

NALAIYA THIRAN PROJECT REPORT
AI POWERED NUTRITION ANALYZER FOR FITNESS
ENTHUSIASISTS

IBM-Project-14381-1659584990

TEAM ID: PNT2022TMID39014

Submitted by

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In partial fulfilment for the award of the degree

of

BACHELOR OF TECHNOLOGY

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ST.ANNE'S COLLEGE OF ENGINEERING & TECHNOLOGY

ANGUCHETTPALAYAM, PANRUTI, CUDDALORE.

CHAPTER 1

INTRODUCTION

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.).

CHAPTER 2

LITERATURE SURVEY

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.).

CHAPTER 3

IDEATION & PROPOSED SOLUTION

3. IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS



3.2 IDEATION & BRAINSTORMING

ANDRO JERRY J

Asks to enter the weight and height to calculate

Calculate the nutrient content in their food by uploading images

Assists nutrientrich foods based on their health conditions

Awards the user who takes balanced nutrient-food on daily basis

GILBART N

Tracking Food Consumption

Nutrition Facts

Calories estimation

FAQs

SANTHOSH R

Indicates calories content of daily taken food

Remember the diet plans and BMI of the body

Maintain the daily food habits and menus

Check the quantity of food

BATRICSON L

Tracking health care plan of an individual

Suggests food based on their health conditions

Tracking calories in the food by uploading images

Suggests regular physical activities for good health

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.

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS <ul style="list-style-type: none">• Healthy Eaters• Sports Persons• Senior Citizens	6. CUSTOMER CONSTRAINTS CC <ul style="list-style-type: none">• Internet Facility• Spending Time	5. AVAILABLE SOLUTIONS AS To detect the nutrition based on fruits like Sugar, Fiber, Protein, Calories, etc. to make the users conscious about their foods.	Explore AS, differentiate
	2. JOBS-TO-BE-DONE / PROBLEMS J&P <ul style="list-style-type: none">• Incorrect Details• Low quality image leads to wrong prediction of nutrients	9. PROBLEM ROOT CAUSE RC <ul style="list-style-type: none">• Busy Schedule• Laziness	7. BEHAVIOUR BE <ul style="list-style-type: none">• Consulting Doctors• Maintaining their own diet	
	3. TRIGGERS TR Through advertisements, neighbors or through social media 4. EMOTIONS: BEFORE / AFTER Before: Unhealthy, Confused After: Healthy, Confident	10. YOUR SOLUTION To track the health care plan of an individual. To track the calories in the food by uploading images. To suggest food based on their health conditions.	8. CHANNELS OF BEHAVIOUR ONLINE: <ul style="list-style-type: none">• Through Social Media• Channel Advertisements OFFLINE: <ul style="list-style-type: none">• Suggests neighbors• Through pamphlets	

CHAPTER 4

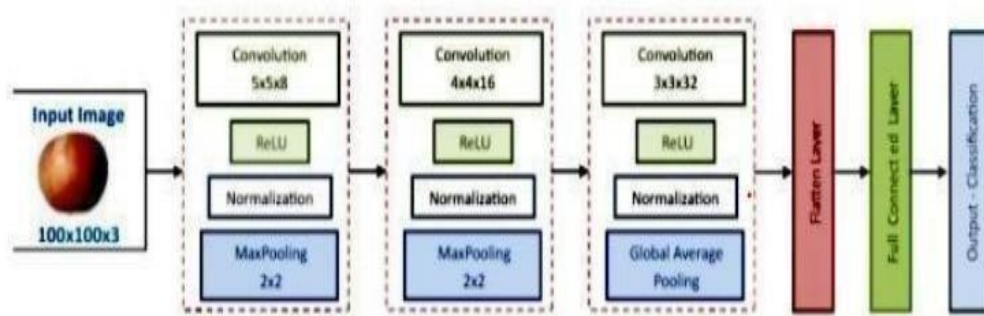
REQUIREMENT ANALYSIS

4.REQUIREMENT ANALYSIS

4.1FUNCTIONAL 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

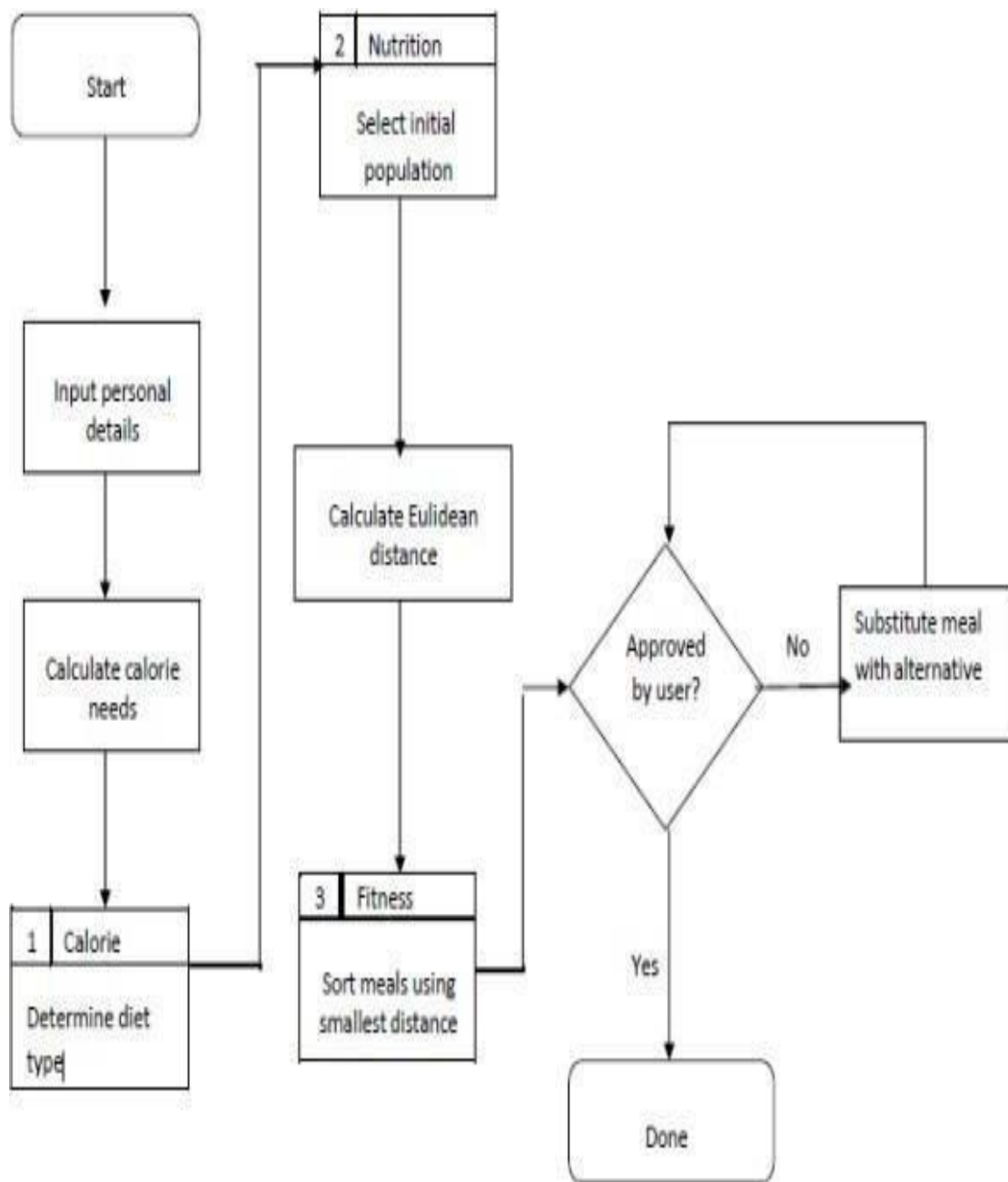
FR No.	Non-Functional Requirement (Epic)	Description
NFR-1	Usability	The users should be able to use the application without any difficulties. The interface should be easy to use and understand. The image capture process should be smooth and not tedious.
NFR-2	Security	Details of the users and their 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.

CHAPTER 5

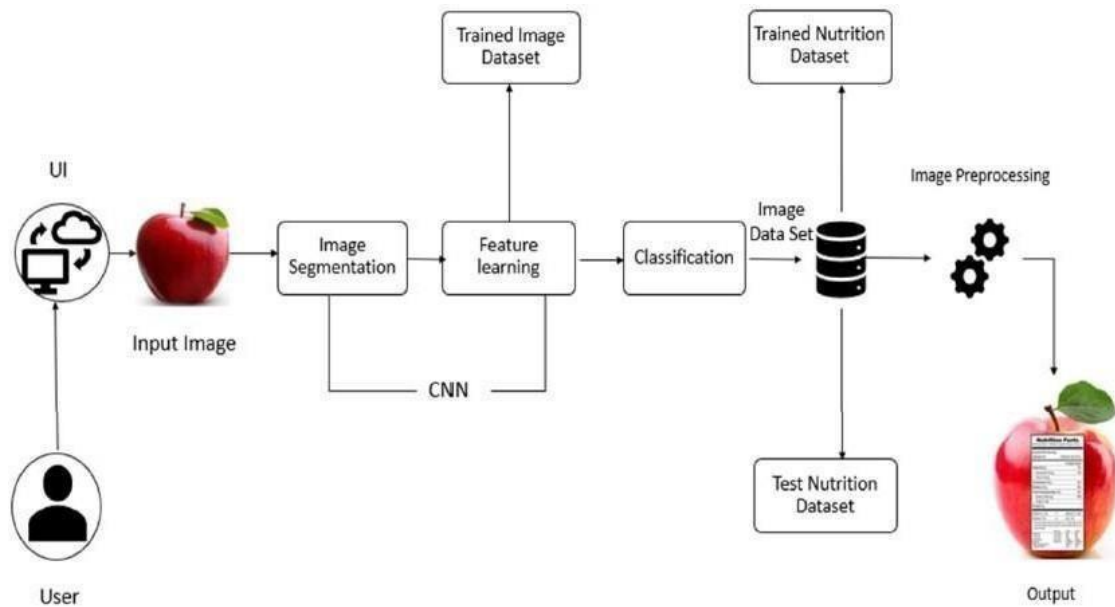
PROJECT DESIGN

5.PROJECT DESIGN

5.1Data Flow Diagrams



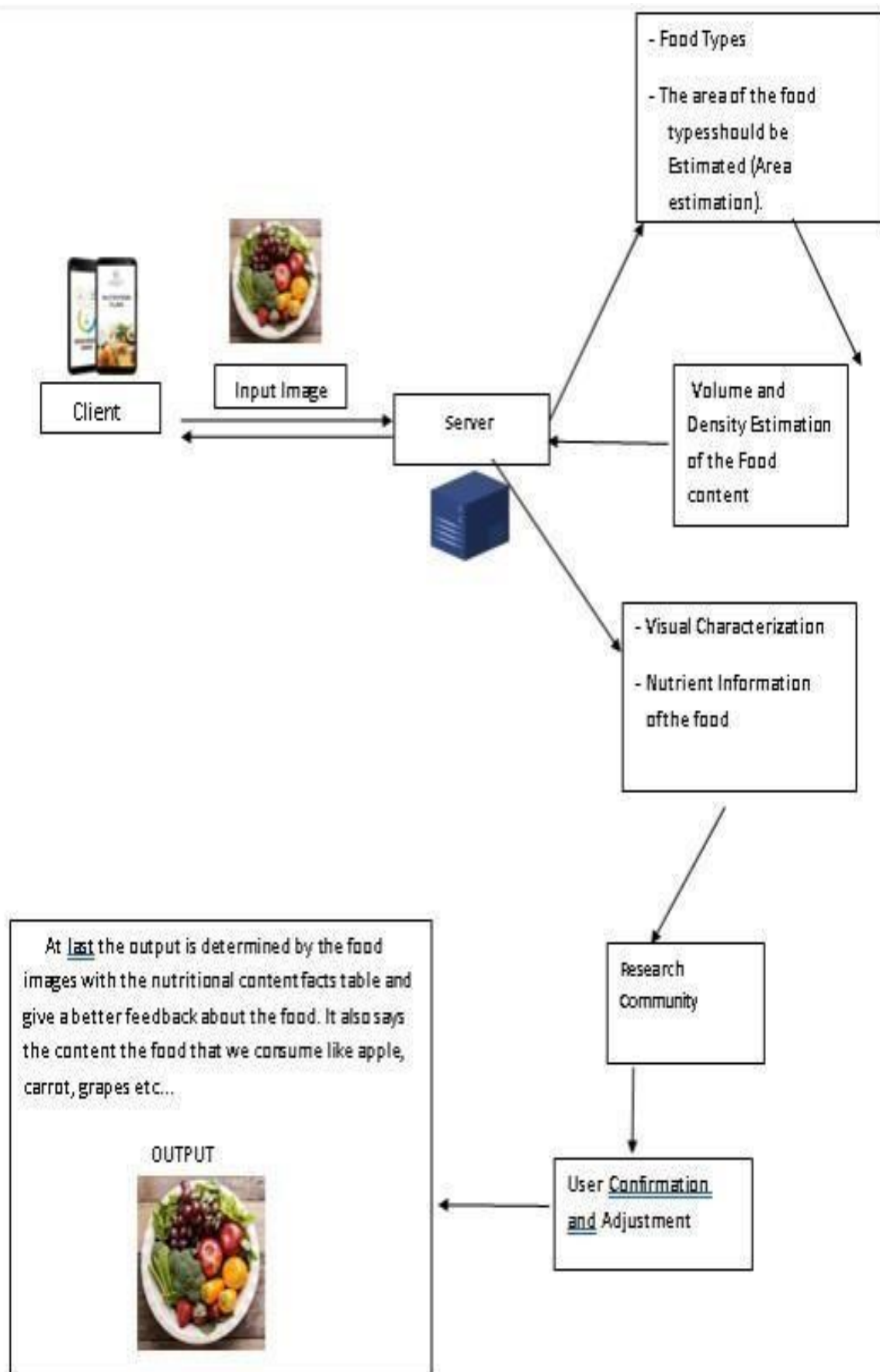
5.2 Solution & Technical Architecture



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



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 confirming my password.	I can access my account /dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering 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 confirming my password.	I can access my account /dashboard	High	Sprint -1
Customer Care Executive	Solution	USN-5	Responding to each email you receive can make a lasting impression on customers.	Offer a solution for how your 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 be met to mark a user story complete	High	Sprint-1

CHAPTER 6

PROJECT PLANNING & SCHEDULING

6.PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

	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	J.ANDRO JERRY L.BATRICSON R.SANTHOSH N.GILBART
Sprint-1	Data Preprocessing	USN-2	Importing The Dataset into Workspace	1	Low	J.ANDRO JERRY L.BATRICSON R.SANTHOSH N.GILBART
Sprint-1		USN-3	Handling Missing Data	3	Medium	J.ANDRO JERRY L.BATRICSON R.SANTHOSH N.GILBART
Sprint-1		USN-4	Feature Scaling	3	Low	J.ANDRO JERRY L.BATRICSON R.SANTHOSH N.GILBART
Sprint-1		USN-5	Data Visualization	3	Medium	J.ANDRO JERRY L.BATRICSON R.SANTHOSH N.GILBART
Sprint-1		USN-6	Splitting Data into Train and Test	4	High	J.ANDRO JERRY L.BATRICSON R.SANTHOSH N.GILBART

Sprint-1		USN-7	Creating A Dataset with Sliding Windows	4	High	J.ANDRO JERRY L.BATRICSON R.SANTHOSH N.GILBART
Sprint-2	Model Building	USN-8	Imprting The Model Building Libraries	1	Medium	J.ANDRO JERRY L.BATRICSON R.SANTHOSH N.GILBART

Sprint-2		USN-9	Initializing The Model	1	Medium	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T
Sprint-2		USN-10	Adding LSTM Layers	2	High	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T
Sprint-2		USN-11	Adding Output Layers	3	Medium	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T
Sprint-2		USN-12	Configure The Learning Process	4	High	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T
Sprint.	Functional Requirement(Epic)	User Story Number	User Story/Task	Story Points	Priority	Team Members
Sprint-2		USN-13	Train The Model	2	Medium	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T
Sprint-2		USN-14	Model Evaluation	1	Medium	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH

						N.GILBAR T
Sprint-2		USN-15	Save The Model	2	Medium	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T
Sprint-2		USN-16	Test The Model	3	High	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T
Sprint-3	Application Building	USN-17	Create An HTML Fille	4	Medium	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T

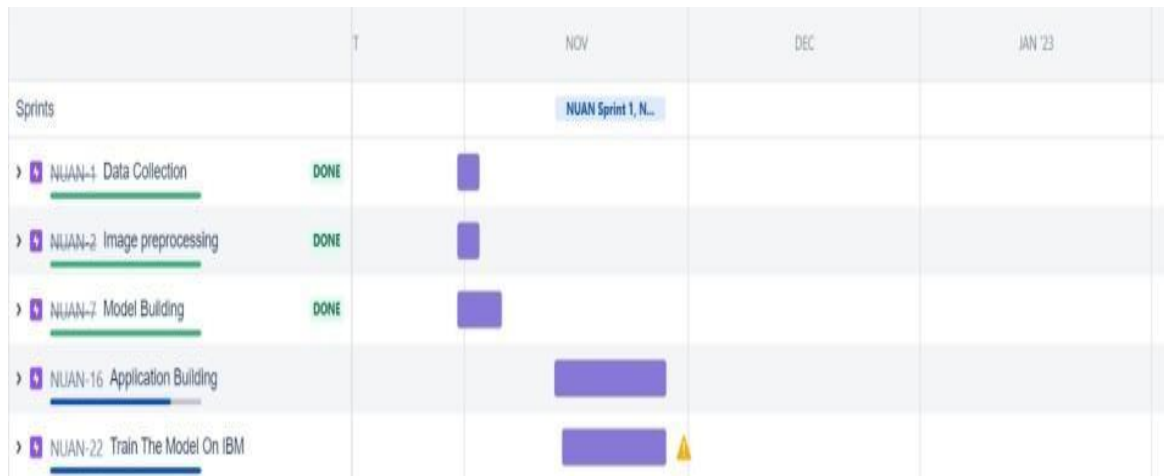
Sprint-3		USN-18	Build Python Code	4	High	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T
Sprint-3		USN-19	Run The App in Lo4cal Browser	4	Medium	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T
Sprint-3		USN-20	Showcasing Prediction On UI	4	High	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T
Sprint-4	Train The Model On IBM	USN-21	Register For IBM Cloud	4	Medium	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T
Sprint-4		USN-22	Train The ML Model On IBM	8	High	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T
Sprint-4		USN-23	Integrate Flask with scoring End Point	8	High	J.ANDRO JERRY L.BATRIC SON R.SANTH OSH N.GILBAR T

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



CHAPTER 7

CODING & SOLUTIONING

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. Please use `Model.fit` instead.

Epoch 1/20

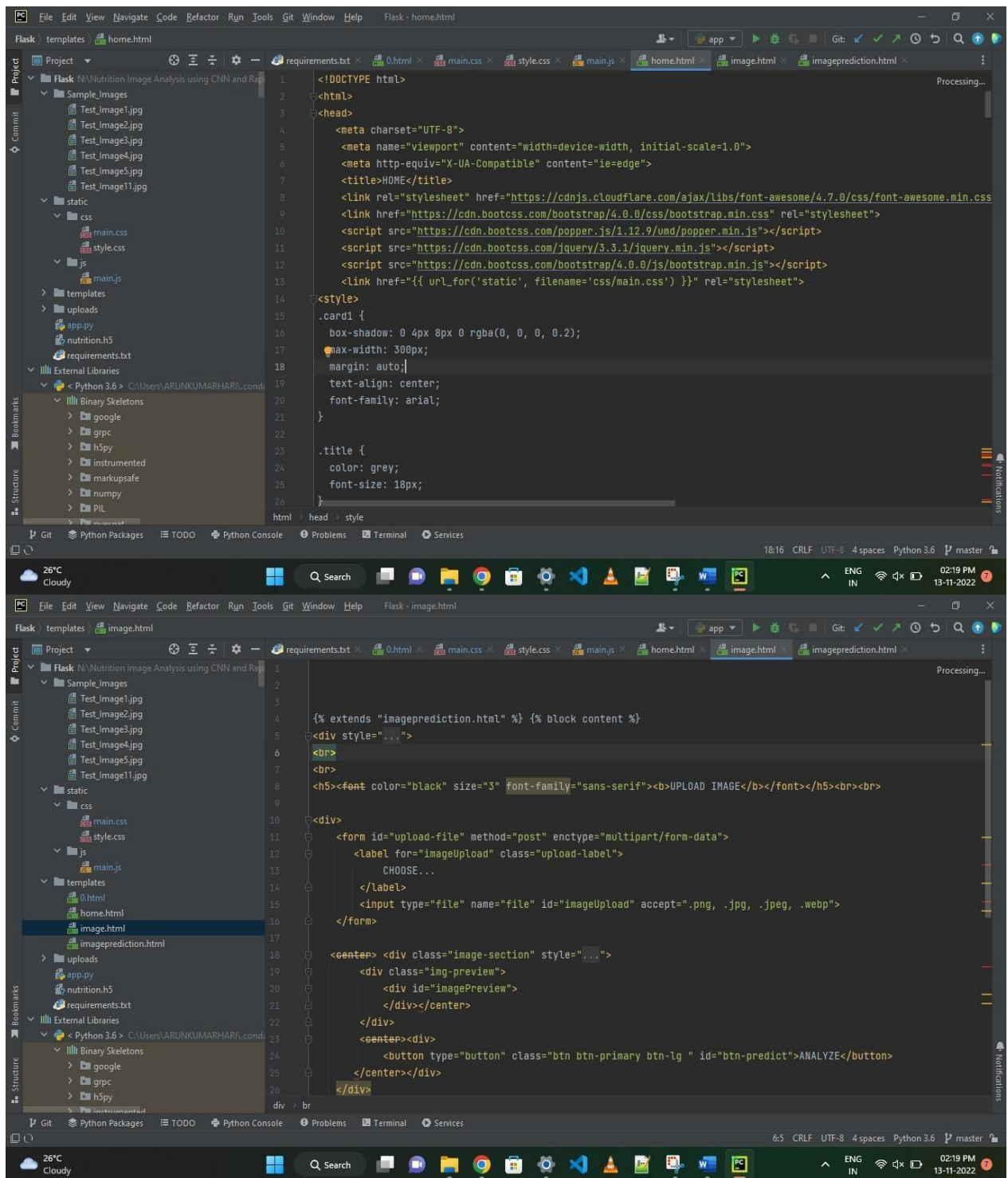
494/824 [=====>.....] - ETA: 6:52 - loss: 0.7194 - accuracy: 0.7174

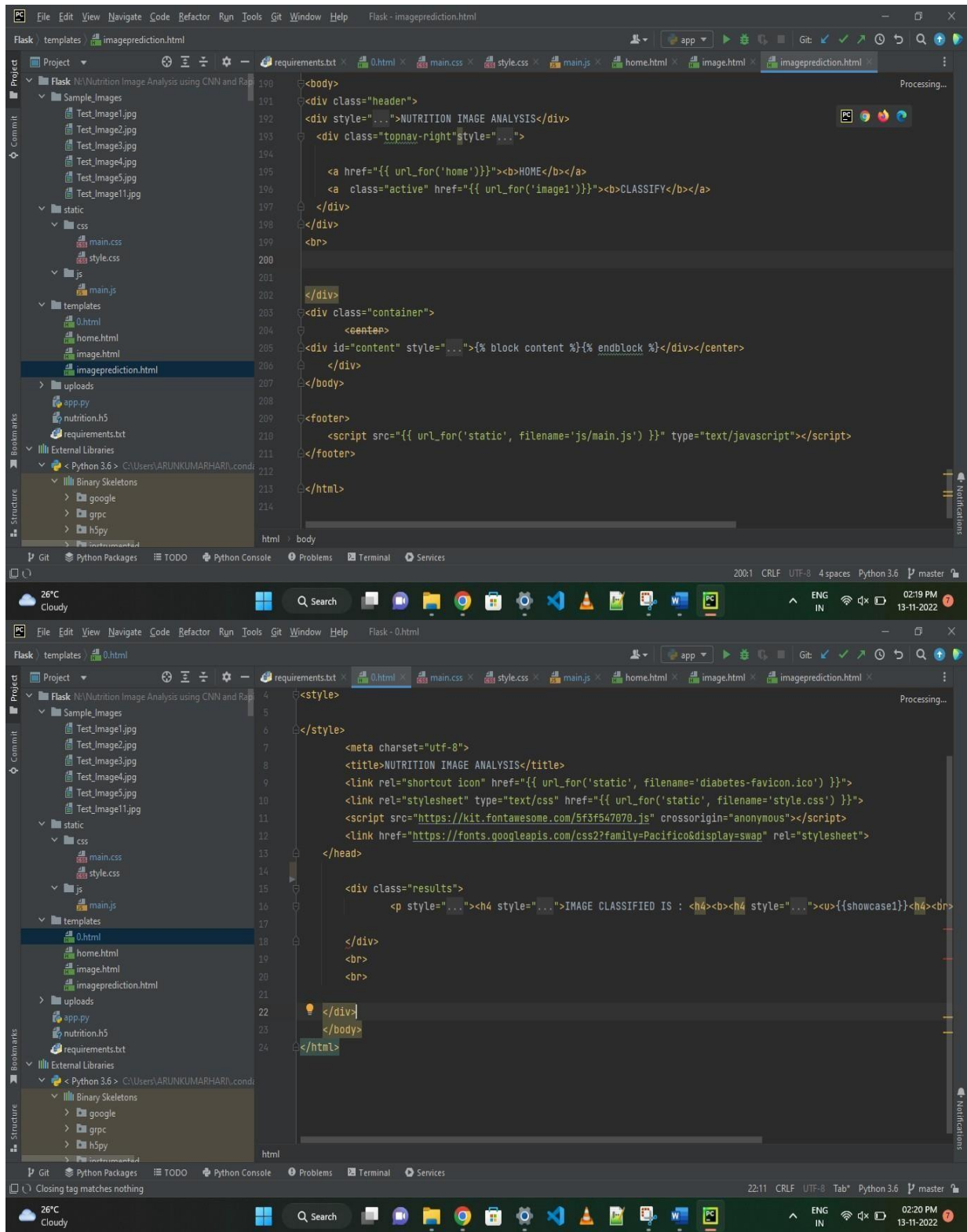


7. Saving The Model

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

7.2 Feature 2





```
Flask - main.css
File Edit View Navigate Code Refactor Run Tools Git Window Help
Flask static css main.css
Project
  Flask Nutrition Image Analysis using CNN and Ra
    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\condi
        Binary Skeletons
          google
          grpc
          h5py
          tensorflow
Git Python Packages TODO Python Console Problems Terminal Services
17:2 LF UTF-8 4 spaces Python 3.6 master
```

```
1 .img-preview {
2   width: 250px;
3   height: 250px;
4   position: relative;
5   border: 5px solid #F8F8F8;
6   box-shadow: 0px 2px 4px 0px rgba(0, 0, 0, 0.1);
7   margin-top: 1em;
8   margin-bottom: 1em;
9 }
10
11 .img-preview>div {
12   width: 100%;
13   height: 100%;
14   background-size: 250px 250px;
15   background-repeat: no-repeat;
16   background-position: center;
17 }
18
19 input[type="file"] {
20   display: none;
21 }
22
23 .upload-label{
24   display: inline-block;
25   padding: 12px 30px;
26   background: #39D2B4;
27   color: #fff;
```

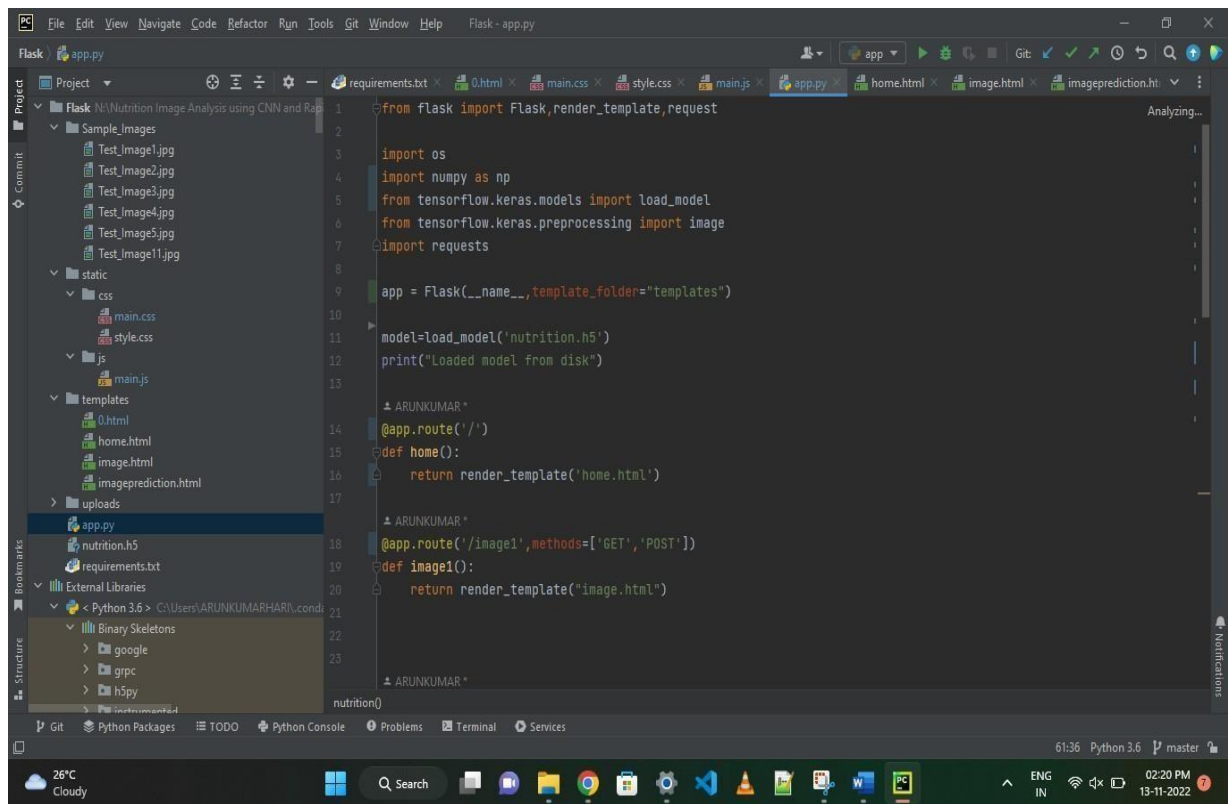
```
Flask - style.css
File Edit View Navigate Code Refactor Run Tools Git Window Help
Flask static css style.css
Project
  Flask Nutrition Image Analysis using CNN and Ra
    Sample_Images
      Test_Image1.jpg
      Test_Image2.jpg
      Test_Image3.jpg
      Test_Image4.jpg
      Test_Image5.jpg
      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\condi
        Binary Skeletons
          google
          grpc
          h5py
          tensorflow
Git Python Packages TODO Python Console Problems Terminal Services
19:10 CRLF UTF-8 4 spaces Python 3.6 master
```

```
1 body{
2   background-image:url(bg.jpg);
3   background-size: 400% auto;
4   background-repeat: no-repeat;
5   background-position:center;
6   color:#555;
7   font-family:Arial, Helvetica, sans-serif;
8   font-size:16px;
9   line-height:1.6em;
10  margin:0;
11 }
12
13 .container{
14   width:80%;
15   margin:auto;
16   overflow:hidden;
17 }
18
19 .justify{
20   text-align:justify;
21   text-justify: auto;
22 }
23
24 .parallax {
25   /* The image used */
26   background-image: url("doc.jpg");
27 }
```



```
File Edit View Navigate Code Refactor Run Tools Git Window Help Flask - main.js
Flask static js main.js
Project
  Flask Nutrition Image Analysis using CNN and Ra
  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
main.js
home.html
image.html
imageprediction.html
app.py
nutrition.h5
requirements.txt
Binary Skeletons
  google
  grpc
  h5py
main.js
1 $(document).ready(function () {
2
3   $('.image-section').hide();
4   $('.loader').hide();
5   $('#result').hide();
6
7
8   function readURL(input) {
9     if (input.files && input.files[0]) {
10       var reader = new FileReader();
11       reader.onload = function (e) {
12         $('#imagePreview').css('background-image', 'url(' + e.target.result + ')');
13         $('#imagePreview').hide();
14         $('#imagePreview').fadeIn(650);
15       }
16       reader.readAsDataURL(input.files[0]);
17     }
18   }
19   $('#imageUpload').change(function () {
20     $('.image-section').show();
21     $('#btn-predict').show();
22     $('#result').text('');
23     $('#result').hide();
24     readURL(this);
25   });
26
27
```

```
File Edit View Navigate Code Refactor Run Tools Git Window Help Flask - app.py
Flask app.py
Project
  Flask Nutrition Image Analysis using CNN and Ra
  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
app.py
home.html
image.html
imageprediction.html
app.py
1 from flask import Flask,render_template,request
2
3 import os
4 import numpy as np
5 from tensorflow.keras.models import load_model
6 from tensorflow.keras.preprocessing import image
7 import requests
8
9 app = Flask(__name__,template_folder="templates")
10
11 model=load_model('nutrition.h5')
12 print("Loaded model from disk")
13
14 # ARUNKUMAR *
15 @app.route('/')
16 def home():
17   return render_template('home.html')
18
19 # ARUNKUMAR *
20 @app.route('/image1',methods=['GET','POST'])
21 def image1():
22   return render_template("image.html")
23
24 # ARUNKUMAR *
25 nutrition()
```

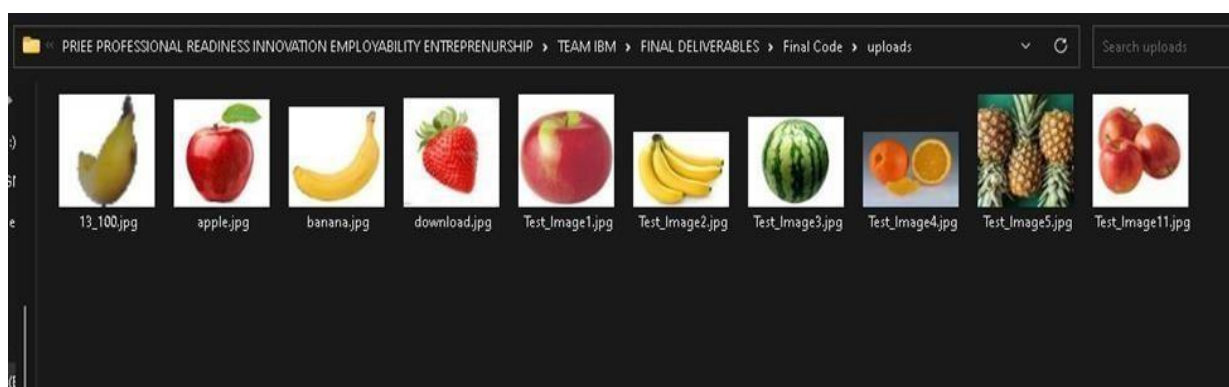
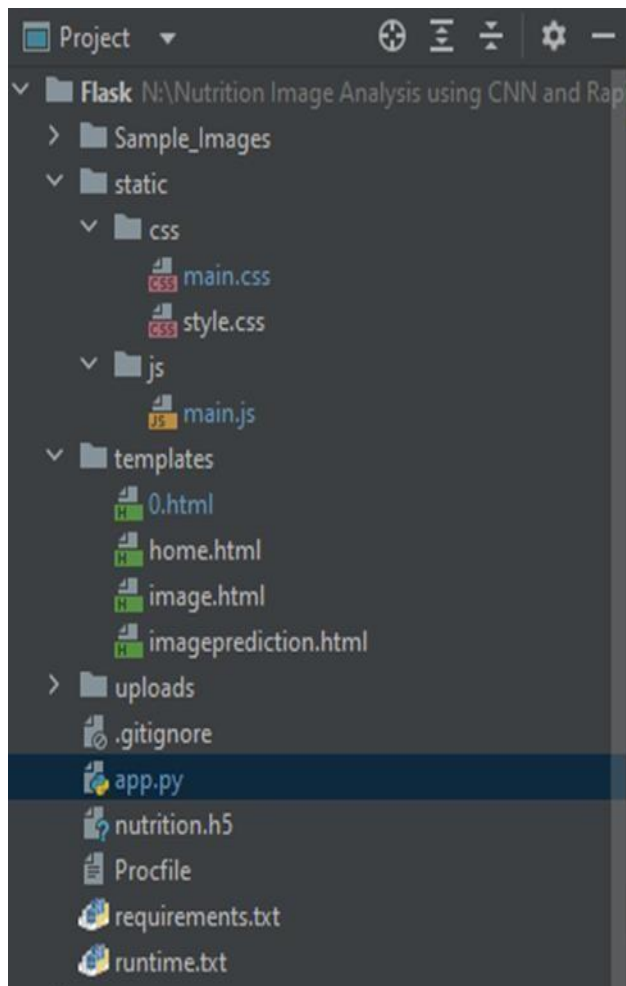


CHAPTER 8

TESTING

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	ExecutedBy
Home Page	UI	Home Page	Verify the UI elements	1. Enter the local host 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		J.ANDRO JERRY
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		L.BATRICSON

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		N.GILBART
-------------------------	------------	-------------	-------------------------------------	---	--------------	------------------------------	---------------------	------	------------	---	--	-----------

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		R.SANTHOSH
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		J.ANDRO JERRY

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

CHAPTER 9

RESULTS

9.RESULTS

9.1Performance Metrics

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

9.2Output

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

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).

27°C Haze

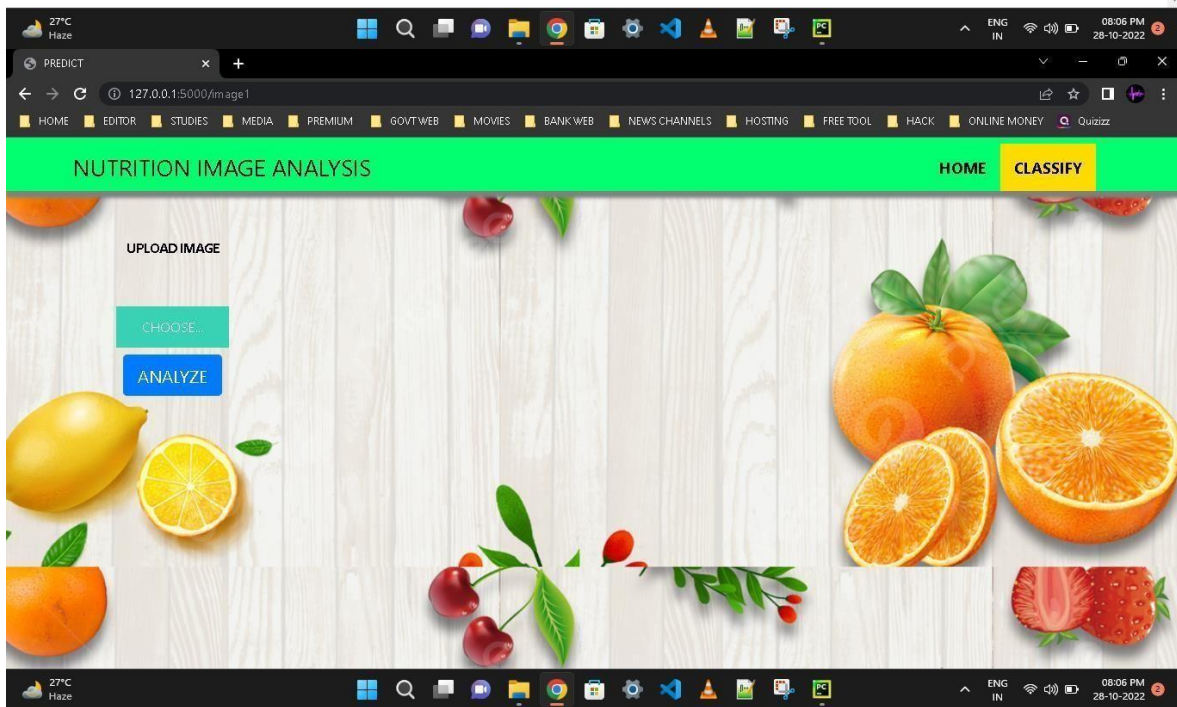
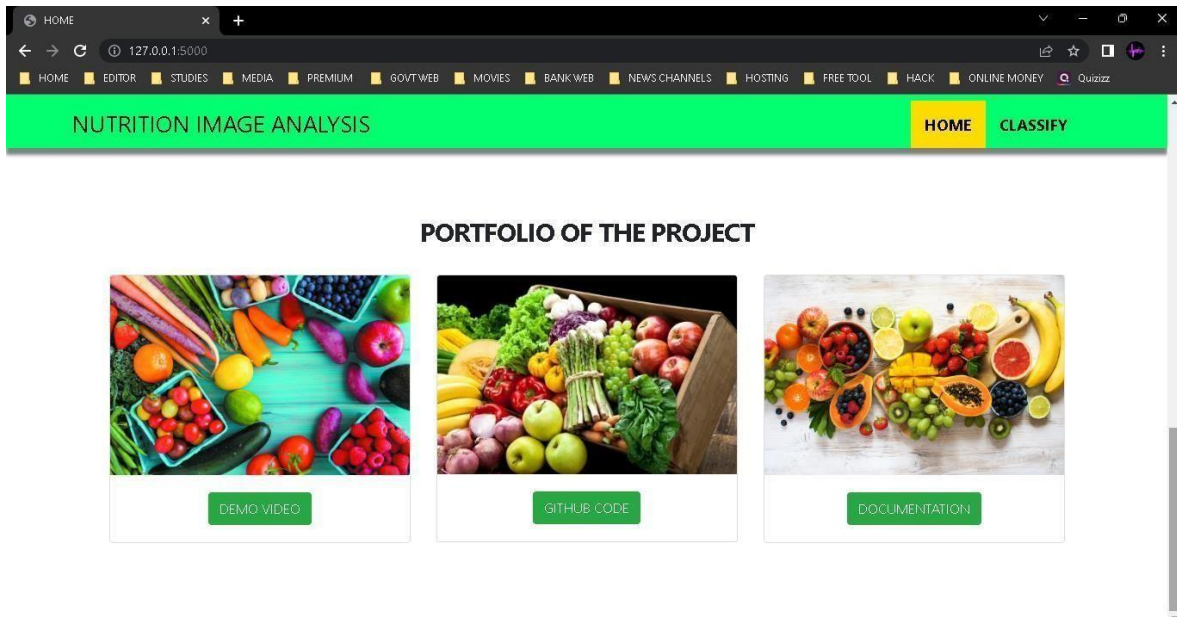
HOME

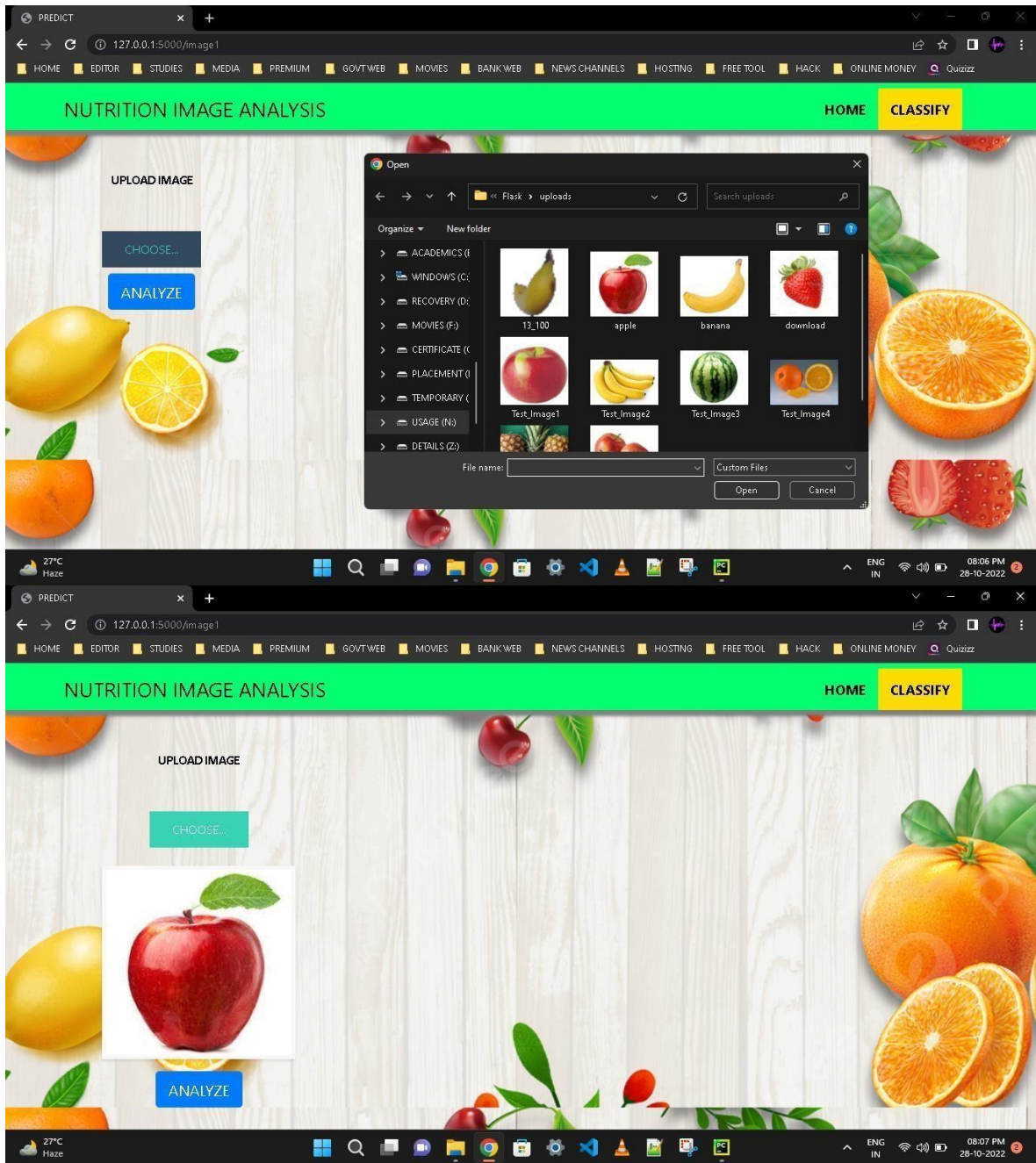
127.0.0.1:5000

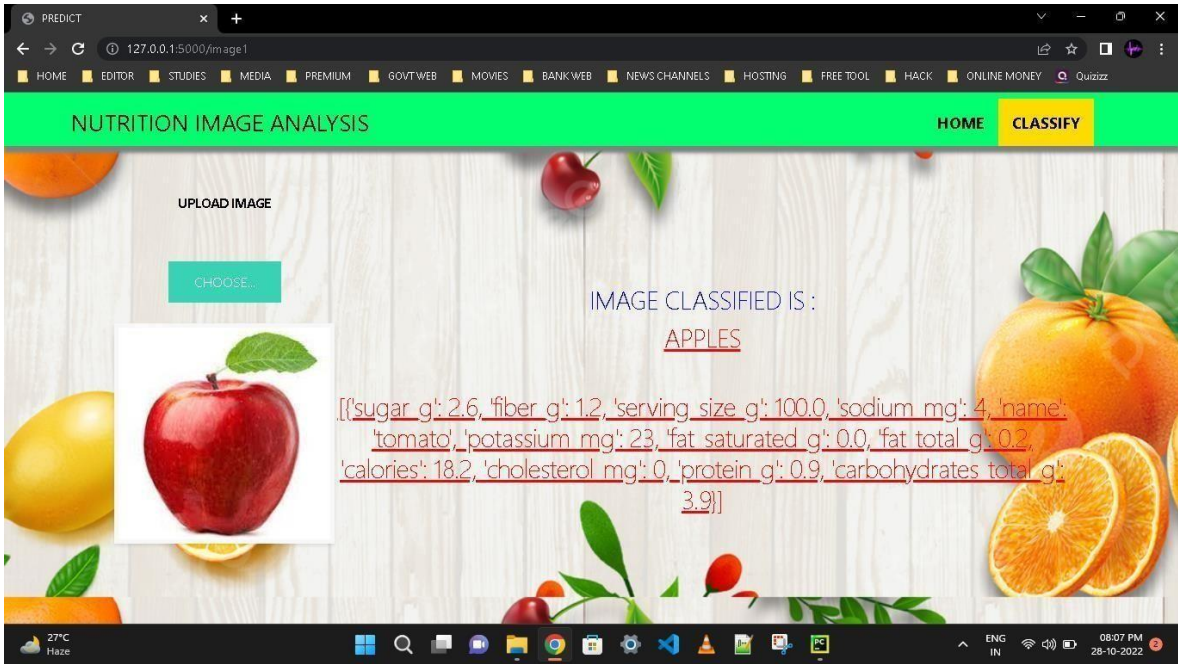
HOME EDITOR STUDIES MEDIA PREMIUM GOVT.WEB MOVIES BANK.WEB NEWS CHANNELS HOSTING FREE TOOL HACK ONLINE MONEY Quizizz

NUTRITION IMAGE ANALYSIS

HOME CLASSIFY







CHAPTER 10

ADVANTAGES & DISADVANTAGES

10.ADVANTAGES & DISADVANTAGES

ADVANTAGES

- The new dietary assessment and nutrition analysis tools enable more opportunities to help people understand their daily eating habits
- It help in exploring the nutrition patterns in their daily routines and this is very useful for people 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.

CHAPTER 11

CONSULSION

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.

CHAPTER 12

FUTURE SCOPE

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 plan

CHAPTER 13

APPENDIX

13.APPENDIX

GitHub - [https://github.com/IBM-EPBL/ IBM-Project-14381-1659584990.git](https://github.com/IBM-EPBL/IBM-Project-14381-1659584990.git)