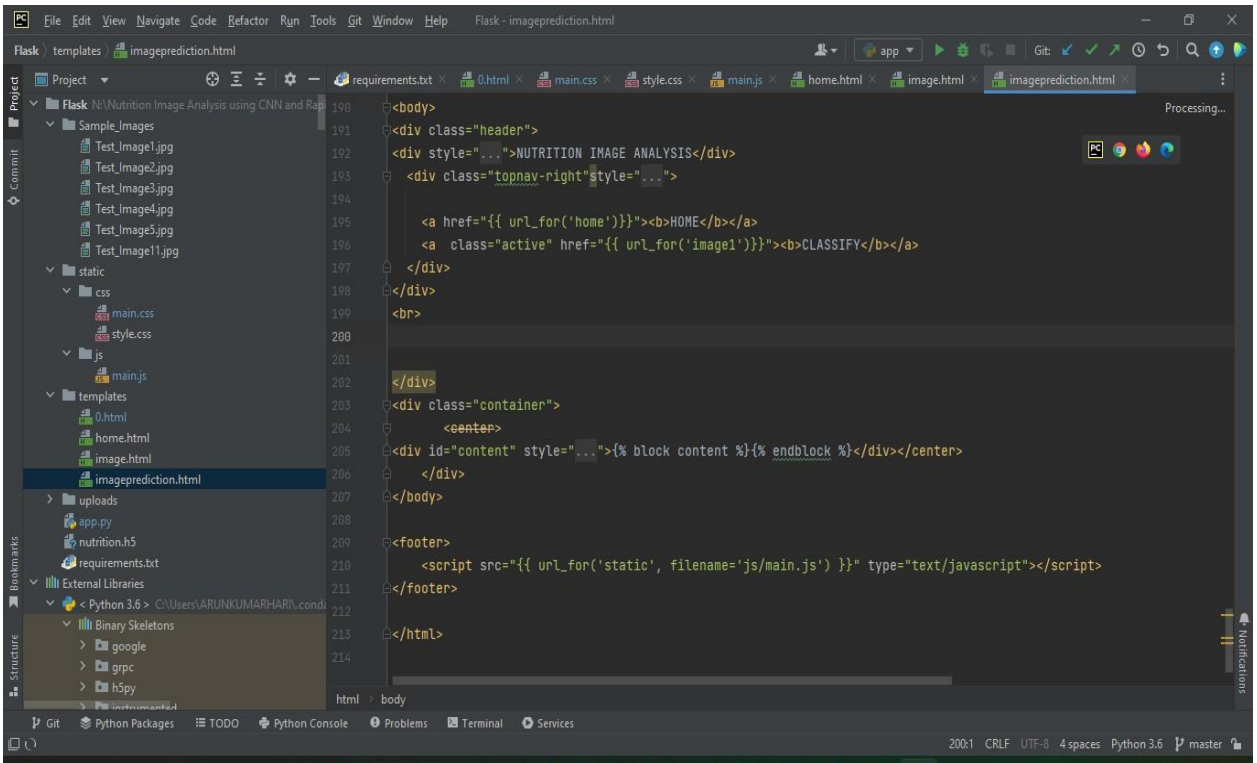

File Edit View Navigate Code Refactor Run Tools Git Window Help
Flask - home.html
Flask templates home.html
app
Git:
Project
Flask N:\Nutrition Image Analysis using CNN and Rap
Sample_Images
Test_Image1.jpg
Test_Image2.jpg
Test_Image3.jpg
Test_Image4.jpg
Test_Image5.jpg
Test_Image11.jpg
static
css
main.css
style.css
js
main.js
templates
uploads
app.py
nutrition.h5
requirements.txt
External Libraries
< Python 3.6 > C:\Users\ARUNKUMARHARI\.condi
Binary Skeletons
google
grpc
h5py
instrumented
markupsafe
numpy
PIL
requirements.txt
0.html
main.css
style.css
main.js
home.html
image.html
imageprediction.html
Processing...
<!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 rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css
<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>
.card1 {
box-shadow: 0 4px 8px 0 rgba(0, 0, 0, 0.2);
max-width: 300px;
margin: auto;
text-align: center;
font-family: arial;
}
.title {
color: grey;
font-size: 18px;
}
html head style
Git Python Packages TODO Python Console Problems Terminal Services
18:16 CRLF UTF-8 4 spaces Python 3.6 master
26°C Cloudy
Search
ENG IN
02:19 PM 13-11-2022
File Edit View Navigate Code Refactor Run Tools Git Window Help
Flask - image.html
Flask templates image.html
{% extends "imageprediction.html" %} {% block content %}

<h5>UPLOAD IMAGE</h5>

<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, .webp">
</form>

<button type="button" class="btn btn-primary btn-lg " id="btn-predict">ANALYZE</button>

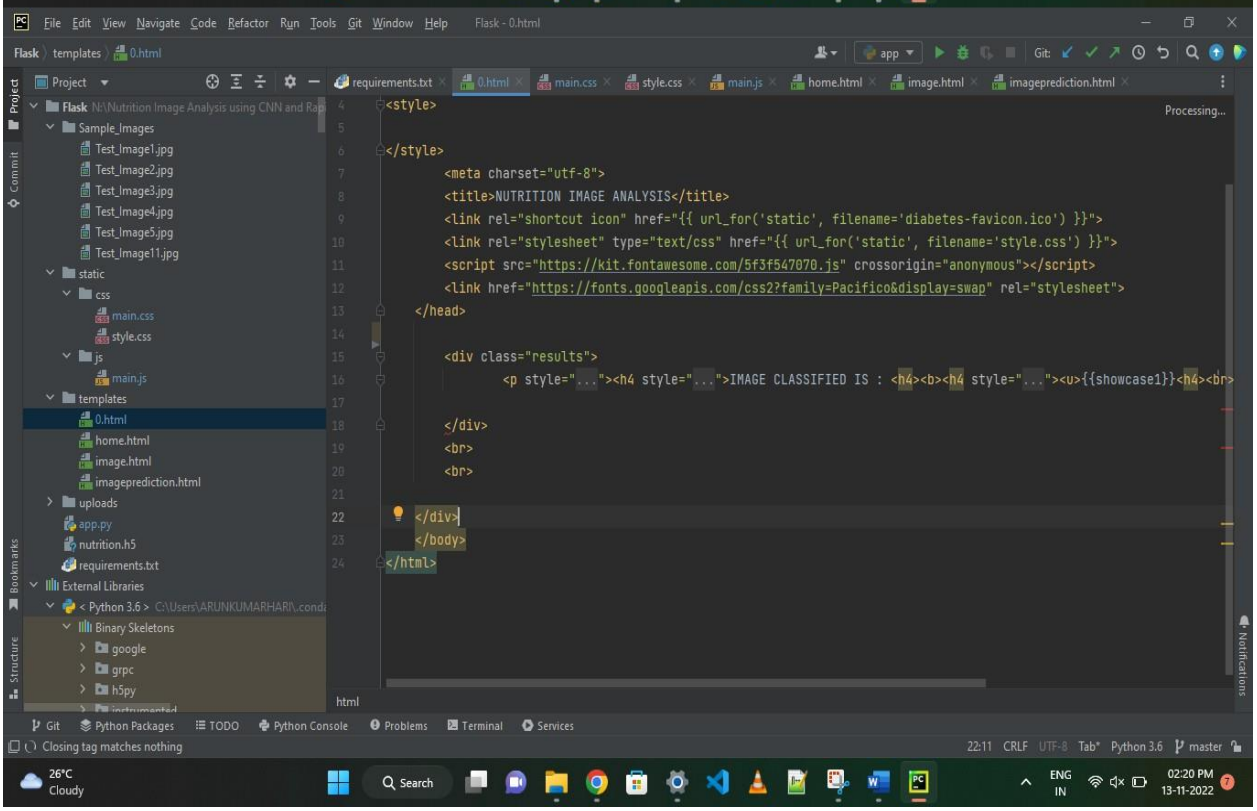
div br
6:5 CRLF UTF-8 4 spaces Python 3.6 master


File Edit View Navigate Code Refactor Run Tools Git Window Help
Flask - imageprediction.html
Flask templates imageprediction.html
app
Git:
Project
Flask N:\Nutrition Image Analysis using CNN and Rap
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 > C:\Users\ARUNKUMARHARI\.conda
Binary Skeletons
google
grpc
h5py
requirements.txt
0.html
main.css
style.css
main.js
home.html
image.html
imageprediction.html
Processing...
<body>

NUTRITION IMAGE ANALYSIS
<div class="topnav-right"style="...">
HOME
CLASSIFY

{% block content %}{% endblock %}

</body>
<footer>
<script src="{{ url_for('static', filename='js/main.js') }}" type="text/javascript"></script>
</footer>
</html>
html body
Git Python Packages TODO Python Console Problems Terminal Services
200:1 CRLF UTF-8 4 spaces Python 3.6 master
26°C Cloudy
Search
ENG IN
02:19 PM 13-11-2022


File Edit View Navigate Code Refactor Run Tools Git Window Help
Flask - 0.html
Flask templates 0.html
app
Git:
Project
Flask N:\Nutrition Image Analysis using CNN and Rap
Sample_Images
Test_Image1.jpg
Test_Image2.jpg
Test_Image3.jpg
Test_Image4.jpg
Test_Image5.jpg
Test_Image11.jpg
static
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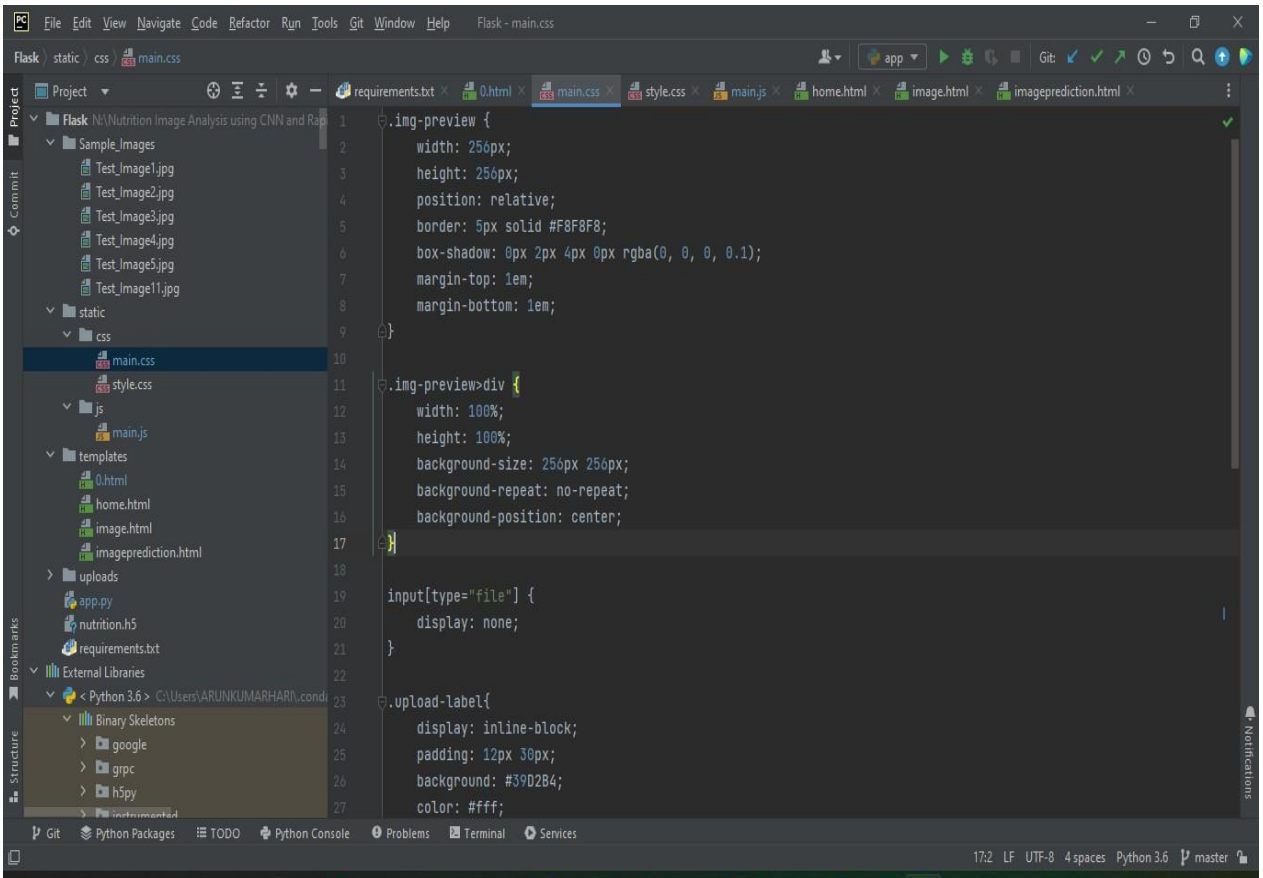
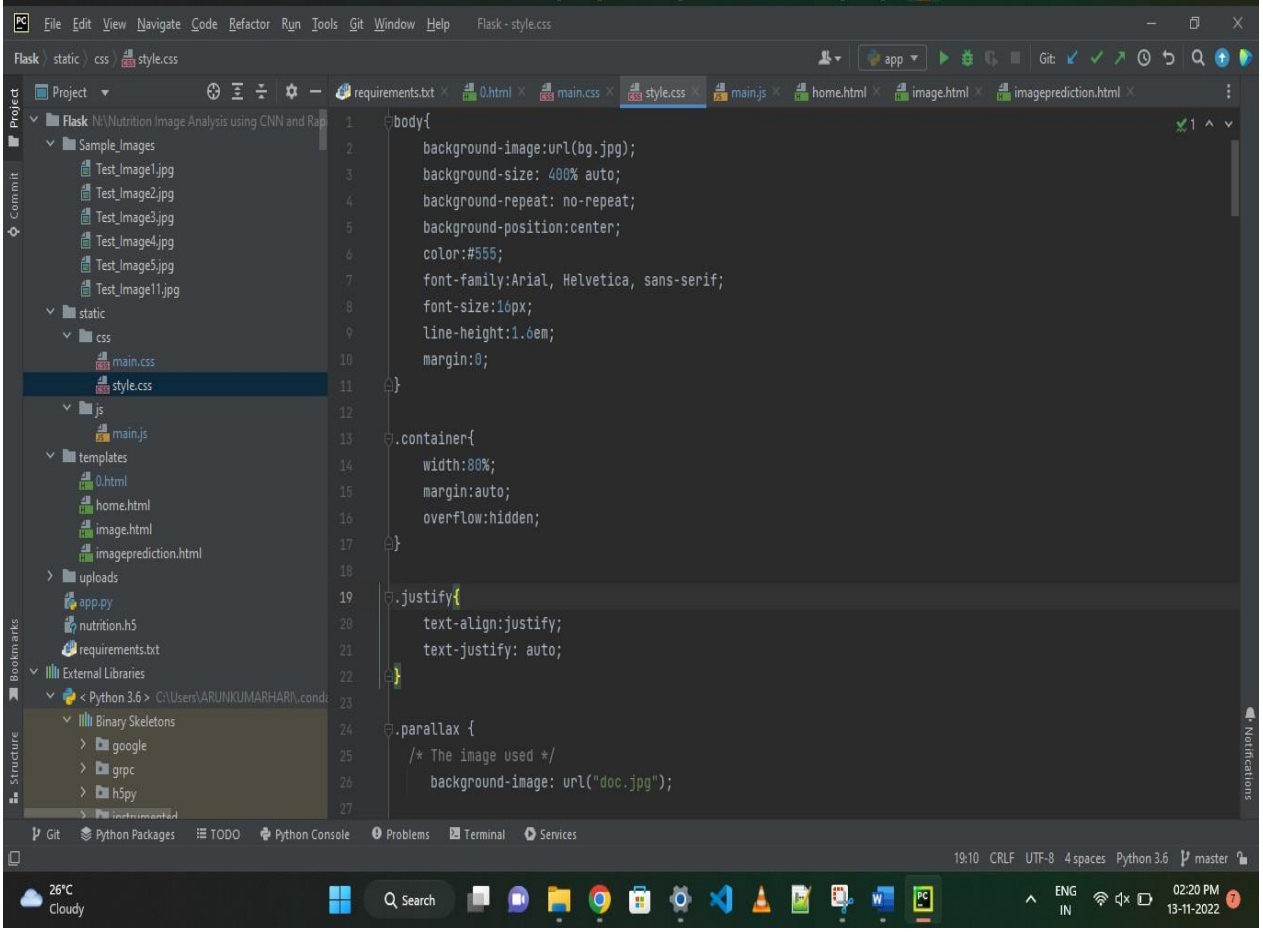
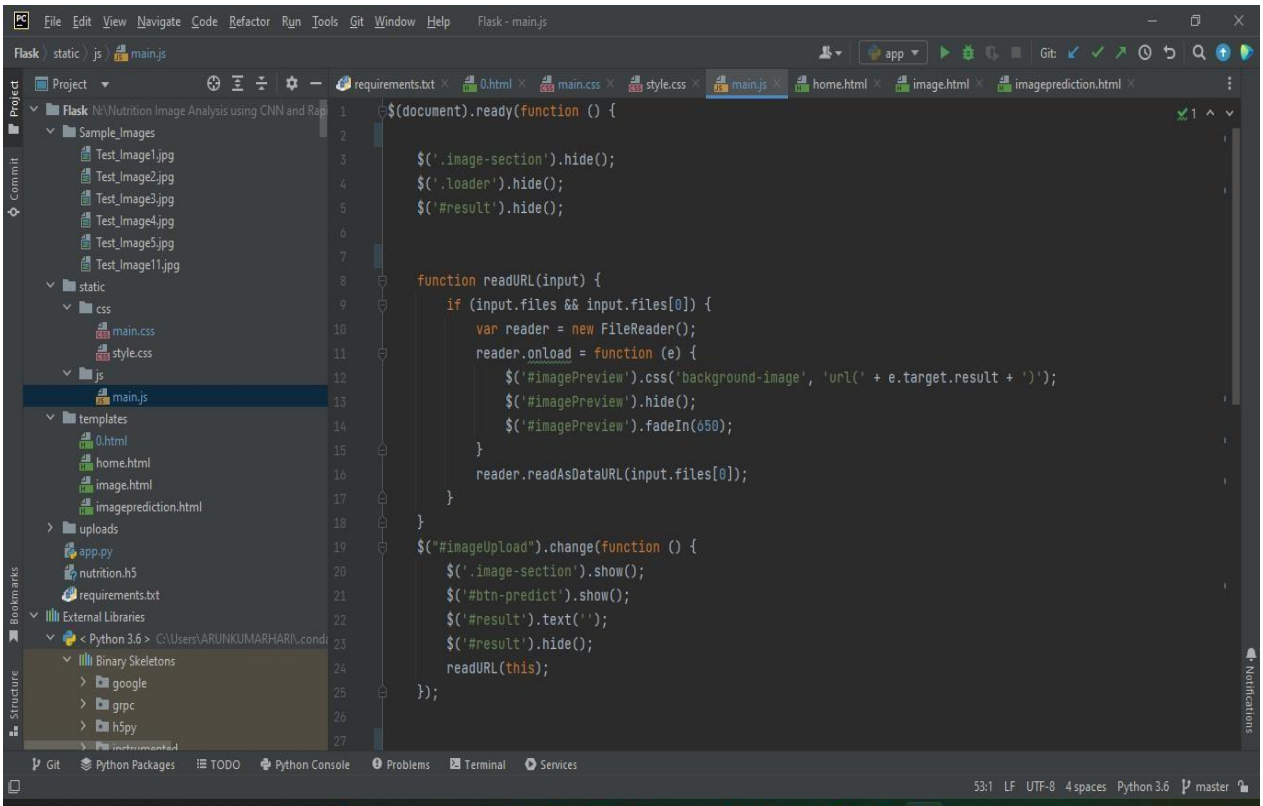
main.css
style.css
js
main.js
templates
0.html
home.html
image.html
imageprediction.html
uploads
app.py
nutrition.h5
requirements.txt
External Libraries
< Python 3.6 > C:\Users\ARUNKUMARHARI\.conda
Binary Skeletons
google
grpc
h5py
requirements.txt
0.html
main.css
style.css
main.js
home.html
image.html
imageprediction.html
Processing...
<style>
</style>
<meta charset="utf-8">
<title>NUTRITION IMAGE ANALYSIS</title>
<link rel="shortcut icon" href="{{ url_for('static', filename='diabetes-favicon.ico') }}">
<link rel="stylesheet" type="text/css" href="{{ url_for('static', filename='style.css') }}">
<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>

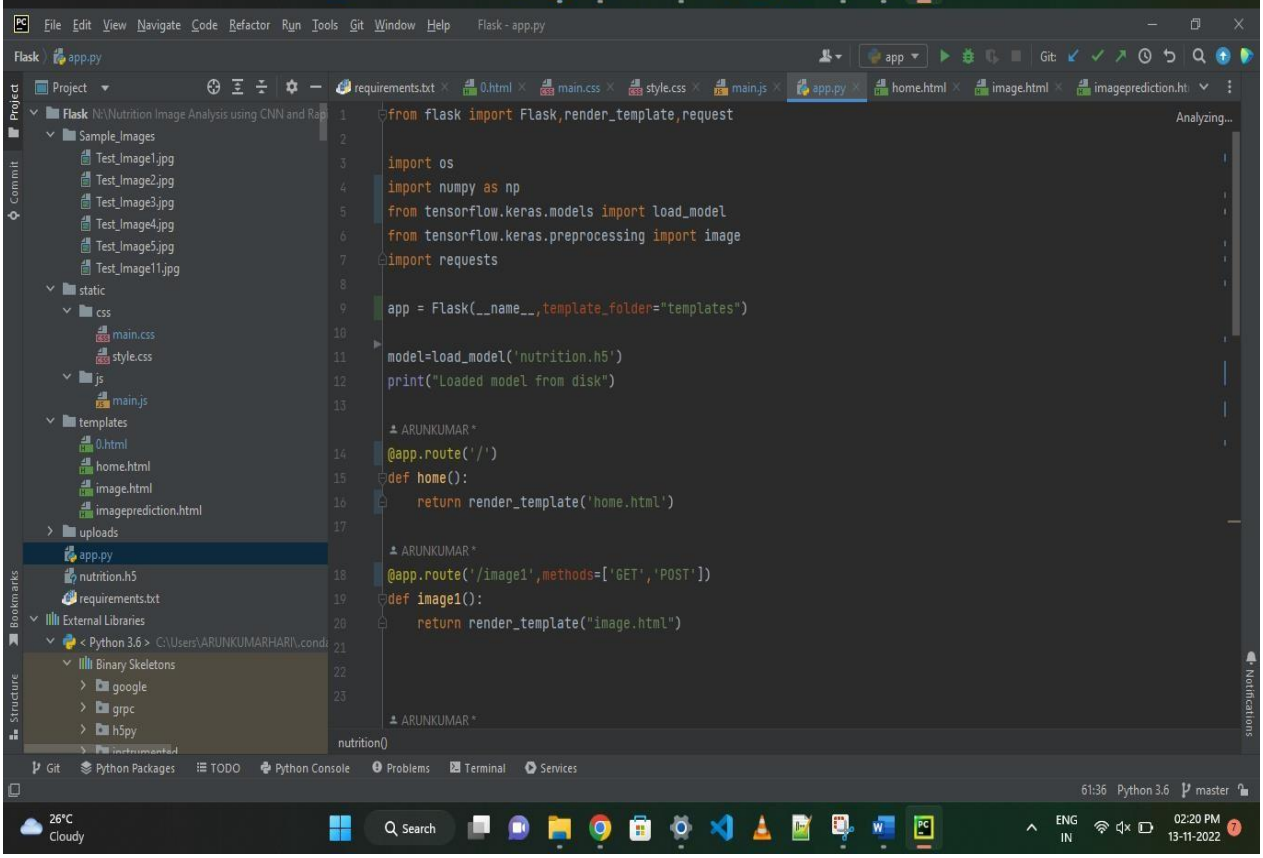
<p style="..."><h4 style="...">IMAGE CLASSIFIED IS : <h4><h4 style="..."><u>{{showcase1}}<h4>

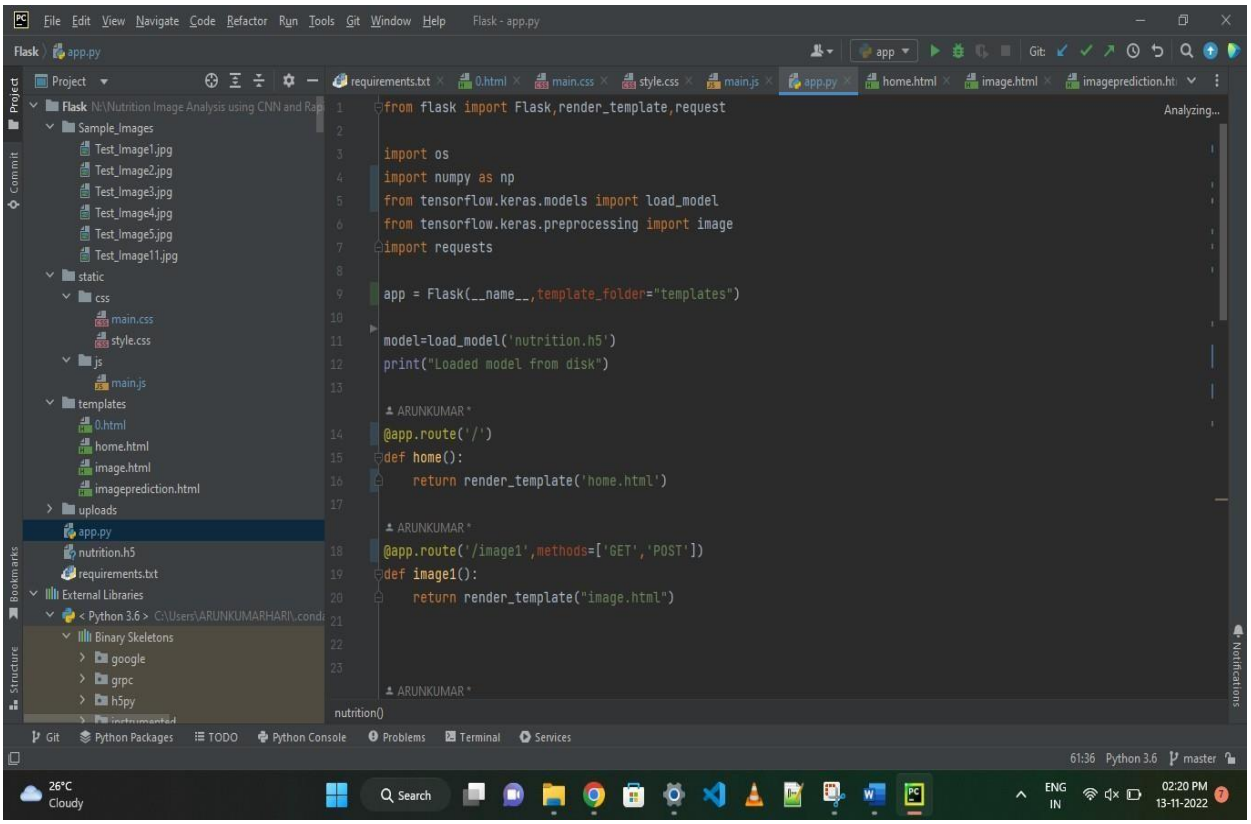
</body>
</html>
html
Git Python Packages TODO Python Console Problems Terminal Services
Closing tag matches nothing
22:11 CRLF UTF-8 Tab* Python 3.6 master
26°C Cloudy
Search
ENG IN
02:20 PM 13-11-2022


File Edit View Navigate Code Refactor Run Tools Git Window Help Flask - main.css
Flask static css main.css
app
Git:
Project
requirements.txt 0.html main.css style.css main.js home.html image.html imageprediction.html
Flask N:\Nutrition Image Analysis using CNN and Rap
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 > C:\Users\ARUNKUMARHARI\.conda
Binary Skeletons
google
grpc
h5py
.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;
Git Python Packages TODO Python Console Problems Terminal Services
17:2 LF UTF-8 4 spaces Python 3.6 master
26°C Cloudy
Search
ENG IN
02:20 PM 13-11-2022


File Edit View Navigate Code Refactor Run Tools Git Window Help Flask - style.css
Flask static css style.css
app
Git:
Project
requirements.txt 0.html main.css style.css main.js home.html image.html imageprediction.html
Flask N:\Nutrition Image Analysis using CNN and Rap
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 > C:\Users\ARUNKUMARHARI\.conda
Binary Skeletons
google
grpc
h5py
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");
Git Python Packages TODO Python Console Problems Terminal Services
19:10 CRLF UTF-8 4 spaces Python 3.6 master
26°C Cloudy
Search
ENG IN
02:20 PM 13-11-2022


File Edit View Navigate Code Refactor Run Tools Git Window Help Flask - main.js
Flask static js main.js
app
Git:
Project
requirements.txt 0.html main.css style.css main.js home.html image.html imageprediction.html
Flask N:\Nutrition Image Analysis using CNN and Rap
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 > C:\Users\ARUNKUMARHARI\.conda
Binary Skeletons
google
grpc
h5py
$(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);
});
Git Python Packages TODO Python Console Problems Terminal Services
53:1 LF UTF-8 4 spaces Python 3.6 master
26°C Cloudy
Search
ENG IN
02:20 PM 13-11-2022


File Edit View Navigate Code Refactor Run Tools Git Window Help Flask - app.py
Flask app.py
app
Git:
Project
requirements.txt 0.html main.css style.css main.js app.py home.html image.html imageprediction.ht
Analyzing...
Flask N:\Nutrition Image Analysis using CNN and Rap
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 > C:\Users\ARUNKUMARHARI\.conda
Binary Skeletons
google
grpc
h5py
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")
ARUNKUMAR *
@app.route('/')
def home():
return render_template('home.html')
ARUNKUMAR *
@app.route('/image1',methods=['GET','POST'])
def image1():
return render_template("image.html")
ARUNKUMAR *
nutrition()
Git Python Packages TODO Python Console Problems Terminal Services
61:36 Python 3.6 master
26°C Cloudy
Search
ENG IN
02:20 PM 13-11-2022


File Edit View Navigate Code Refactor Run Tools Git Window Help Flask - app.py
Flask app.py
app
Git:
Project
Flask N:\Nutrition Image Analysis using CNN and Rap
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 > C:\Users\ARUNKUMARHARI\.conda
Binary Skeletons
google
grpc
h5py
requirements.txt
0.html
main.css
style.css
main.js
app.py
home.html
image.html
imageprediction.ht
Analyzing...
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")
ARUNKUMAR *
@app.route('/')
def home():
return render_template('home.html')
ARUNKUMAR *
@app.route('/image1',methods=['GET','POST'])
def image1():
return render_template("image.html")
ARUNKUMAR *
nutrition()
Git Python Packages TODO Python Console Problems Terminal Services
61:36 Python 3.6 master
26°C
Cloudy
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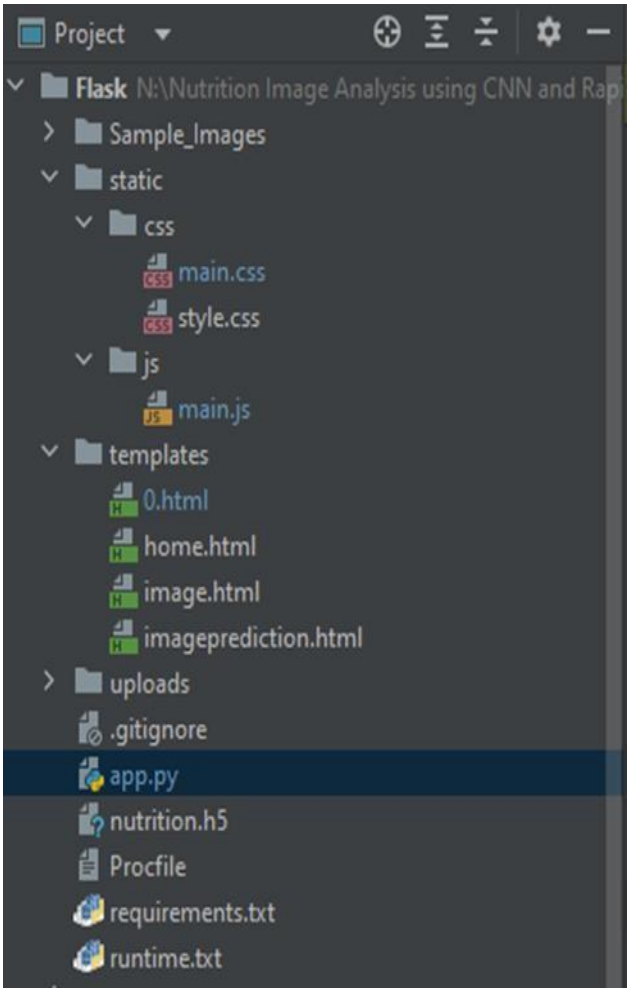
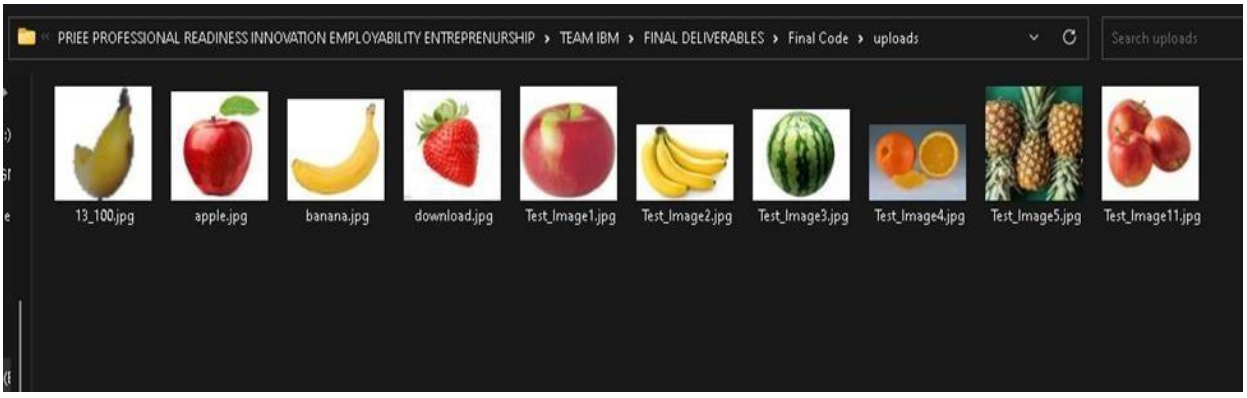
02:20 PM
13-11-2022

8. TESTING

8.1 Test Cases



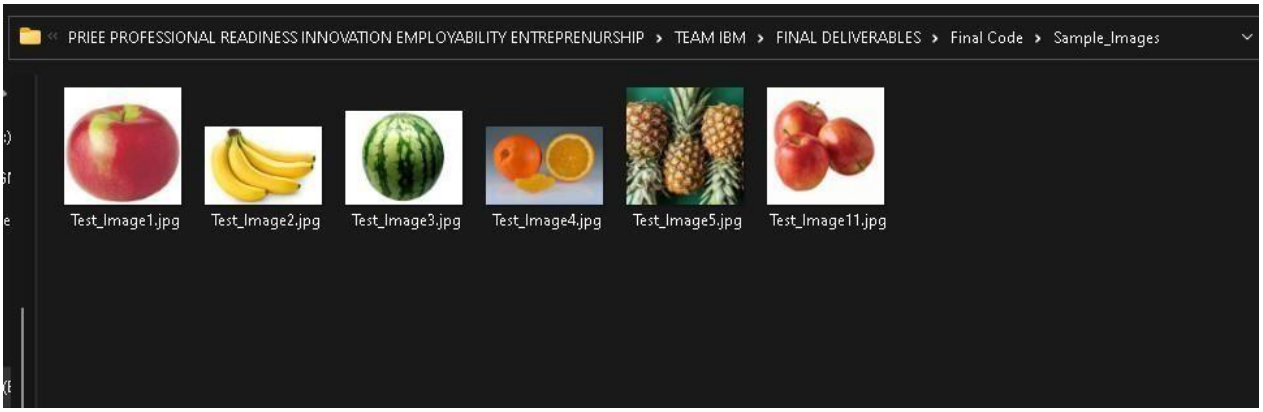


Test case ID	Feature Type	Component	Test Scenario	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation (Y/ N)	BUG ID	Executed By
Home Page	UI	Home Page	Verify the UI elements	1. Enter the localhost url and click go. 2. Verify home page with below element	Localhost/webapp/image.html	Application should show below UI elements: 1.Home button	Working as expected	PASS	Successful	Y		Naveen S Suryasivarj M
Classify Page Tc 001	Functional	PredictPage	Verify user is able to upload damage	1. upload the image. 2. Click analyze button	Upload image	User should upload the image	Working as expected	PASS	Successful	Y		Gokul B

Classify Page Tc 002	Functional	PredictPage	Verify user is able to upload image	1. upload the image. 2. Click analyze button	Upload image	User should upload the image	Working as expected	PASS	Successful	Y		**Vasim E**

Classify Page Tc 003	Functional	PredictPage	Verify user is able to upload image	1. upload the image. 2. Click analyze button	Upload image	User should upload the image	Working as expected	PASS	Successful	Y		Vasim E
Classify Page Tc 004	Functional	PredictPage	Verify user is able to upload image	1. upload the image. 2. Click analyze button	Upload image	User should upload the image	Working as expected	PASS	Successful	Y		Gokul B

8.2 User Acceptance Testing



Purpose of User Acceptance Testing

The purpose of this document is to briefly explain the test coverage and open issues of the [ProductName]project at the time of the release to User Acceptance Testing (UAT).

Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Severity 5	Subtotal
By Design	2	2	1	1	1	7
Duplicate	1	0	1	0	0	2
External	2	0	0	2	0	4

Fixed	3	2	1	1	0	7
Not Reproduced	0	0	1	1	0	2
Skipped	0	0	0	0	0	0
Won't Fix	0	0	0	0	0	0
Totals	8	4	4	5	1	22

Test Case Analysis

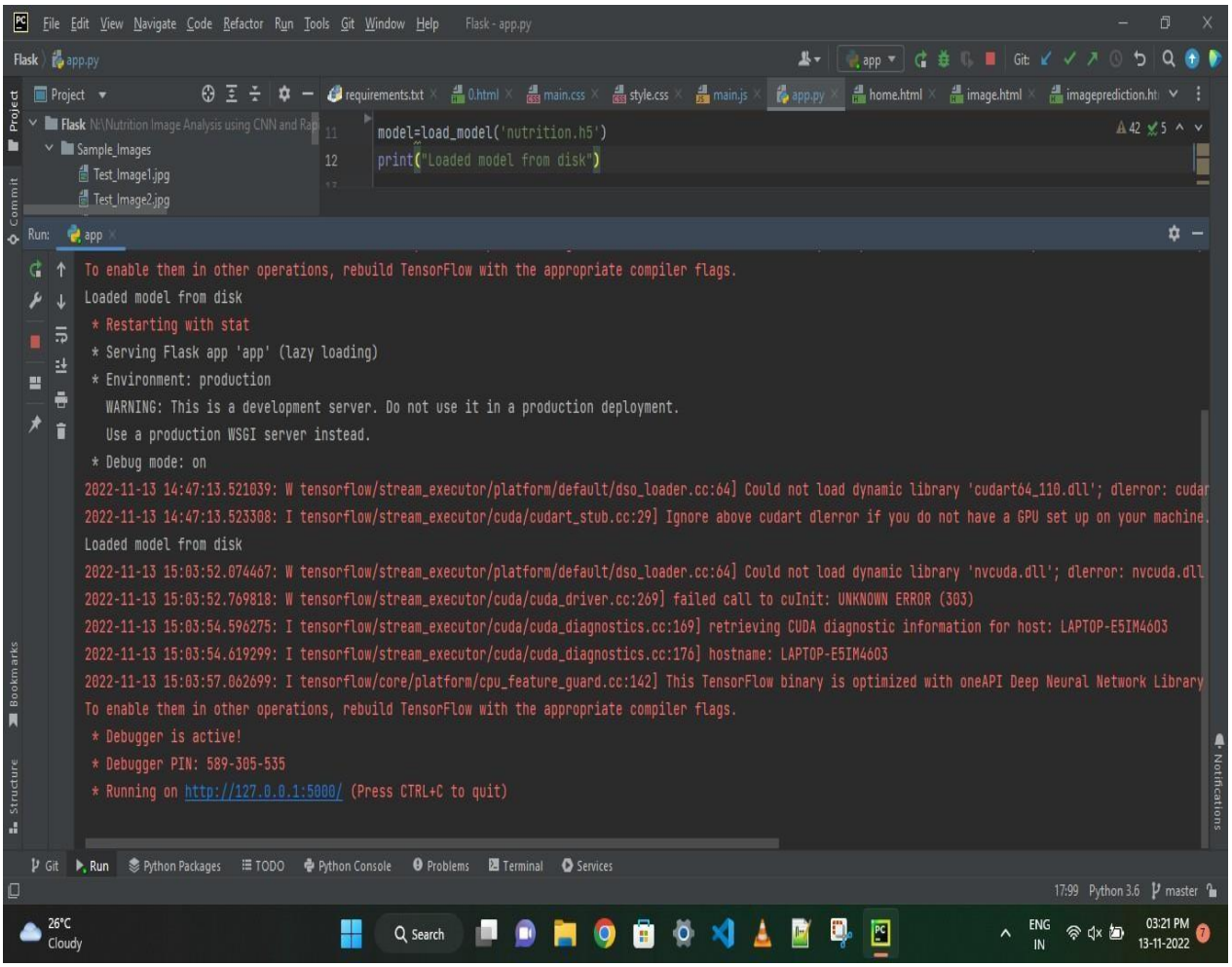
shows the number of test cases that have passed, failed, and untested

Section	**Total cases**	**Not Tested**	**Fail**	**Pass**
Home page	6	0	0	6
Image Page	5	0	0	5

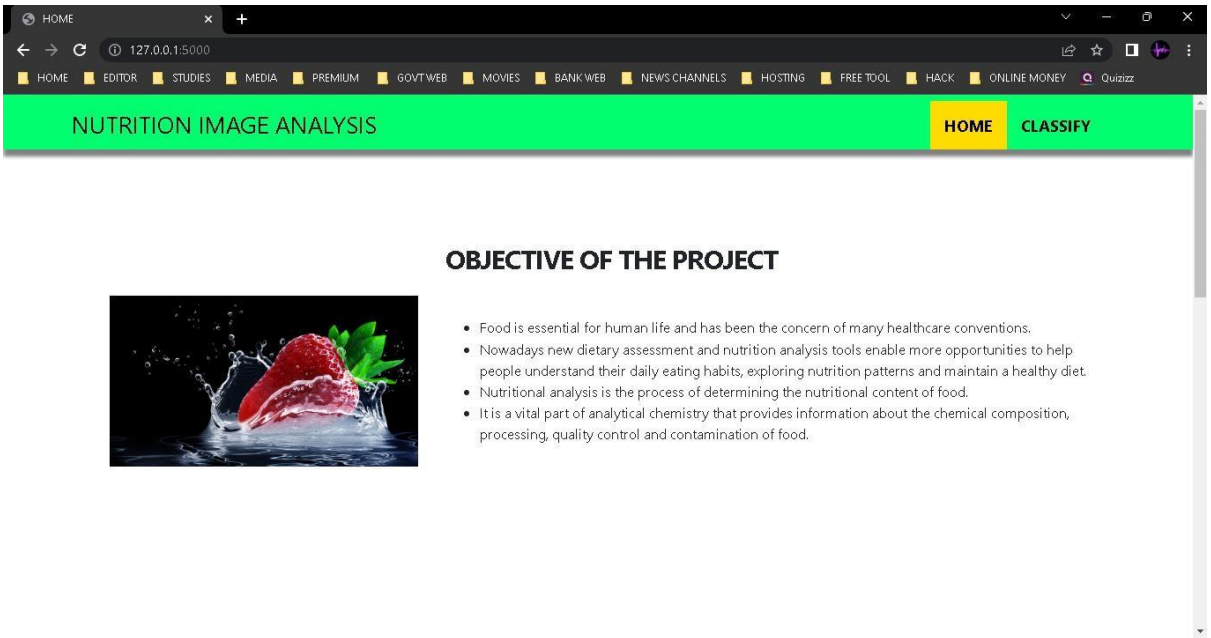
Prediction Page	3	0	0	3
Report Page	3	0	0	3

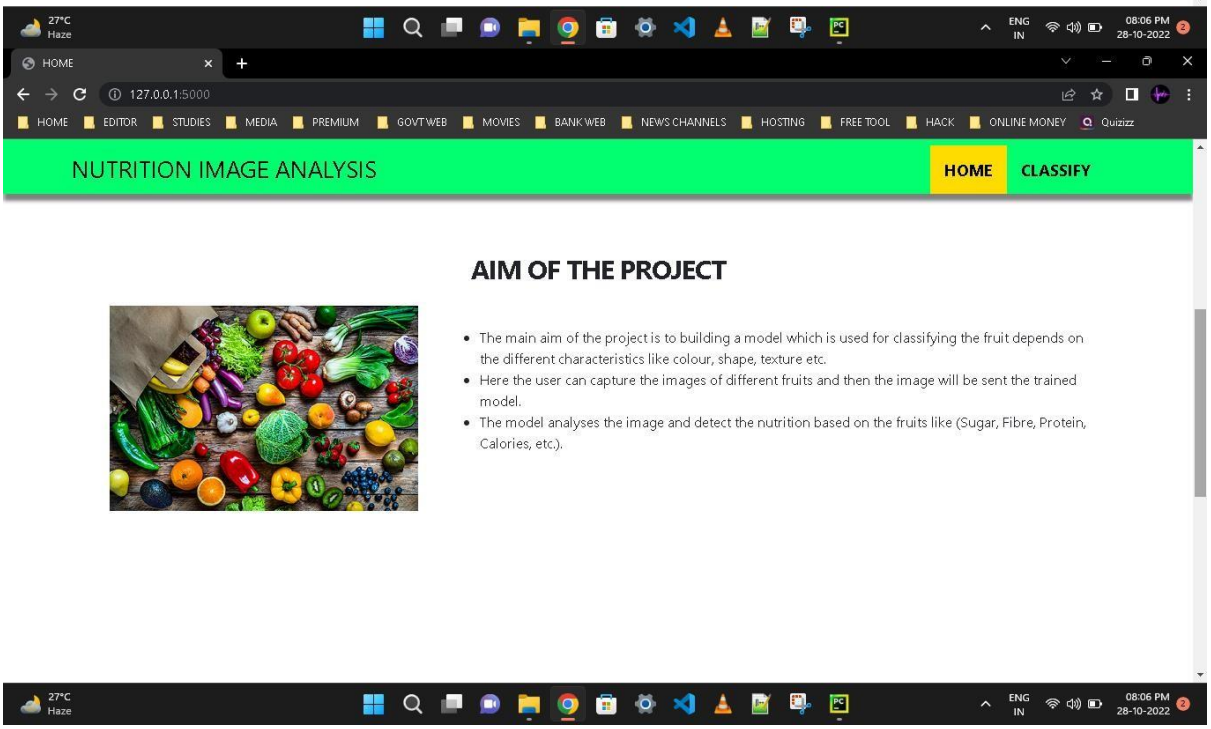
9. RESULTS

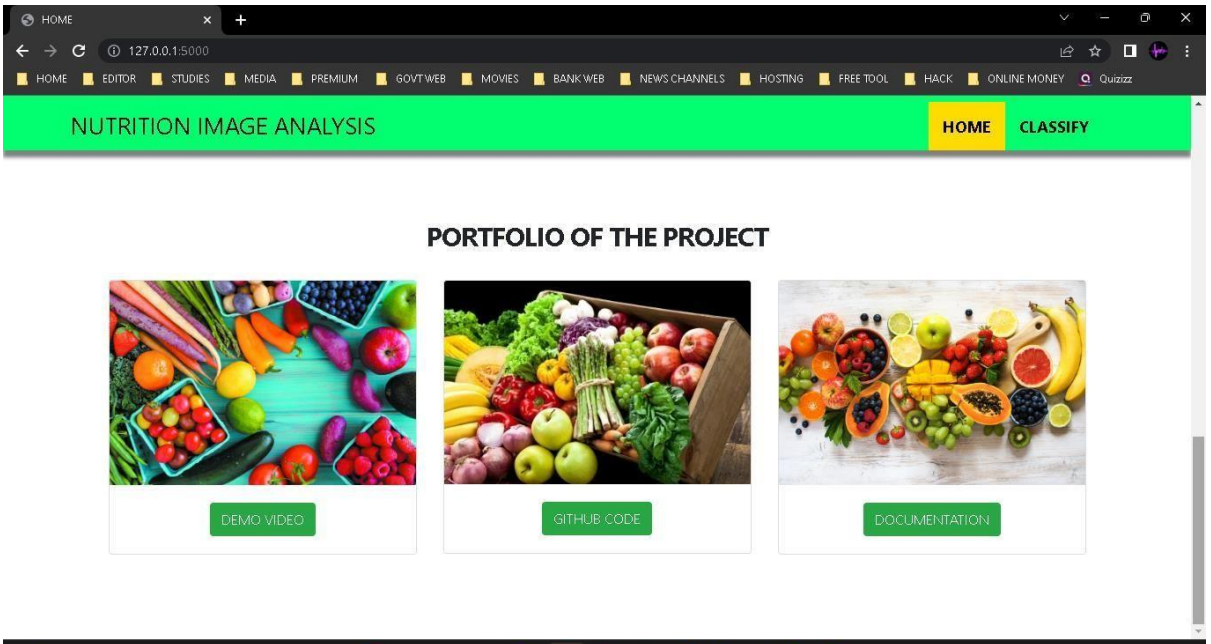
9.1 Performance Metrics

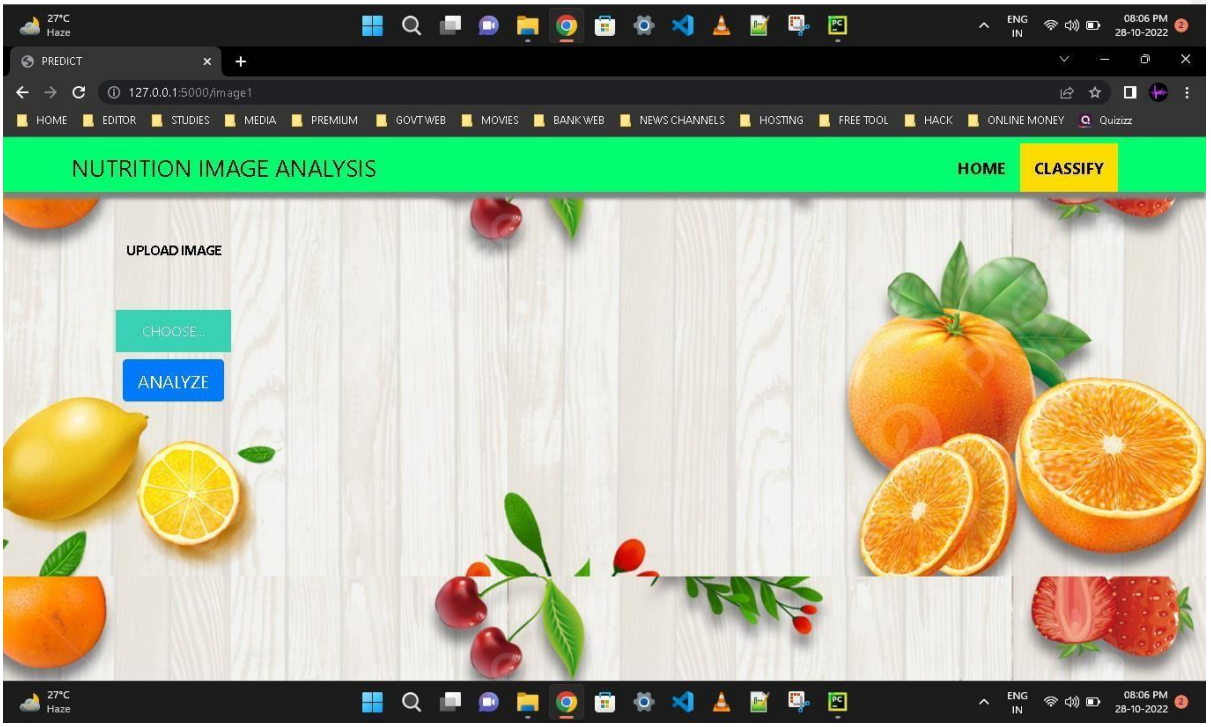


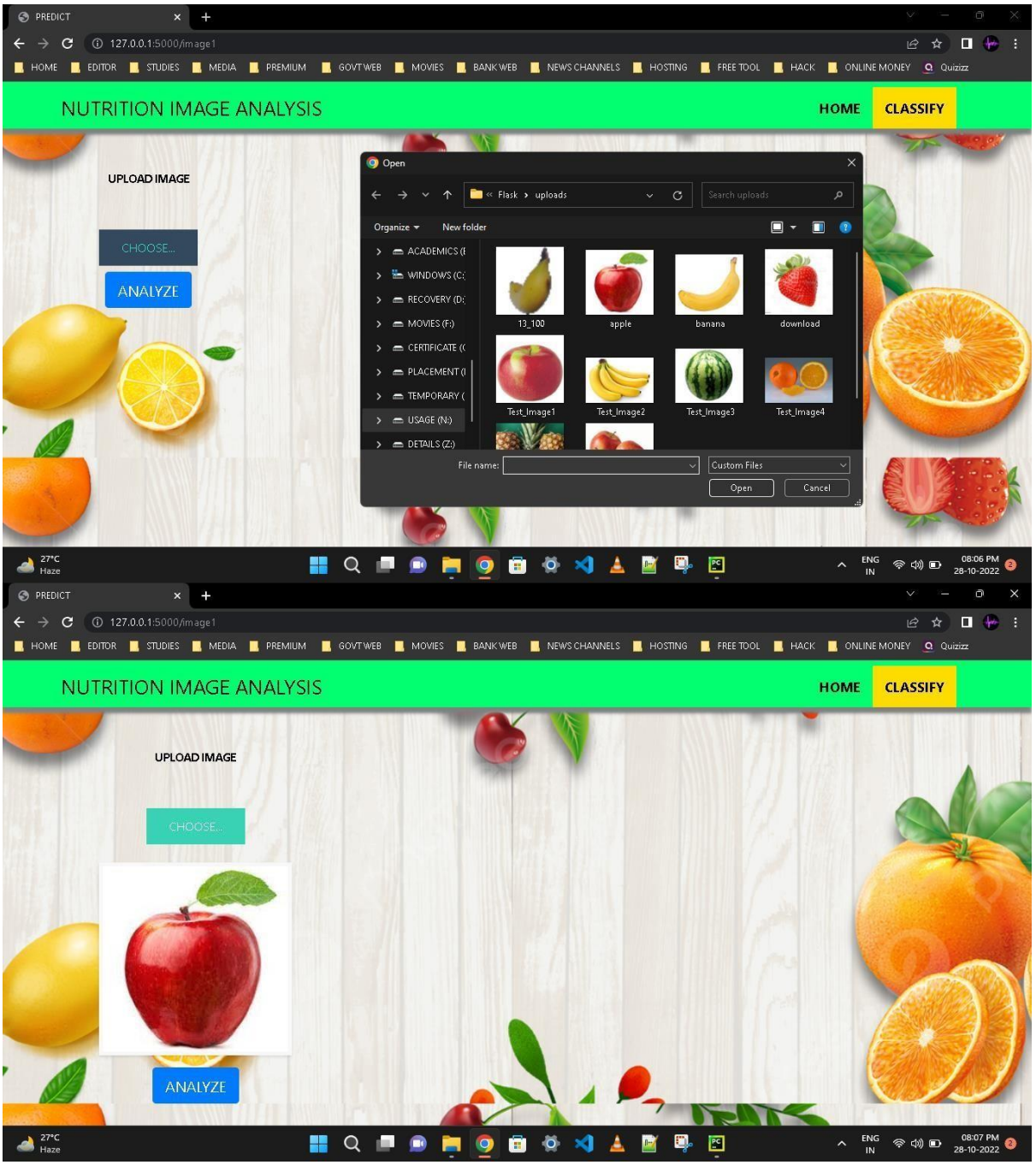
9.2 Output


HOME
127.0.0.1:5000
HOME EDITOR STUDIES MEDIA PREMIUM GOVT WEB MOVIES BANK WEB NEWS CHANNELS HOSTING FREE TOOL HACK ONLINE MONEY Quizizz
NUTRITION IMAGE ANALYSIS
HOME
CLASSIFY
OBJECTIVE OF THE PROJECT
Food is essential for human life and has been the concern of many healthcare conventions.
Nowadays new dietary assessment and nutrition analysis tools enable more opportunities to help people understand their daily eating habits, exploring nutrition patterns and maintain a healthy diet.
Nutritional analysis is the process of determining the nutritional content of food.
It is a vital part of analytical chemistry that provides information about the chemical composition, processing, quality control and contamination of food.

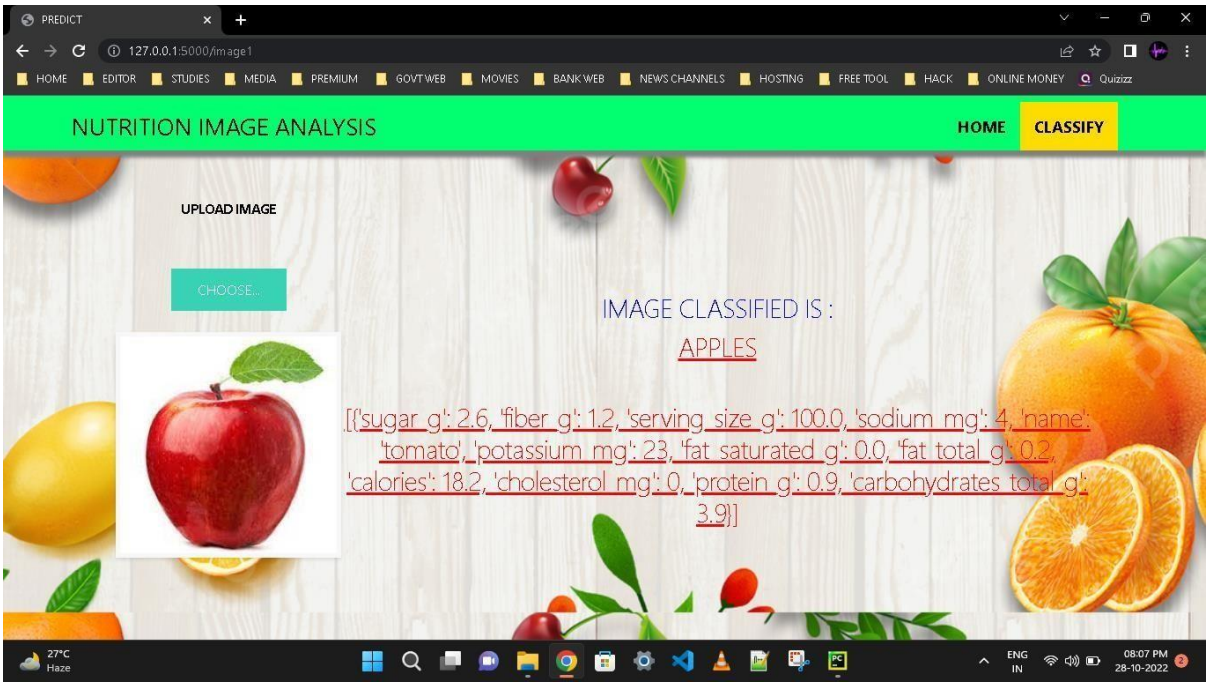

27°C
Haze
ENG
IN
08:06 PM
28-10-2022
HOME
127.0.0.1:5000
HOME EDITOR STUDIES MEDIA PREMIUM GOVT WEB MOVIES BANK WEB NEWS CHANNELS HOSTING FREE TOOL HACK ONLINE MONEY Quizizz
NUTRITION IMAGE ANALYSIS
HOME
CLASSIFY
AIM OF THE PROJECT
The main aim of the project is to building a model which is used for classifying the fruit depends on the different characteristics like colour, shape, texture etc.
Here the user can capture the images of different fruits and then the image will be sent the trained model.
The model analyses the image and detect the nutrition based on the fruits like (Sugar, Fibre, Protein, Calories, etc.).


HOME
127.0.0.1:5000
HOME EDITOR STUDIES MEDIA PREMIUM GOVT WEB MOVIES BANK WEB NEWS CHANNELS HOSTING FREE TOOL HACK ONLINE MONEY Quizizz
NUTRITION IMAGE ANALYSIS
HOME
CLASSIFY
PORTFOLIO OF THE PROJECT
DEMO VIDEO
GITHUB CODE
DOCUMENTATION


27°C
Haze
ENG
IN
08:06 PM
28-10-2022
PREDICT
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...
ANALYZE


PREDICT
127.0.0.1:5000/image1
NUTRITION IMAGE ANALYSIS
HOME
CLASSIFY
UPLOAD IMAGE
CHOOSE...
ANALYZE
Open
Flask › uploads
Search uploads
Organize
New folder
13_100
apple
banana
download
Test_Image1
Test_Image2
Test_Image3
Test_Image4
File name:
Custom Files
Open
Cancel
27°C
Haze
ENG
IN
08:06 PM
28-10-2022

PREDICT
127.0.0.1:5000/image1
NUTRITION IMAGE ANALYSIS
HOME
CLASSIFY
UPLOAD IMAGE
CHOOSE...
ANALYZE
27°C
Haze
ENG
IN
08:07 PM
28-10-2022


PREDICT
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}]
27°C
Haze
ENG
IN
08:07 PM
28-10-2022

10. ADVANTAGES & DISADVANTAGES

ADVANTAGES

- The new dietary assessment and nutrition analysis tools enable more opportunities to helppeople understand their daily eating habits
- It help in exploring the nutrition patterns in their daily routines and this is very useful forpeople to maintain a healthy diet balances.
- The nutritional analysis is used to determine the nutritional content of food.
- This application eliminates the travelling cost in visiting a dietician.
- The usage of this application greatly reduces the time required to get the best diet plan

DISADVANTAGES

- The android mobile user will not be able to insert or view details if the server goes down.
- Thus there is disadvantage of single point failure.

11. CONCLUSION

By the end of this project we will

- know fundamental concepts and techniques of Convolutional Neural Network.
- gain a broad understanding of image data
- know how to build a web application using the Flask framework.
- know how to pre-process data and
- know how to clean the data using different data preprocessing techniques.

12. FUTURE SCOPE

- AI is revolutionizing the health industry.
- It is majorly used in improving marketing and sales decisions, AI is now also being used to reshape individual habits.
- In future we don’t want to go to gym and do any diets. By using this nutrition fitness analyzer we can maintain our diet plans without any help from others and we can lead a happy and healthy life with good wealth.
- AI can easily track health behaviors and repetitive exercise patterns and use the data to guide you towards your fitness journey and diet plans .

13. APPENDIX

Source Code -

GitHub - https://github.com/IBM-EPBL/IBM-Project-47085-1660796481.git

Demo link -