# AI - POWERED NUTRITION ANALYZER FOR FITNESS ENTHUSIASTS

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# 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

1.AI powered nutrition Analyzer For Fitness Enthusiasts – Jeukendrup A.E.,Killer S.C. The myths surrounding pre-exercise carbohydrate feeding.

At present, the researchers are showing there great effort in the area of food nutrition. In this section is presenting some of the researchers work that must enlighten our study. A descriptive cross-sectional study has done among 144 children and they found that in rural areas, parameter Weight-for Height(WHZ ) projected that 1.39% of children were severely malnourished, 1.39% moderately malnourished, 22.3% mildly malnourished and had no serious overweight, but in urban areas, 25%, 2.78% and 1.38% mild, moderate and severe over weight respectively.

For Weight-for-Age(WAZ), the results further stated that 38.8% children mildly underweight, 25% moderately underweight in rural areas and found the opposite result for urban area[1]. Another research has done with 80 street children with 90% boy and 10% gamines and the result shows that the underweight ratio 65%. About 77.5% of underweight children eat three meals a day and 22.5% of children eat only twice a day. Most of the children

in the study, 85% developed the habit of washing their hands before eating. About 61.3% of them had been suffering from different diseases for the last 3 months before starting the study .

## 2.2 REFERENCES

1.Davenport.T and Kalakota R.2019.The potential for Artificial Intelligence in healthcare-Future healthcare journal,2019-ncbi.nlm.nih.gov

The complexity and rise of data in healthcare means that Artificial Intelligence(AI) will increasingly be applied within the field. Several types of AI are already being employed by payers and providers of care, and life sciences companies. The key categories of applications involve diagnosis and treatment recommendations, patient engagement and adherence, and administrative activities.

2.Amann J., Blasimme A., Vayena E., Frey D., Madai V.I., and Precise Q.C.2020. Explainability for Artificial Intelligence in Fitness: A multidisciplinary perspective.

Explainability is one of the most heavily debated topics when it comes to the application of Artificial intelligence(AI) in Fitness. Even though AI-driven systems have been shown to outperform humans in certain analytical tasks, the lack of explainability continues to spark criticism. It is not a pure technological issue, instead it invokes a host of medical, legal, ethical, and societal questions that require thorough exploration.

## 2.3 PROBLEM STATEMENT DEFINITION

Due to change in food habits people do not get aware of food items. Our project is to get details about food nutritions, carbohydrate, protein and fat. Nutritional awareness is also related to knowledge of the interrelationships between nutritional matters and human life, which may have an effect on a person's life.

The World Health Organisation(WHO) data reveals that more than 60% of world's population is not physically active enough to induce health benefits.

## 3. IDEATION & PROPOSED SOLUTION

## 3.1 EMPATHY MAP CANVAS

## 3.2 IDEATION &BRAINSTORMING



## 3.3 PROPOSED SOLUTION

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, Fibres, Protein, Calories, etc.).

## 3.4 PROBLEM SOLUTION FIT



## 4.REQUIREMENT ANALYSIS

## 4.1 FUNCTIONAL REQUIREMENTS

| FR NO. | FUNCTIONAL REQUIREMENTS(EPIC) | SUB REQUIREMENT (STORY/SUBTASK) |
|---|---|---|
|  |  |  |

| FR-1 | USER REGISTRATION | ❖ Registration through Gmail<br>❖ Registration through Mobile Number<br>❖ Registration through Face-book |
|------|-------------------|---|
| FR-2 | USER CONFIRMATION | ❖ Confirmation via Email<br>❖ Confirmation via OTP |

| FR-3 | USER DETAILS | Age | Food | |
|------|--------------|-----|------|---|
| | | Height | Recipe | |
| | | Weight | Added Ingredients | |
| | | Diseases if any | Age | |
| | | Conditions if any | | |
| | | Allergies if any | | |

| FR-4 | USER REQUIREMENTS | ❖ The user simply inputs your recipe ingredients and amounts.<br>❖ The software will instantly produce an accurate readout of your dish in terms of nutritional analysis in a readable format that consumers are familiar with.<br>❖ With already given details the system can alert the consumer if any content of their allergies ,it can alert the consumer |
|------|-------------------|---|

## 4.2 NON FUNCTIONAL REQUIREMENTS

| FR.NO | NON-FUNCTIONAL | DESCIPTION |
|-------|----------------|------------|
| | | |

| | REQUIREMENTS | |
|---|---|---|
| NFR-1 | USABILITY | ❖ No training is required to access the Nutrition Analyzer.<br>❖ The results should be loaded within 30 seconds.<br>❖ It should be user friendly and comfortable.<br>❖ It should be simple and easy to use.<br>❖ The results should be self explanatory so that it can be understood by common people. |
| NFR-2 | SECURITY | ❖ AI powered nutrition analyzer for fitness should contain more security in which our data which entered or maintained should be more security.<br>❖ With the help of the username and password it provides more security in which it can access more securable and the data are private.<br>❖ It should be social-economic which should access to sufficient and safe to use. |
| | | ❖ It is Important that the AI powered nutrition analyzer for fitness provides should Must reliable.<br>❖ How a person can find it is reliable? It is easy to find that is he/she can compare the nutrition based food with other nutrition related application so, it can easily rectify whether it is reliable or not.<br>❖ But it take too much time, to avoid this a reliable application should made in which it itself produces whether we can get correct solution or not. So, it is necessary that the AI powered nutrition analyzer for fitness should have proper data and information in which we can get a correct information about it and also get a proper guidance about it.<br>❖ With the proper guideness and proper information in which we can get a nutrition properly and we can have get a proper fitness plan. |

| NFR-3 | RELIABILITY | ❖ It should also provides the information on nutrition and health which it should prevent from health information on diseases, health risks and prevention guidelines. It should also provides an extension a research based online learning network with several resource areas, so it provides more reliability in that area. For more reliable it can also contains the calorie information, balanced diet plans, what type food can consumed at what time etc..... So, by this way it can reliable. |
|---|---|---|
| NFR-4 | PERFORMANCE | ❖ It should provide more number of users to consume at any time and at any place. <br> ❖ It should provide Reliability, Scalability, Security and Usability. <br> ❖ It should contain minimum data while over-paging the websites or application and it is necessary that it should not exceed more than 20mb. <br> ❖ While consuming the page it should provide the response as much as possible without any delay or time traffic. <br> ❖ The connection should e properly maintained so that it can use while travelling or in remote places. <br> ❖ The nutritious food to meet their dietary needs and the food preferences for an active and healthy life. <br> ❖ It should be consistently access, availability and affordability of foods and beverages that promote well-being and prevent from diseases. <br> ❖ It should suitable in all situations that exists to all people, at all times. |
| NFR-5 | AVAILABILITY | ❖ Easy to access Data. <br> ❖ Avoids Data redundancy and inconsistency. <br> ❖ Fast and Efficient. <br> ❖ User Friendly. |
| | | ❖ The architecture for AI powered Nutrition Analyzer for fitness provides the clear procedure daily consumption of food and helps the user to maintain a healthy diet. |

| NFR-6 | SCALABILITY | ❖ According to their tracking system implemented in architecture provide the proper mechanism to the every individual of their nutrients intake which can be increased or decreased.<br>❖ The premium amount for analyzer is very much optimum. |
|-------|-------------|---|

# 5.PROJECT DESIGN

## 5.1 DATA FLOW DIAGRAMS

## Flowchart

Start → Input personal details → Calculate calorie needs → Determine diet type → Select initial population → Calculate eulidean distance → Sort meals using smallest distance → Approved by user?

- No → Substitute meal with alternative
- Yes → Done



**Second Level DFD - Fitness Center Management System**

Admin → Login to System → Check Credentials
Admin → Forgot Password → Send Email to User
Check Roles of Access → Manage Modules

Manage Modules:
- Manage Fitness Details
- Manage Member Details
- Manage Facility Details
- Manage Fitness Class Details
- Manage Branch Details
- Manage Trainer Details
- Manage Report
- Manage System Admins
- Manage Roles of User
- Manage User Permission

**First Level DFD - Fitness Center Management System**

# 5.2 SOLUTION & TECHNICAL ARCHITECTURE

Create Indian Food Dataset

Detect & Classify Meal

Map to Nutrition Database

Integrate into Mobile Application



Prediction

Train Data

Image Data

Evaluation

UI

Inputs

Model

User

DL Algorithm

Data Preprocessing

Test Data
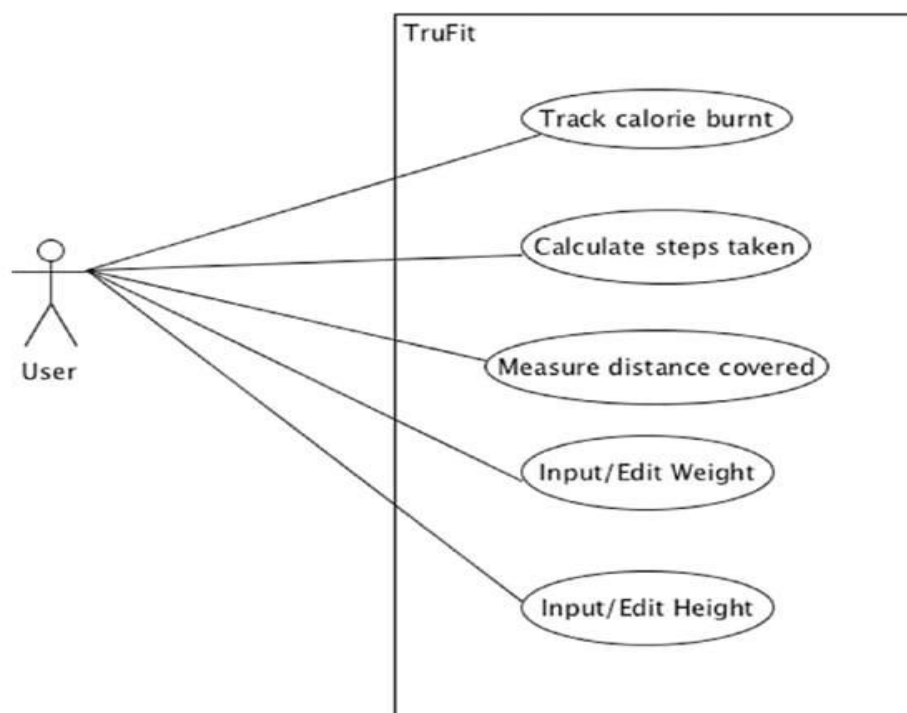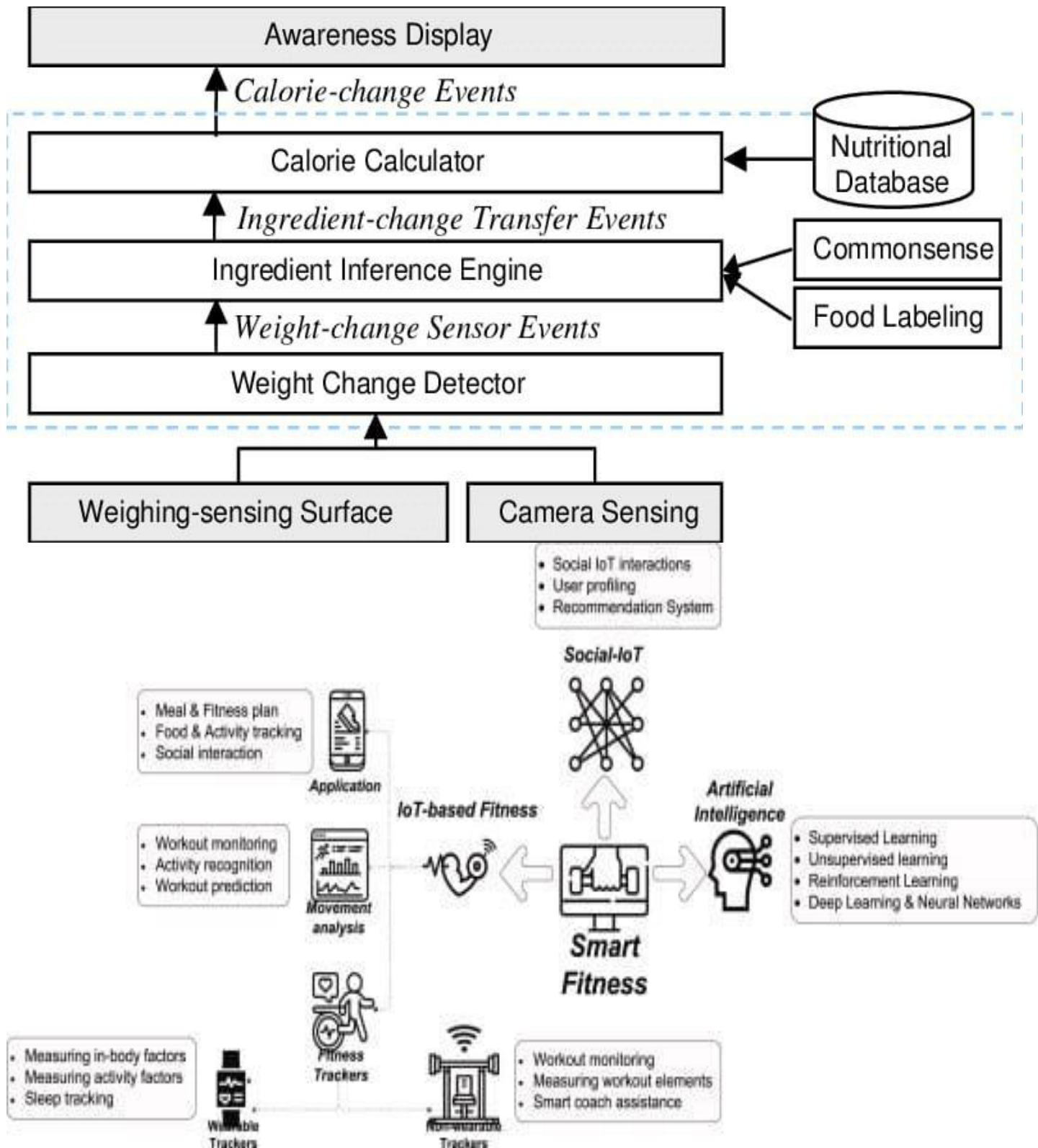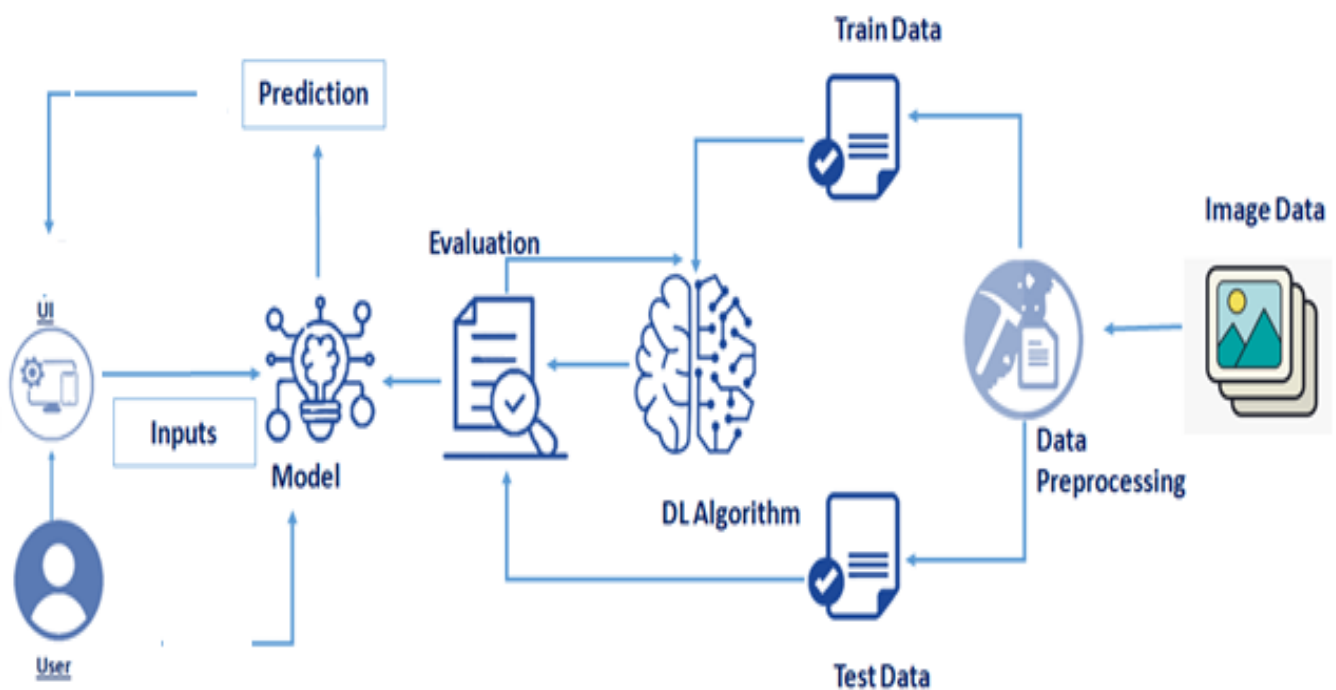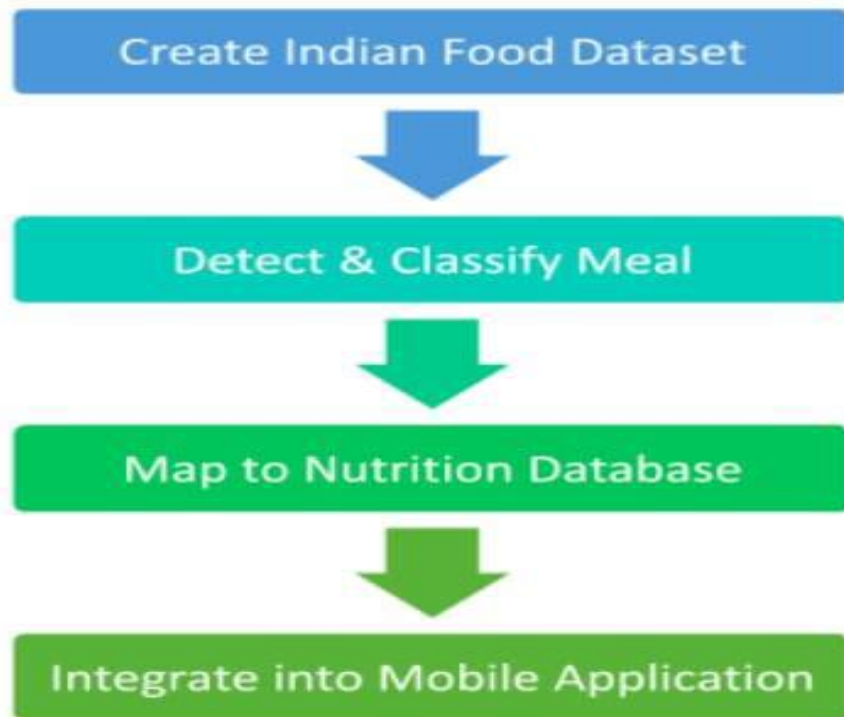
| S.NO | COMPONENT | DESCRIPTION | TECHNOLOGY |
|---|---|---|---|
| 1. | User Interface | Predicts the user interaction with Application | HTML, CSS, Javascript |
| 2. | Application Logic-1 | A fitness tool is used for analysing the nutrient | Python |
| 3. | Application Logic-2 | IBM Watson Health is a digital tool that helps the healthcare services through AI | IBM Watson STT service |
| 4. | Database | Datatype, Configurations, Data, etc., | MSSQL |
| 5. | Cloud Database | Cloud Database Service | IBM DB2, IBM Cloudant |
| 6. | Notification | Nutrition notification will be Sent from the server | Grid |
| 7. | File Storage | File storage requirements | IBM Block Storage or Other Storage Services |
| 8. | External API | External API is used in the Application | IBM Weather API, Aadhar API |
| 9. | Machine Learning Model | Detect and identify the image and objects | Python Colab |
| 10. | Infrastructure (Server / Cloud) | Application Deployment, Local Server Configuration, Cloud Server Configuration | Local, Cloud Foundry, Kubernetes, etc., |

# APPLICATION CHARACTERISTICS

| S.No | Characteristics | Description | Technology |
|------|-----------------|-------------|------------|
| 1. | Open-Source Frameworks | Flask framework | Artificial Intelligence |
| 2. | Security Implementations | Request authentication, Security controls ,etc., | Encryption, firewalls |
| 3. | Scalable Architecture | Supports high workloads | Artificial Intelligence |
| 4. | Availability | Use of load, distributed Servers | Artificial Intelligence |
| 5. | Performance | The application predicts the image up to 6000 per second | Artificial Intelligence |

# 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 | I may sign up for the programme as a user by providing my email address, a password, and a password confirmation. | I can login my dashboard or account. | High | Sprint-1 |
| | Login | USN-2 | When I register for the application as a user, I will get a confirmation email. | When I register for the application as a user, I will get a confirmation email. | High | Sprint-1 |
| | Registration | USN-3 | I may sign up for the application as a user through Facebook. | I may use Facebook to sign up and view the dashboard. | Low | Sprint-2 |
| | Registration | USN-4 | I may sign up for the application as a user using Gmail. | I can sign up via mail. | Medium | Sprint-1 |
| | Login | USN-5 | I may access the application as a user by providing my email address and password. | I have continuous access to the website as a user. | High | Sprint-1 |
| | Access | USN-6 | As a user I can give access to camera | I can give access | Medium | Sprint-1 |
| | Webpage | USN-7 | As a user I can upload the input fruit image to the website | I can upload the images | High | Sprint-2 |
| | Calorie Tracker | USN-8 | As a user, I have the option of manually entering my food consumption or five daily camera picture captures. | Every day, my food consumption is calculated and analysed. | Medium | Sprint-2 |
| | Diet Plan | USN-9 | I, as a user, am able to create my own diet plan using the vital components provided. | The AI model determines if my food has the necessary amounts of nutrients.. | Low | Sprint-3 |
| Customer (Web user) | Registration | USN-10 | I may sign up for the programme as a user by providing my email address, a password, and a password confirmation. | I can login my account or dashboard | High | Sprint-3 |
| Customer Care Executive | Solving customer queries | USN-11 | In the event that the application was unsuccessful, I should be able to contact customer service for assistance. | I can get suggestions & replies from it. | Medium | Sprint-2 |

| Administrator | Database maintenance | US-12 | I can manage all the user data & picture datasets collected by the AI model in my capacity as an administrator.. | I can give numerous assurances on user security and data safety. | High | Sprint-4 |

# 6. PROJECT PLANNING & SCHEDULING

## 6.1 SPRINT PLANNING & ESTIMATION

| Sprint | Functional Requirement(Epic) | User Story Number | User Story/ Task | Story Points | Priority | Team Member |
|---|---|---|---|---|---|---|
| Sprint-1 | | USN-0 | As a developer I have to collect different type of data supporting the model | 5 | High | Manjuladevi T |
| Sprint-1 | | USN-1 | As a user, I can register for the application by entering my email, password, and confirming my password | 5 | High | Aananthi B |
| Sprint-1 | | USN-2 | As a user, I will receive confirmation email once I | 5 | High | Hemalatha P |

| | | | have registered for the application | | | |
|---|---|---|---|---|---|---|
| Sprint-2 | | USN-3 | As a user, I will receive confirmation email once I have registered for the application | 3 | Low | Madhumitha S |
| Sprint-1 | | USN-4 | As a user, I can register for the application through Gmail | 3 | Medium | Manjuladevi T |
| Sprint-1 | Login | USN-5 | As a user, I can log into the application by entering email & password | 5 | High | Aananthi B |
| Sprint-2 | Model Building | USN-6 | As a user, I can log into the application by entering | 5 | High | Hemalatha P |

| Sprint | | USN | | | | |
|--------|---|-----|---|---|---|---|
| | | | email & password | | | |
| Sprint-2 | Main Interface | USN-7 | As a user I can view my calorie intake by clicking photo of the food I eat | 5 | High | Madhumitha S |
| Sprint-2 | Package, Dashboard | USN-8 | As a user I can choose variety of packages based on my requirement | 4 | Medium | Manjuladevi T |
| Sprint-3 | Diet plan for free users | USN-9 | As a dietitian I provide daily plans for the betterment of the user | 5 | High | Aananthi B |
| Sprint-3 | Personalized food habit-based diet plan for premium users | USN-10 | As a Premium User, I can choose to follow diet plan based on my food habits or the generalized one | 3 | Medium | Hemalatha P |

| Sprint-2 | User image analysis | USN-11 | As a user I can track my calorie intake, and know about my food in detail | 5 | High | Madhumitha S |
|---|---|---|---|---|---|---|
| Sprint-3 | Improve efficiency of AI model | - | As a developer I have to give a better model that will analyse food precisely and provide accurate results | 3 | Medium | Manjuladevi T |
| Sprint-2 | User Analysis record | USN-12 | As a user, I can check the previous records and I can analyse my food habits | 4 | Medium | Aananthi B |
| Sprint-4 | Fitness tips and basic exercises | USN-13 | As a user I can follow some fitness tips and I can maintain | 5 | Medium | Hemalatha P |

| | | | weight as required | | | |
|---|---|---|---|---|---|---|
| Sprint-4 | Home remedies | USN-14 | As a user I can follow some natural home remedies for common diseases like (cold, cough, fever) and treat myself | 5 | High | Madhumitha S |
| Sprint-4 | Optimize the user experience with the app | | As a developer I have to provide clean and smooth interface to my user | 5 | High | Manjuladevi T |
| Sprint-4 | Payment Gateway for purchasing package | | As a developer I have to create a environment which makes user feel ease to complete his/her Payments with various | 3 | Medium | Aananthi B |

| | | | Payment options | | | |
|---|---|---|---|---|---|---|

## 6.2 SPRINT DELIVERY SCHEDULE

| 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 ADD | 6Days | 21-Oct - 2022 | 29-Oct-2022 | 23 | 28-Oct-2022 |
| Sprint-2 | 20 | 6Days | 31-Oct - 2022 | 05-Nov-2022 | 26 | 04-Nov-2022 |
| Sprint-3 | 20 | 6Days | 07-Nov-2022 | 12-Nov-2022 | 11 | 11-Nov-2022 |
| Sprint-4 | 20 | 6Days | 14-Nov-2022 | 19-Nov-2022 | 18 | 17-Nov-2022 |

## 6.3 REPORTS FROM JIRA
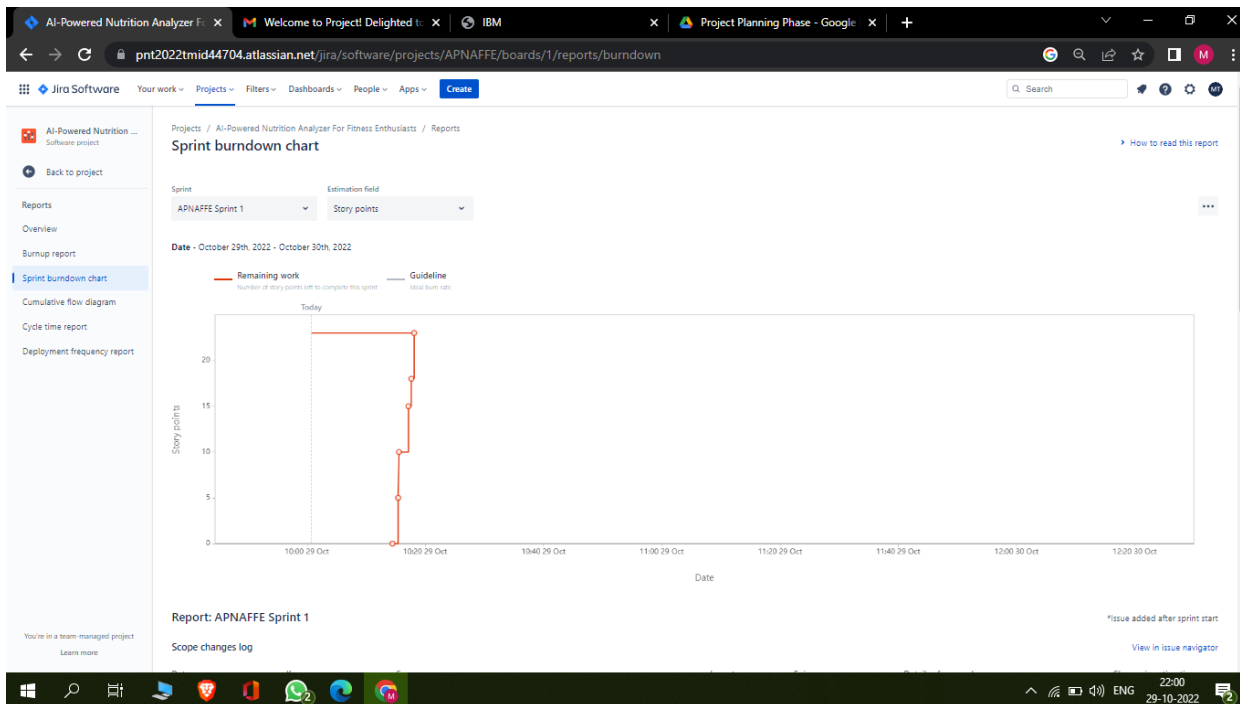


## 7. CODING & SOLUTIONING

## 7.1 FEATURE-1

## App.py

# -- coding: utf-8 --

"""

Created on Fri Nov  4 14:19:28 2022

@author: Mr...Vs..99

"""

from flask import Flask,render_template,request

# Flask-It is our framework which we are going to use to run/serve our application.

```python
#request-for accessing file which was uploaded by the user on our application.

import os

import numpy as np #used for numerical analysis

from tensorflow.keras.models import load_model#to load our trained model

from tensorflow.keras.preprocessing import image

import requests


app = Flask(_name_,template_folder="templates") #initializing a flask app

# Loading the model

model=load_model('nutrition.h5')

print("Loaded model from disk")


@ app.route('/')# route to display the home page

def home():

    return render_template('home.html') #rendering the home page


@ app.route('/image1', methods=['GET', 'POST']) # routes to the index html

def image1():

    return render_template("image.html")



@ app.route('/predict' ,methods=['GET','POST']) # route to show the predictions in a Web UI

def lanuch():

    if request.method=='POST':
```

```python
        f=request.files['file'] # requesting the file

        basepath=os.path.dirname('_file_') #storing the file directory

        filepath=os.path.join(basepath,"uploads",f.filename) #storing the file in uploads folder

        f.save(filepath) #saving the file


        img=image.load_img(filepath,target_size=(64,64)) #load and reshaping the image

        x=image.img_to_array(img) #converting image to an array

        x=np.expand_dims(x,axis=0) #changing the dimensions of the image


        pred=np.argmax(model.predict(x), axis=1)

        print("prediction",pred) #printing the prediction

        index=['APPLE','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):
```

```python
url = "https://calorieninjas.p.rapidapi.com/v1/nutrition"

querystring = {"query":index}

headers = {
    'x-rapidapi-key': "85887549f4msh51e7315b280a87ep1f43e0jsn585c940f2ea6",
    '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_":
    # running the app
    app.run(debug=False)
```

Spyder (Python 3.9) — D:\Flask\app.py

```python
# -*- coding: utf-8 -*-
"""
Created on Fri Nov  4 14:19:28 2022

@author: Mr...Vs..99
"""

from flask import Flask,render_template,request
# Flask-It is our framework which we are going to use to run/serve our application.
#request-for accessing file which was uploaded by the user on our application.
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def lanuch():
    if request.method=='POST':
        f=request.files['file'] # requesting the file
        basepath=os.path.dirname('  file  ') #storing the file directory
```

```python
        f=request.files['file'] # requesting the file
        basepath=os.path.dirname('__file__') #storing the file directory
        filepath=os.path.join(basepath,"uploads",f.filename) #storing the file in uploads folder
        f.save(filepath) #saving the file

        img=image.load_img(filepath,target_size=(64,64)) #load and reshaping the image
        x=image.img_to_array(img) #converting image to an array
        x=np.expand_dims(x,axis=0) #changing the dimensions of the image

        pred=np.argmax(model.predict(x), axis=1)
        print("prediction",pred) #printing the prediction
        index=['APPLE','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":index}

    headers = {
    'x-rapidapi-key': "85887549f4msh51e7315b280a87ep1f43e0jsn585c940f2ea6",
    'x-rapidapi-host': "calorieninjas.p.rapidapi.com"
    }

    response = requests.request("GET", url, headers=headers, params=querystring)
```
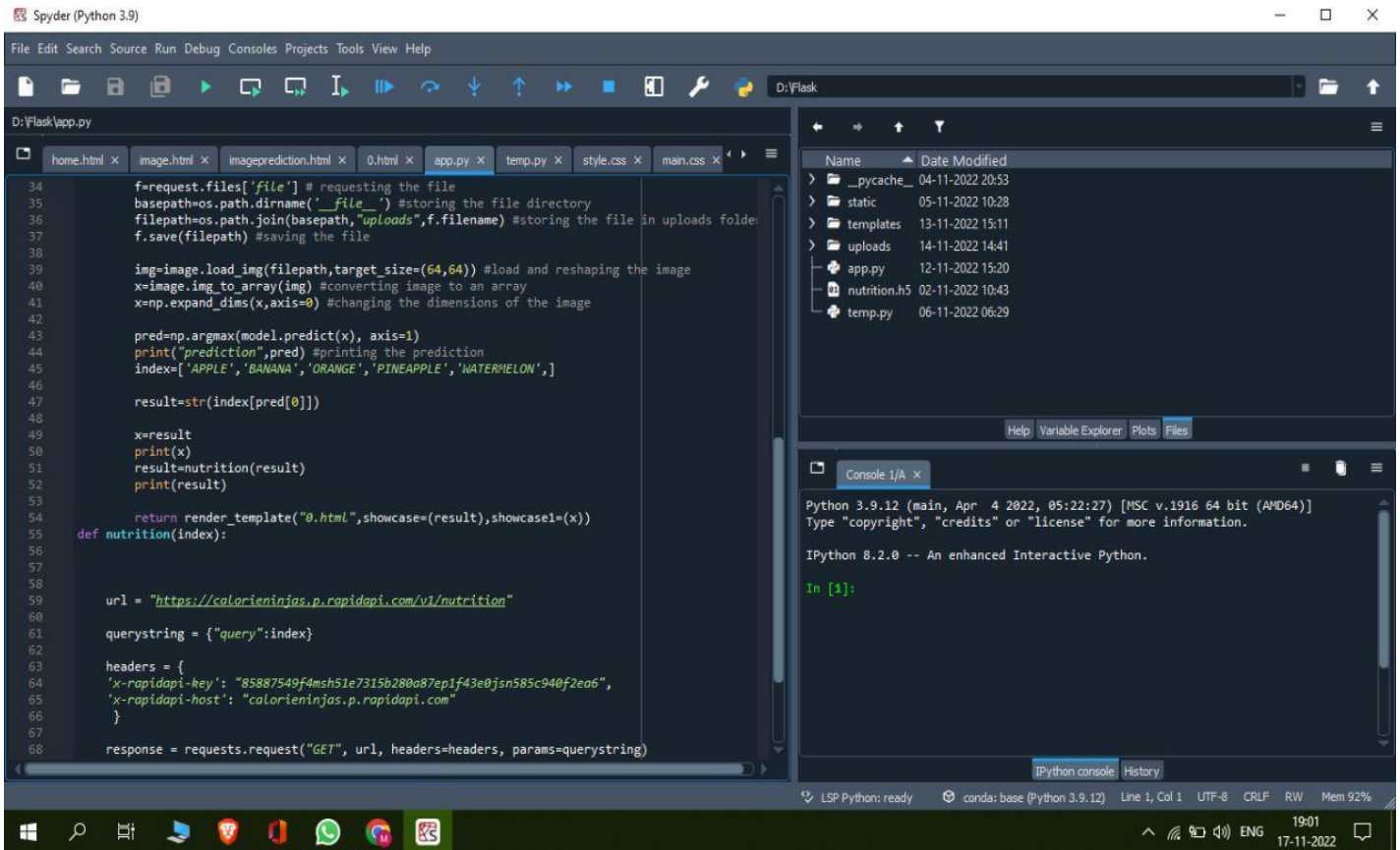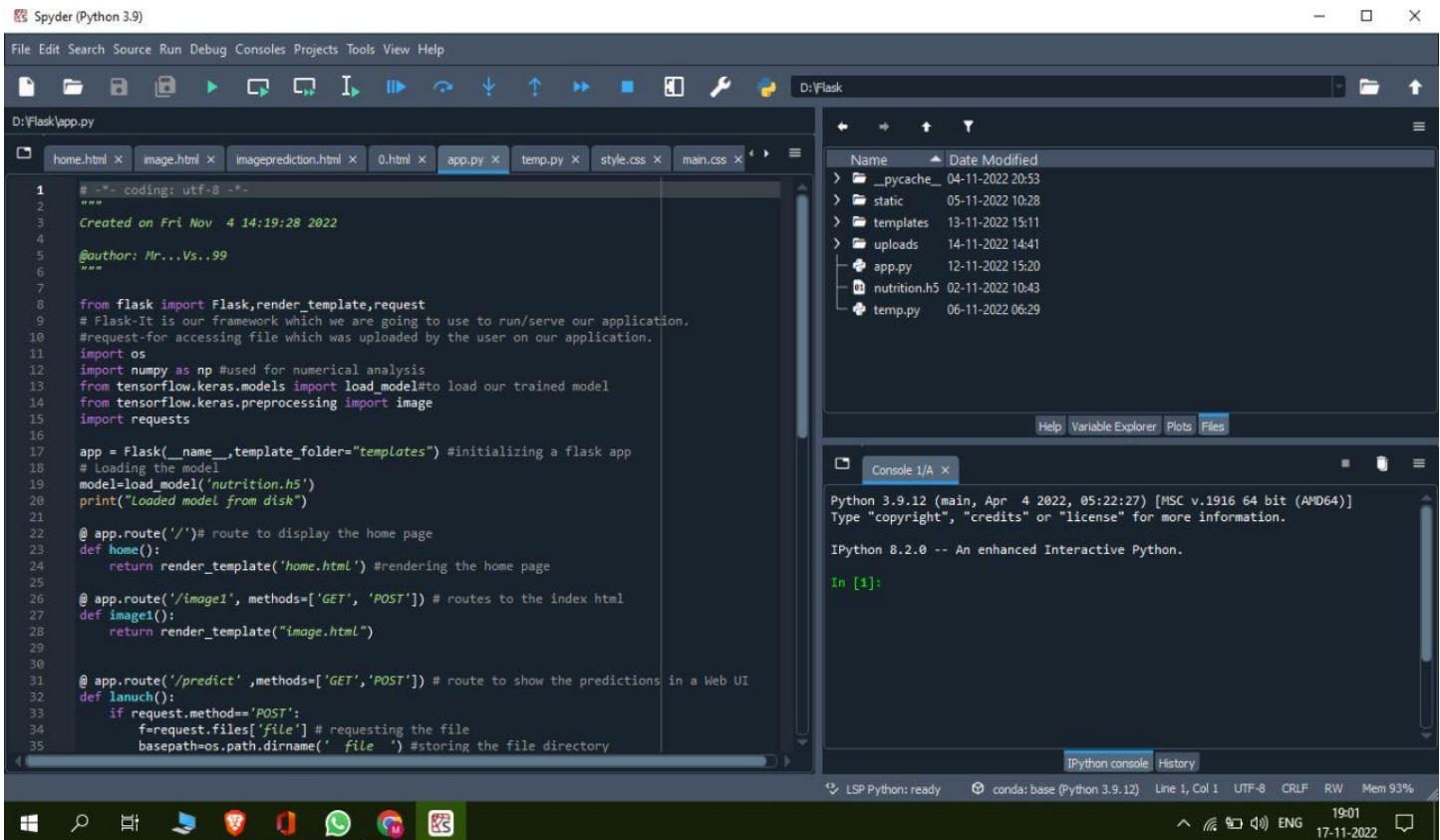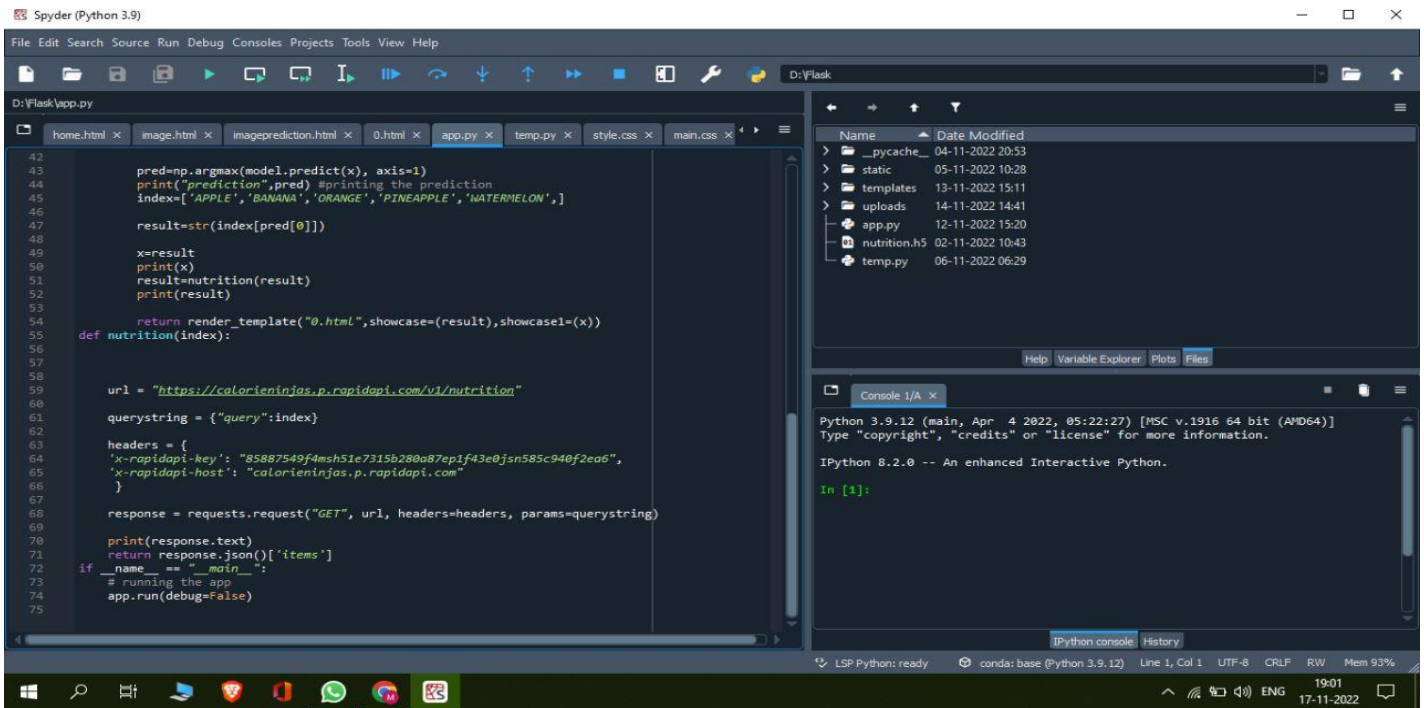
## 7.2 FEATURE-2

**ModelBuliding.ipynb** ☆

File  Edit  View  Insert  Runtime  Tools  Help  Last edited on November 3

+ Code  + Text

```
model.summary()
```

```
Model: "sequential"

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

max_pooling2d (MaxPooling2D  (None, 31, 31, 32)        0
)

conv2d_1 (Conv2D)            (None, 29, 29, 32)        9248

max_pooling2d_1 (MaxPooling  (None, 14, 14, 32)        0
2D)

flatten (Flatten)            (None, 6272)              0

dense (Dense)                (None, 128)               802944

dense_1 (Dense)              (None, 5)                 645

flatten_1 (Flatten)          (None, 5)                 0

=================================================================
Total params: 813,733
Trainable params: 813,733
Non-trainable params: 0
```

---

**Image preprocessing.ipynb** ☆

File  Edit  View  Insert  Runtime  Tools  Help  Last edited on November 3

+ Code  + Text

Import the library

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

Arguments for ImageDataGenerator class

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

Applying ImageDataGenerator functionality to trainset and testset

```
from tensorflow.keras.preprocessing.image import ImageDataGenerator
train_datagen = ImageDataGenerator(rescale= 1./255,horizontal_flip = True,vertical_flip = True,zoom_range = 0.2)
test_datagen = ImageDataGenerator(rescale= 1./255)
```

```
x_train = train_datagen.flow_from_directory("/content/drive/MyDrive/ibm project/TRAIN_SET",target_size = (64,64),
                                            class_mode = "categorical",batch_size = 24)
```

```
Found 4118 images belonging to 5 classes.
```

```
model.add(Convolution2D(32,(3,3),input_shape=(64,64,3),activation="relu"))
# 32 indicates => no of feature detectors
#(3,3)=> kernel size (feature detector size)
```

```
# add Maxpooling layer
```

```
model.add(MaxPooling2D(pool_size=(2,2)))
```

```
#Second convolution layer and pooling
model.add(Convolution2D(32,(3,3),activation='relu'))
```

```
model.add(MaxPooling2D(pool_size=(2,2)))
```

```
#Flattening the layers
model.add(Flatten())
```

```
model.add(Dense(units=128,activation='relu'))
```

```
model.add(Dense(units=5,activation='softmax'))
```

```
# add flatten layer => input to your ANN
```

---

```
x_test = test_datagen.flow_from_directory("/content/drive/MyDrive/ibm project/TEST_SET",target_size=(64,64),batch_size=32,class_mode="binary")

Found 929 images belonging to 3 classes.
```

```
x_train.class_indices

{'APPLES': 0, 'BANANA': 1, 'ORANGE': 2, 'PINEAPPLE': 3, 'WATERMELON': 4}
```

```
#checking the number of classes
print(x_test.class_indices)

{'APPLES': 0, 'BANANA': 1, 'ORANGE': 2}
```

```
from collections import Counter as c
c(x_train .labels)

Counter({0: 995, 1: 1354, 2: 1019, 3: 275, 4: 475})
```

```
#Initializing the model
model = Sequential()
```

```
# add First convolution layer
```

```
#import keras libraries
from keras.models import Sequential
from keras.layers import Dense
from keras.layers import Convolution2D
from keras.layers import MaxPooling2D
from keras.layers import Flatten
```

```
#image preprocessing(or) image augmentation
from keras.preprocessing.image import ImageDataGenerator
```

```
train_datagen = ImageDataGenerator(rescale=1./255,shear_range=0.2,zoom_range=0.2,horizontal_flip=True,vertical_flip=True)
#rescale => rescaling pixel value from 0 to 255 to 0 to 1
#shear_range=> counter clock wise rotation(anti clock)
```

```
test_datagen = ImageDataGenerator(rescale=1./255)
```

```
x_train = train_datagen.flow_from_directory("/content/drive/MyDrive/ibm project/TRAIN_SET",target_size=(64,64),batch_size=32,class_mode="binary")
```

Found 4118 images belonging to 5 classes.

```
x_test = test_datagen.flow_from_directory("/content/drive/MyDrive/ibm project/TEST_SET",target_size=(64,64),batch_size=32,class_mode="binary")
```

Found 929 images belonging to 3 classes.

# 8. TESTING

## 8.1 TEST CASE

## 8.2 USER ACCEPTENCE TESTING

### 1. PURPOSE OF DOCUMENT
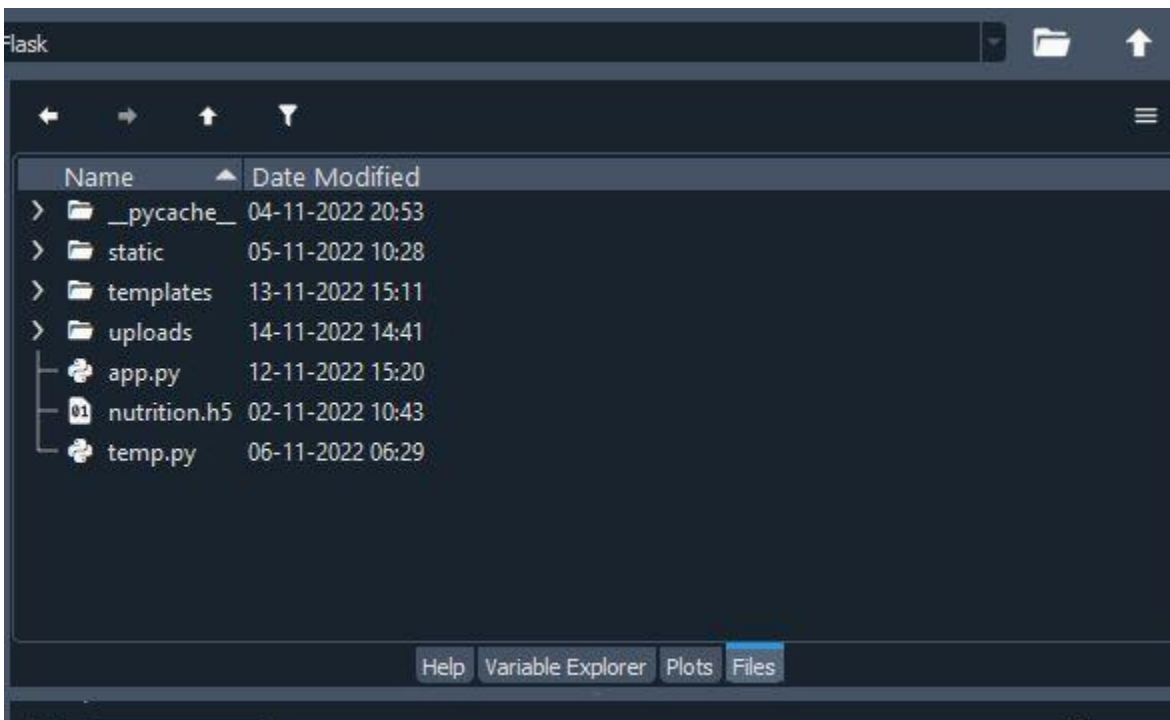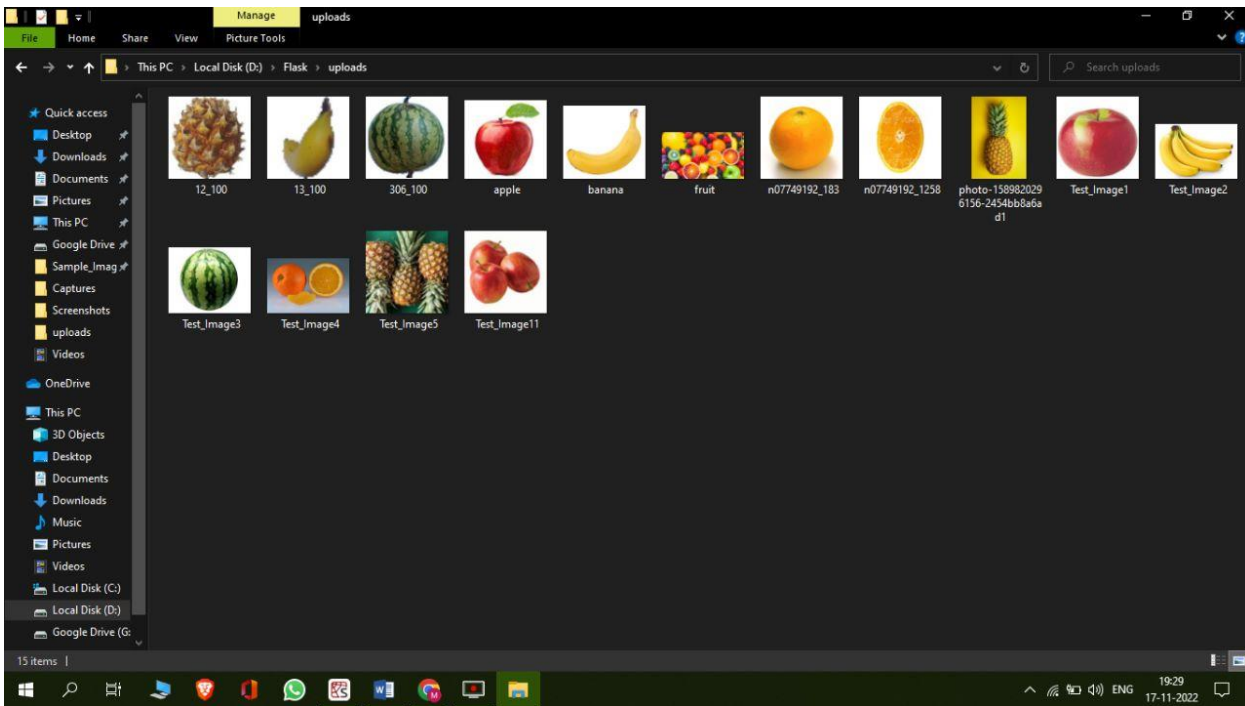
➢ The purpose of this document is to briefly explain the test coverage and open issues of the [AI-Powered Nutrition Analyzer For Fitness Euthusiasts] project at the time of the release to User Acceptance Testing (UAT).

### 2. 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 | Subtotal |
|------------|------------|------------|------------|------------|----------|
| By Design  | 0          | 0          | 1          | 0          | 1        |
| Duplicate  | 1          | 3          | 2          | 2          | 8        |
| External   | 2          | 3          | 0          | 0          | 5        |

| | | | | | |
|---|---|---|---|---|---|
| Fixed | 4 | 4 | 4 | 4 | 16 |
| Not Reproduced | 0 | 0 | 0 | 1 | 1 |
| Skipped | 0 | 0 | 0 | 0 | 0 |
| Won't Fix | 0 | 0 | 0 | 0 | 0 |
| Totals | 7 | 10 | 7 | 7 | 31 |
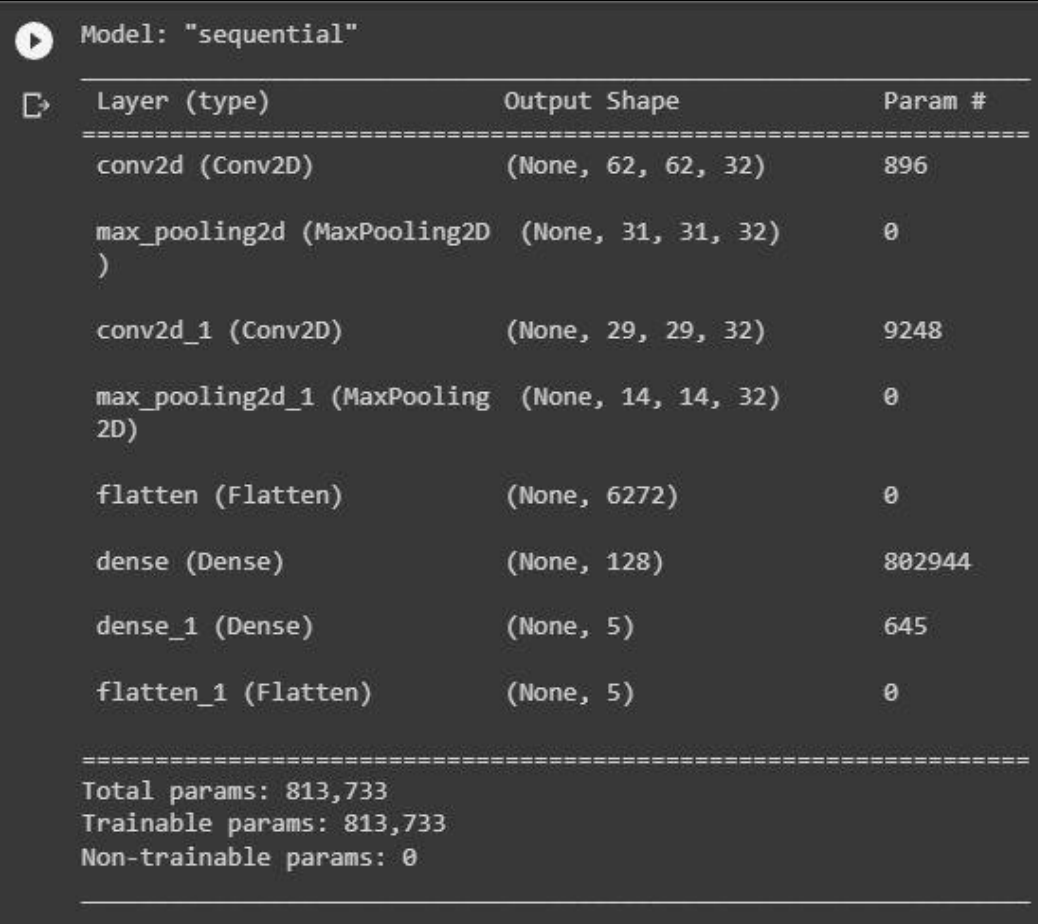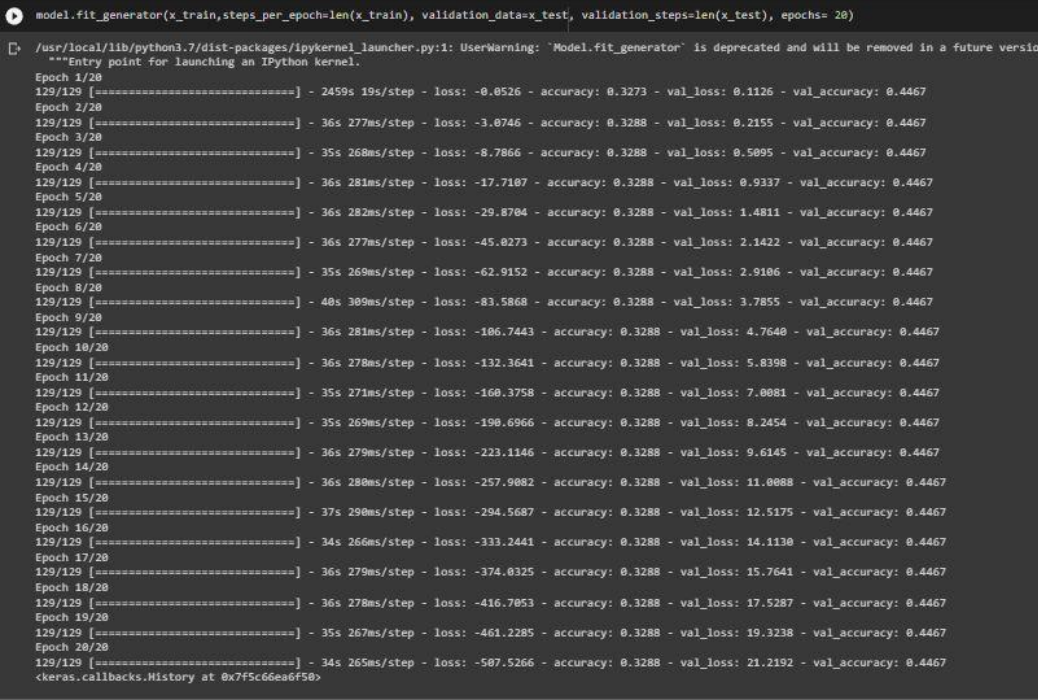
## 3. TEST CASE ANALYSIS

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

| Section | Total Cases | Not Tested | Fail | Pass |
|---|---|---|---|---|
| Print Engine | 5 | 0 | 0 | 5 |
| Client Application | 5 | 0 | 0 | 5 |
| Security | 5 | 0 | 0 | 5 |
| Outsource shipping | 5 | 0 | 0 | 5 |
| Exception Reporting | 5 | 0 | 0 | 5 |
| Final Report Output | 5 | 0 | 0 | 5 |
| Version Control | 5 | 0 | 0 | 5 |

# 9. RESULTS

## 9.1 PERFORMANCE METRICS

| S.NO | Parameter | values | Screenshot |
|---|---|---|---|
| 1 | Model summary | Total params : 813,733 Trainable params: 813,733 Non-trainable params: 0 | Model: "sequential"<br><br>Layer (type) / Output Shape / Param #<br>conv2d (Conv2D) (None, 62, 62, 32) 896<br>max_pooling2d (MaxPooling2D) (None, 31, 31, 32) 0<br>conv2d_1 (Conv2D) (None, 29, 29, 32) 9248<br>max_pooling2d_1 (MaxPooling2D) (None, 14, 14, 32) 0<br>flatten (Flatten) (None, 6272) 0<br>dense (Dense) (None, 128) 802944<br>dense_1 (Dense) (None, 5) 645<br>flatten_1 (Flatten) (None, 5) 0<br><br>Total params: 813,733<br>Trainable params: 813,733<br>Non-trainable params: 0 |
| 2 | Accuracy | Training Accuracy – 96.55<br><br>Validation Accuracy- 97.45 | model.fit_generator(x_train,steps_per_epoch=len(x_train), validation_data=x_test, validation_steps=len(x_test), epochs= 20)<br>/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:1: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version<br>  """Entry point for launching an IPython kernel.<br>Epoch 1/20<br>129/129 [==============================] - 2459s 19s/step - loss: -0.0526 - accuracy: 0.3273 - val_loss: 0.1126 - val_accuracy: 0.4467<br>Epoch 2/20<br>129/129 [==============================] - 36s 277ms/step - loss: -3.0746 - accuracy: 0.3288 - val_loss: 0.2155 - val_accuracy: 0.4467<br>Epoch 3/20<br>129/129 [==============================] - 35s 268ms/step - loss: -8.7866 - accuracy: 0.3288 - val_loss: 0.5095 - val_accuracy: 0.4467<br>Epoch 4/20<br>129/129 [==============================] - 36s 281ms/step - loss: -17.7107 - accuracy: 0.3288 - val_loss: 0.9337 - val_accuracy: 0.4467<br>Epoch 5/20<br>129/129 [==============================] - 36s 282ms/step - loss: -29.8704 - accuracy: 0.3288 - val_loss: 1.4811 - val_accuracy: 0.4467<br>Epoch 6/20<br>129/129 [==============================] - 36s 277ms/step - loss: -45.0273 - accuracy: 0.3288 - val_loss: 2.1422 - val_accuracy: 0.4467<br>Epoch 7/20<br>129/129 [==============================] - 35s 269ms/step - loss: -62.9152 - accuracy: 0.3288 - val_loss: 2.9106 - val_accuracy: 0.4467<br>Epoch 8/20<br>129/129 [==============================] - 40s 309ms/step - loss: -83.5868 - accuracy: 0.3288 - val_loss: 3.7855 - val_accuracy: 0.4467<br>Epoch 9/20<br>129/129 [==============================] - 36s 281ms/step - loss: -106.7443 - accuracy: 0.3288 - val_loss: 4.7640 - val_accuracy: 0.4467<br>Epoch 10/20<br>129/129 [==============================] - 36s 278ms/step - loss: -132.3641 - accuracy: 0.3288 - val_loss: 5.8398 - val_accuracy: 0.4467<br>Epoch 11/20<br>129/129 [==============================] - 35s 271ms/step - loss: -160.3758 - accuracy: 0.3288 - val_loss: 7.0081 - val_accuracy: 0.4467<br>Epoch 12/20<br>129/129 [==============================] - 35s 269ms/step - loss: -190.6966 - accuracy: 0.3288 - val_loss: 8.2454 - val_accuracy: 0.4467<br>Epoch 13/20<br>129/129 [==============================] - 36s 279ms/step - loss: -223.1146 - accuracy: 0.3288 - val_loss: 9.6145 - val_accuracy: 0.4467<br>Epoch 14/20<br>129/129 [==============================] - 36s 280ms/step - loss: -257.9082 - accuracy: 0.3288 - val_loss: 11.0088 - val_accuracy: 0.4467<br>Epoch 15/20<br>129/129 [==============================] - 37s 290ms/step - loss: -294.5687 - accuracy: 0.3288 - val_loss: 12.5175 - val_accuracy: 0.4467<br>Epoch 16/20<br>129/129 [==============================] - 34s 266ms/step - loss: -333.2441 - accuracy: 0.3288 - val_loss: 14.1130 - val_accuracy: 0.4467<br>Epoch 17/20<br>129/129 [==============================] - 36s 279ms/step - loss: -374.0325 - accuracy: 0.3288 - val_loss: 15.7641 - val_accuracy: 0.4467<br>Epoch 18/20<br>129/129 [==============================] - 36s 278ms/step - loss: -416.7053 - accuracy: 0.3288 - val_loss: 17.5287 - val_accuracy: 0.4467<br>Epoch 19/20<br>129/129 [==============================] - 35s 267ms/step - loss: -461.2285 - accuracy: 0.3288 - val_loss: 19.3238 - val_accuracy: 0.4467<br>Epoch 20/20<br>129/129 [==============================] - 34s 265ms/step - loss: -507.5266 - accuracy: 0.3288 - val_loss: 21.2192 - val_accuracy: 0.4467<br><keras.callbacks.History at 0x7f5c66ea6f50> |

# Model Summary

```
Model: "sequential"

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

 max_pooling2d (MaxPooling2D   (None, 31, 31, 32)         0
 )

 conv2d_1 (Conv2D)             (None, 29, 29, 32)         9248

 max_pooling2d_1 (MaxPooling   (None, 14, 14, 32)         0
 2D)

 flatten (Flatten)             (None, 6272)               0

 dense (Dense)                 (None, 128)                802944

 dense_1 (Dense)               (None, 5)                  645

 flatten_1 (Flatten)           (None, 5)                  0

=================================================================
Total params: 813,733
Trainable params: 813,733
Non-trainable params: 0
```

# Accuracy

```
model.fit_generator(x_train,steps_per_epoch=len(x_train), validation_data=x_test, validation_steps=len(x_test), epochs= 20)

/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:1: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use `Model.fit`, which supports generators.
  """Entry point for launching an IPython kernel.
Epoch 1/20
129/129 [==============================] - 2459s 19s/step - loss: -0.0526 - accuracy: 0.3273 - val_loss: 0.1126 - val_accuracy: 0.4467
Epoch 2/20
129/129 [==============================] - 36s 277ms/step - loss: -3.0746 - accuracy: 0.3288 - val_loss: 0.2155 - val_accuracy: 0.4467
Epoch 3/20
129/129 [==============================] - 35s 268ms/step - loss: -8.7866 - accuracy: 0.3288 - val_loss: 0.5095 - val_accuracy: 0.4467
Epoch 4/20
129/129 [==============================] - 36s 281ms/step - loss: -17.7107 - accuracy: 0.3288 - val_loss: 0.9337 - val_accuracy: 0.4467
Epoch 5/20
129/129 [==============================] - 36s 282ms/step - loss: -29.8704 - accuracy: 0.3288 - val_loss: 1.4811 - val_accuracy: 0.4467
Epoch 6/20
129/129 [==============================] - 36s 277ms/step - loss: -45.0273 - accuracy: 0.3288 - val_loss: 2.1422 - val_accuracy: 0.4467
Epoch 7/20
129/129 [==============================] - 35s 269ms/step - loss: -62.9152 - accuracy: 0.3288 - val_loss: 2.9106 - val_accuracy: 0.4467
Epoch 8/20
129/129 [==============================] - 40s 309ms/step - loss: -83.5868 - accuracy: 0.3288 - val_loss: 3.7855 - val_accuracy: 0.4467
Epoch 9/20
129/129 [==============================] - 36s 281ms/step - loss: -106.7443 - accuracy: 0.3288 - val_loss: 4.7640 - val_accuracy: 0.4467
Epoch 10/20
129/129 [==============================] - 36s 278ms/step - loss: -132.3641 - accuracy: 0.3288 - val_loss: 5.8398 - val_accuracy: 0.4467
Epoch 11/20
129/129 [==============================] - 35s 271ms/step - loss: -160.3758 - accuracy: 0.3288 - val_loss: 7.0081 - val_accuracy: 0.4467
Epoch 12/20
129/129 [==============================] - 35s 269ms/step - loss: -190.6966 - accuracy: 0.3288 - val_loss: 8.2454 - val_accuracy: 0.4467
Epoch 13/20
129/129 [==============================] - 36s 279ms/step - loss: -223.1146 - accuracy: 0.3288 - val_loss: 9.6145 - val_accuracy: 0.4467
Epoch 14/20
129/129 [==============================] - 36s 280ms/step - loss: -257.9082 - accuracy: 0.3288 - val_loss: 11.0088 - val_accuracy: 0.4467
Epoch 15/20
129/129 [==============================] - 37s 290ms/step - loss: -294.5687 - accuracy: 0.3288 - val_loss: 12.5175 - val_accuracy: 0.4467
Epoch 16/20
129/129 [==============================] - 34s 266ms/step - loss: -333.2441 - accuracy: 0.3288 - val_loss: 14.1130 - val_accuracy: 0.4467
Epoch 17/20
129/129 [==============================] - 36s 279ms/step - loss: -374.0325 - accuracy: 0.3288 - val_loss: 15.7641 - val_accuracy: 0.4467
Epoch 18/20
129/129 [==============================] - 36s 278ms/step - loss: -416.7053 - accuracy: 0.3288 - val_loss: 17.5287 - val_accuracy: 0.4467
Epoch 19/20
129/129 [==============================] - 35s 267ms/step - loss: -461.2285 - accuracy: 0.3288 - val_loss: 19.3238 - val_accuracy: 0.4467
Epoch 20/20
129/129 [==============================] - 34s 265ms/step - loss: -507.5266 - accuracy: 0.3288 - val_loss: 21.2192 - val_accuracy: 0.4467
<keras.callbacks.History at 0x7f5c66ea6f50>
```
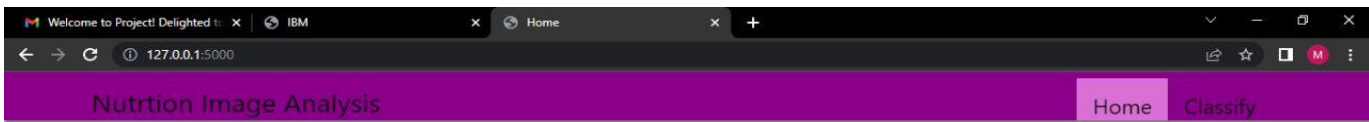
## 9.2 OUTPUTS
## 9.2.1 home.html

Nutrtion Image Analysis      Home  Classify

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. It ensures compliance with trade and food laws.
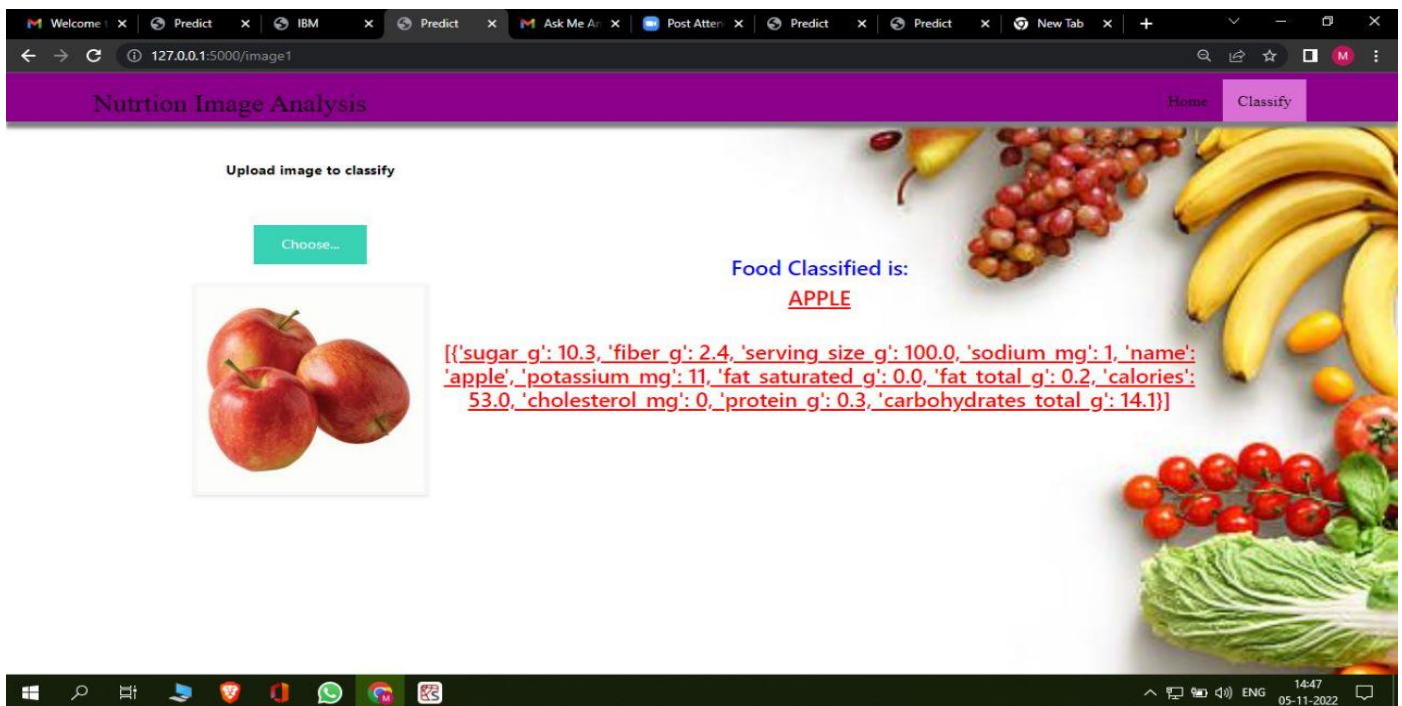
## 9.2.2. image.html
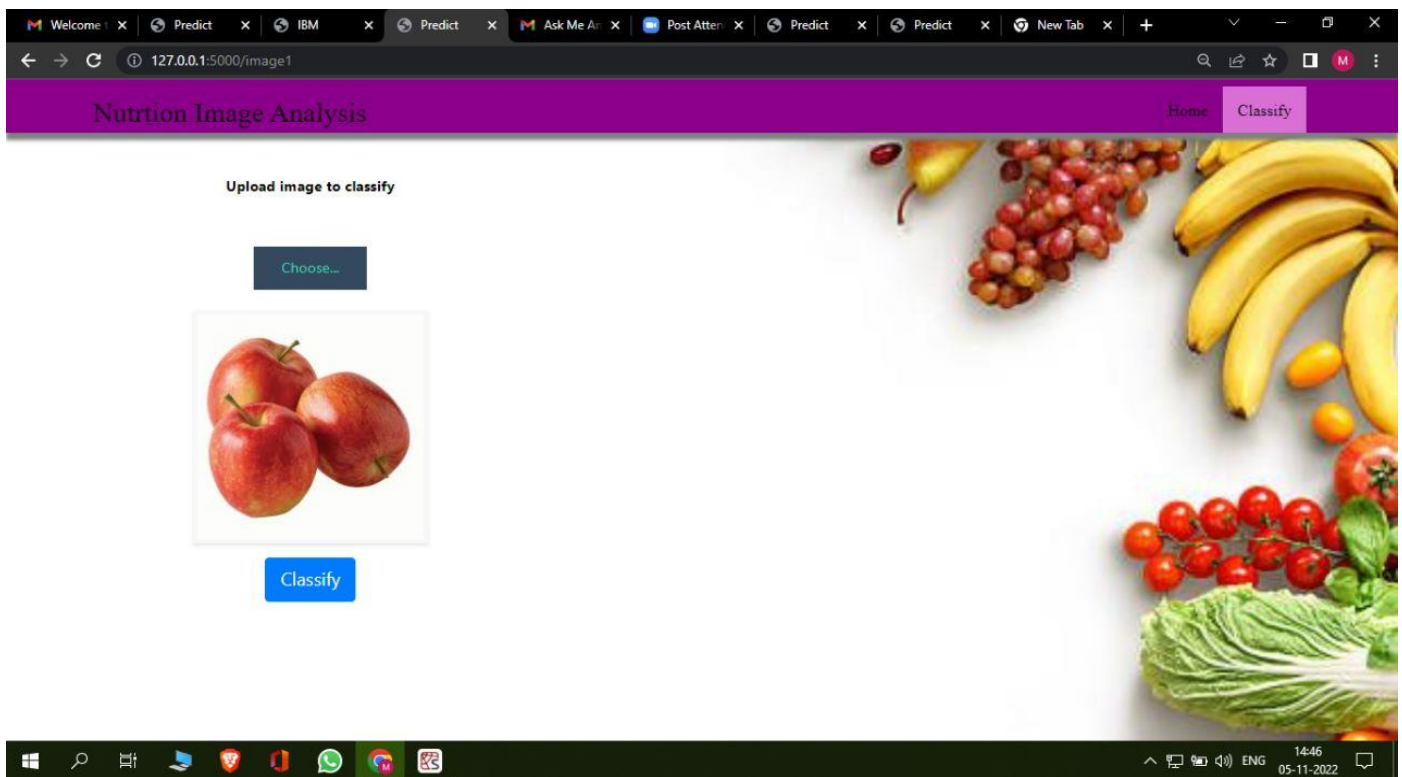
### 9.2.3.image prediction.html

Nutrtion Image Analysis

Home    Classify

Upload image to classify

Choose…

Food Classified is:

PINEAPPLE

[{'sugar_g': 9.9, 'fiber_g': 1.4, 'serving_size_g': 100.0, 'sodium_mg': 0, 'name': 'pineapple', 'potassium_mg': 8, 'fat_saturated_g': 0.0, 'fat_total_g': 0.1, 'calories': 50.8, 'cholesterol_mg': 0, 'protein_g': 0.5, 'carbohydrates_total_g': 13.0}]



Nutrtion Image Analysis

Home    Classify

Upload image to classify

Choose…

Food Classified is:

BANANA

[{'sugar_g': 12.3, 'fiber_g': 2.6, 'serving_size_g': 100.0, 'sodium_mg': 1, 'name': 'banana', 'potassium_mg': 22, 'fat_saturated_g': 0.1, 'fat_total_g': 0.3, 'calories': 89.4, 'cholesterol_mg': 0, 'protein_g': 1.1, 'carbohydrates_total_g': 23.2}]
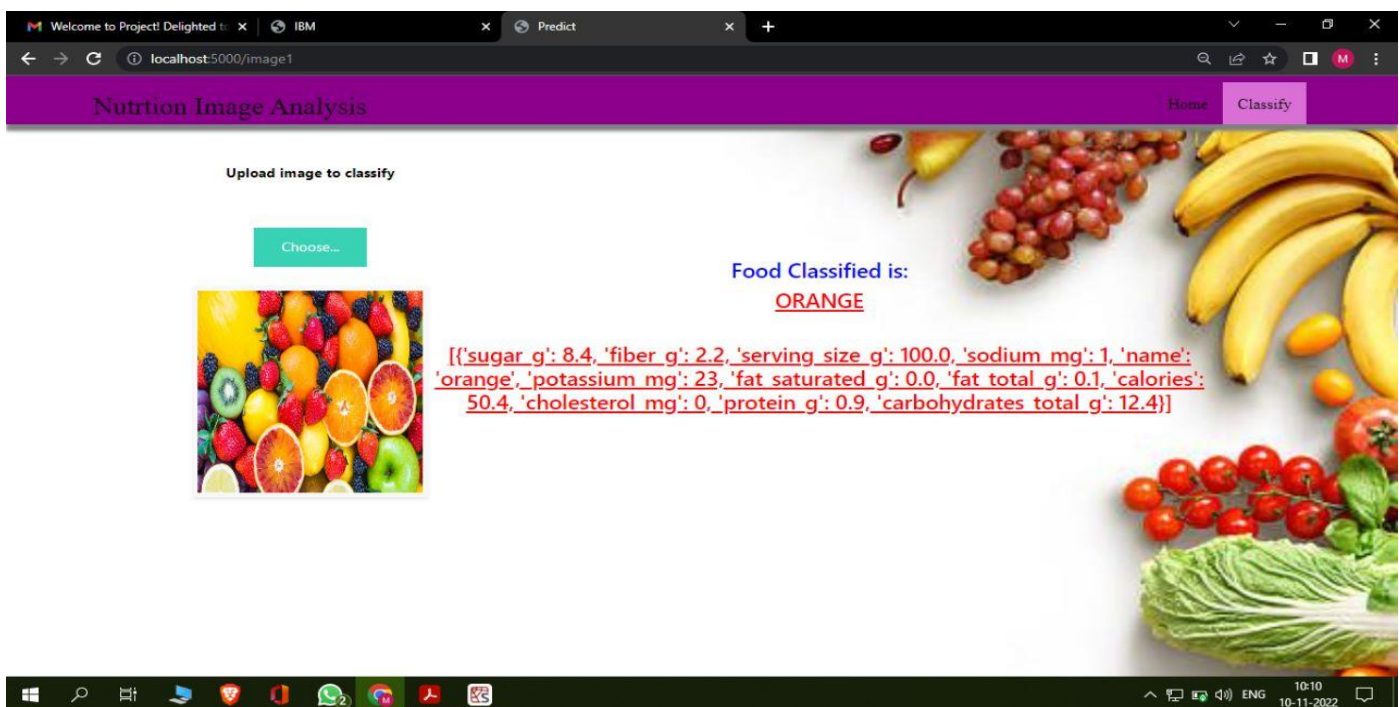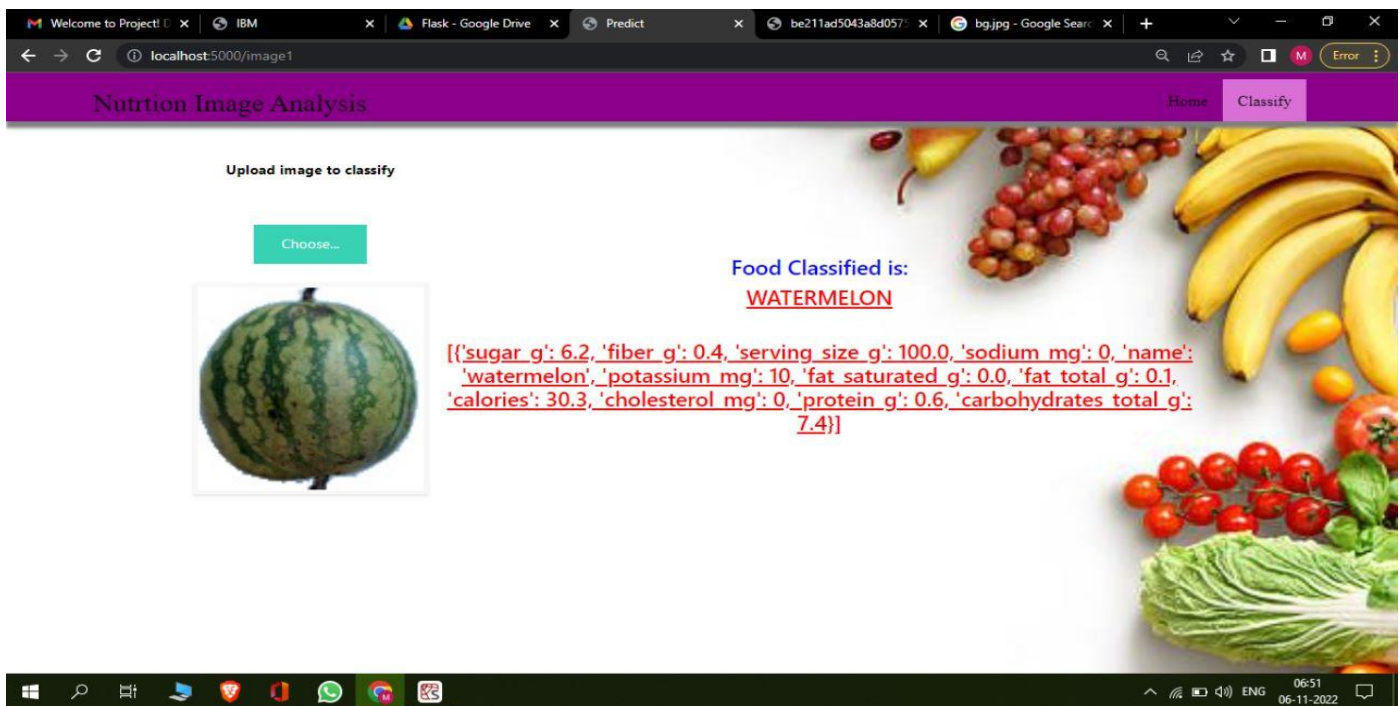
# 10. ADVANTAGESD & DISADVANTAGES

## 10.1 ADVANTAGES

➢ Picture of body identifying benefits of healthy eating for adults.

  ❖ May help you live longer.

❖ Keeps skin, teeth, and eyes healthy.
❖ Supports muscles.
❖ Boosts immunity.
❖ Strengthens bones.
❖ Lowers risk of heart disease, type 2 diabetes, and some cancers.
❖ Supports healthy pregnancies and breastfeeding.

## 10.2 DISADVANTAGES

➢ These unhealthy eating habits can affect our nutrient intake, including energy (or kilojoules) protein, carbohydrates, essential fatty acids, vitamins and minerals as well as fibre and fluid.

❖ Being overweight
❖ Tooth decay
❖ High blood pressure
❖ Highcholesterol
❖ Heart disease and stroke
❖ Type-2 diabetes

## 11. CONCLUSION

➢ Good nutrition promotes not only better physical health and reduced susceptibility to disease, but has also been demonstrated to contribute to cognitive development and academic success. Left to their own devices, children will not automatically select healthy foods.

## 12. FUTURE SCOPE

➢ Mindful Eating and Food as Medicine:
  ❖ The distinction between food and supplements blur as functionalities, such as immune support or gut health, become a priority for consumers.
➢ Plant-Based Eating and Alternative Proteins:
  ❖ Plant-based products accelerated this past year due to demand for healthy food options during the pandemic
➢ From Farm to Fork: Food Tech, Origins and Security:

- ❖ Demand for sourcing transparency combined with unprecedented investment in tech is advancing the ability to trace food from production to consumption.

# 13. APPENDIX

## 13.1 SOURCE CODE

## APP.PY

```
# -- coding: utf-8 --
"""

Created on Fri Nov  4 14:19:28 2022


@author: Mr...Vs..99
"""


from flask import Flask,render_template,request

# Flask-It is our framework which we are going to use to run/serve our application.

#request-for accessing file which was uploaded by the user on our application.

import os

import numpy as np #used for numerical analysis

from tensorflow.keras.models import load_model#to load our trained model

from tensorflow.keras.preprocessing import image

import requests


app = Flask(_name_,template_folder="templates") #initializing a flask app

# Loading the model

model=load_model('nutrition.h5')
```

```python
print("Loaded model from disk")


@ app.route('/')# route to display the home page
def home():
    return render_template('home.html') #rendering the home page


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



@ app.route('/predict' ,methods=['GET','POST']) # route to show the predictions in a Web UI
def lanuch():
    if request.method=='POST':
        f=request.files['file'] # requesting the file
        basepath=os.path.dirname('_file_') #storing the file directory
        filepath=os.path.join(basepath,"uploads",f.filename) #storing the file in uploads folder
        f.save(filepath) #saving the file

        img=image.load_img(filepath,target_size=(64,64)) #load and reshaping the image
        x=image.img_to_array(img) #converting image to an array
        x=np.expand_dims(x,axis=0) #changing the dimensions of the image

        pred=np.argmax(model.predict(x), axis=1)
```

```python
    print("prediction",pred) #printing the prediction

    index=['APPLE','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":index}


    headers = {
        'x-rapidapi-key': "85887549f4msh51e7315b280a87ep1f43e0jsn585c940f2ea6",
        'x-rapidapi-host': "calorieninjas.p.rapidapi.com"
    }
```

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

    print(response.text)

    return response.json()['items']

if _name_ == "_main_":

    # running the app

    app.run(debug=False)
```

## HOME.HTML

```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

{
```

```css
  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;
```

```css
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%;
```

```css
        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%;">Nutrtion Image Analysis</div>
  <div class="topnav-right"style="padding-top:0.5%;">


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

<br>

<br>

<br>

<br>

<br>

<h1>

<center>

<h3>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. It ensures compliance with trade and food laws.</h3>

</center>

</h1>

```
</body>

</html>
```

# IMAGE.HTML

```
{% 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">


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

  </h3>


</div>

</div>




{% endblock %}
```

## IMAGE PREDICTION.HTML

```
<!DOCTYPE html>

<html>

<head>
```

```html
<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/be211ad5043a8d05757a3538bdd8f450.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;
```

```css
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;
```

```css
  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;
```

```css
        }
            .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%;">Nutrtion 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>
```

## 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;
```

```css
    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 {
```

```css
  border: 8px solid #f3f3f3; /* Light grey */

  border-top: 8px solid #3498db; /* Blue */

  border-radius: 50%;

  width: 50px;

  height: 50px;

  animation: spin 1s linear infinite;

}


@keyframes spin {

  0% { transform: rotate(0deg); }

  100% { transform: rotate(360deg); }

}
```

## STYLE.CSS

```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;
```

```css
}

.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;
```

```css
    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;

}
```

```css
#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{
```

```css
    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;

}
```

```css
#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%;
```

```css
    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;

}
```

```css
.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 {
```

```css
  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;
```

```css
    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 () {

    // Init

    $('.image-section').hide();

    $('.loader').hide();

    $('#result').hide();


    // Upload Preview

    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);
});


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


    // Show loading animation
    $(this).hide();
    $('.loader').show();


    // Make prediction by calling api /predict
    $.ajax({
        type: 'POST',
        url: '/predict',
        data: form_data,
```

```
            contentType: false,

            cache: false,

            processData: false,

            async: true,

            success: function (data) {

                // Get and display the result

                $('.loader').hide();

                $('#result').fadeIn(600);

                $('#result').html(data);

                console.log('Success!');

            },

        });

    });


});
```

## GITHUB

https://github.com/IBM-EPBL/IBM-Project-42762-1660708736

## PROJECT DEMO LINK

https://drive.google.com/file/d/1nS2W1IAD6AExQqmvprEjBWEAXSq32ghB/view?usp=sharing