

# AI POWERED NUTRITION ANALYSER FOR FITNESS ENTHUSIASTS

## 1. INTRODUCTION

### 1.1 PROJECT OVERVIEW

- ❖ Food is a necessity for human life and has been addressed in numerous medical conventions .
- ❖ Modern dietary assessment and nutrition analysis tools give people additional possibilities to explore nutrition patterns, comprehend their daily eating habits, and keep up a balanced diet.
- ❖ Finding out a food's/fruit's nutritional value is done through nutritional analysis.
- ❖ Information about the chemical composition, processing, quality assurance, and contamination of food is a vital part of analytical chemistry.

### 1.2. PURPOSE

- ❖ The main aim of the project is to build 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

- ❖ As the importance of consuming nutritious foods has grown, new dietary assessment and nutrition analysis tools provide additional chances for people to understand their daily eating habits, explore nutrition trends, and maintain a balanced diet.

### 2.2 REFERENCES

- **HEALTHIFY ME** : CEO - Tushar Vashisht Mathew Cherian and Sachin Shenoy published in 2012 (<https://en.wikipedia.org/wiki/HealthifyMe>)
- **MY PLATE CALORIE TRACKER** : CEO - Sean Moriarty Developer Website: Leaf Group Limited (<https://www.healthnavigator.org.nz/apps/m/myplate-calorie-tracker-app/>)
- **ALPHA COACH EVOLVE** : CEO - Ketan Mavinkurve published on 7th October 2022 (<https://www.alphacoach.app/evolve>)
- **FOODVISOR-NUTRITION AND DIET** : CEO - Charles Boes published on 2nd oct-2018 (<https://www.foodvisor.io/en/>)
- **MY FITNESSPAL** : CEO - Tricia Han published on 2005 (<https://en.wikipedia.org/wiki/MyFitnessPal>)

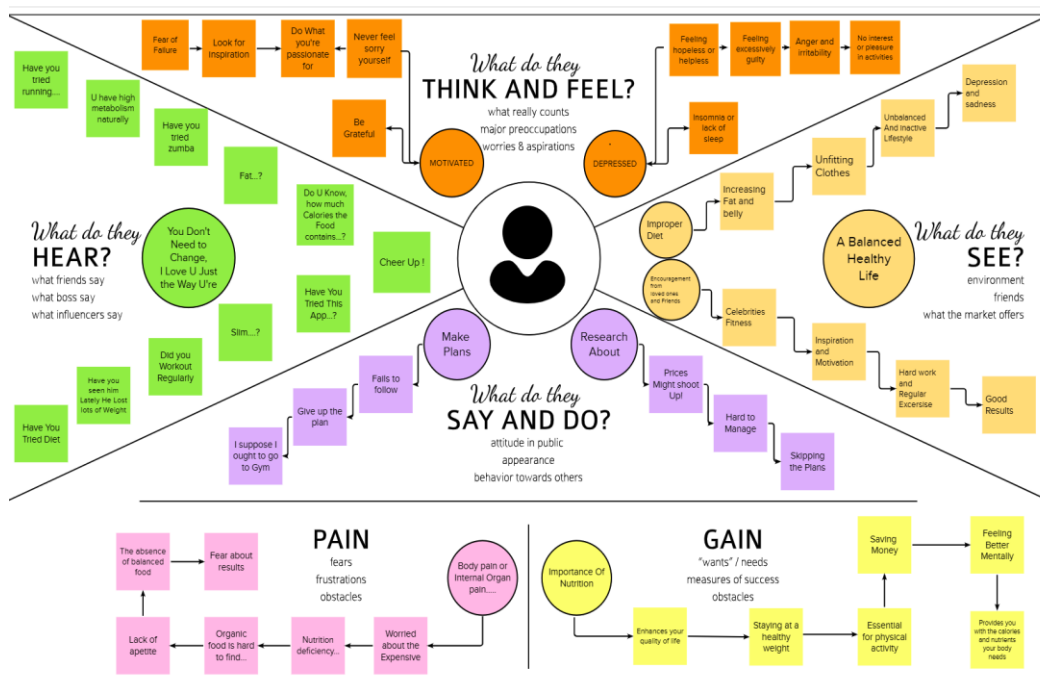
- **CALORIE COUNTER BY FATSECRET** : CEO - Lenny Moses Launched on 2011 ([https://play.google.com/store/apps/details?id=com.fatsecret.android&hl=en\\_IN&gl=US](https://play.google.com/store/apps/details?id=com.fatsecret.android&hl=en_IN&gl=US))
- **NOOM** : CEO - Artem Petakov and Saeju Jeong founded in 2008 (<https://www.noom.com/>)

## 2.3 PROBLEM STATEMENT DEFINITION

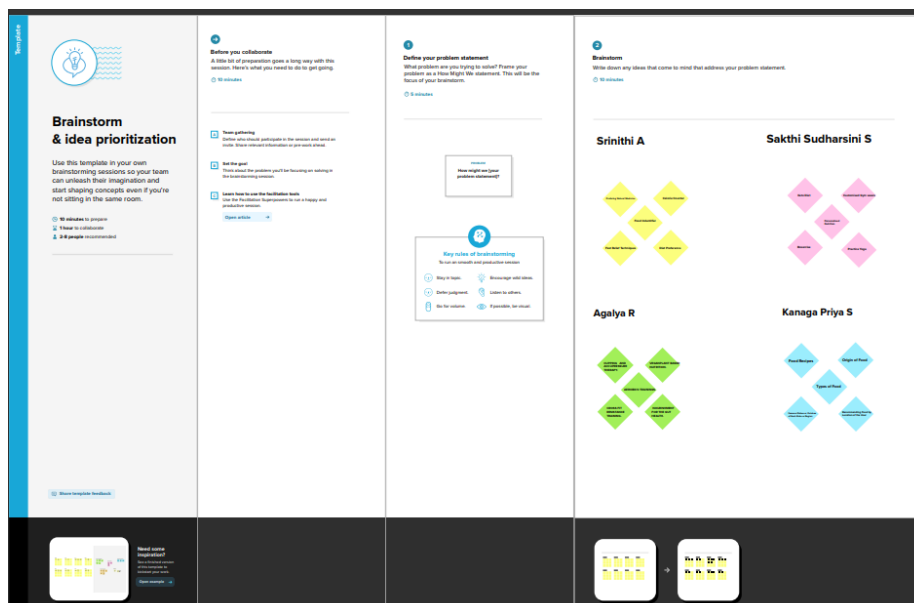
- ❖ Humans find it challenging to eat healthily because of their hectic lifestyles.
- ❖ Sometimes they are unable to determine if the fruits are developed enough to eat or not, and in those moments of need, they want to consume the healthiest fruit possible.

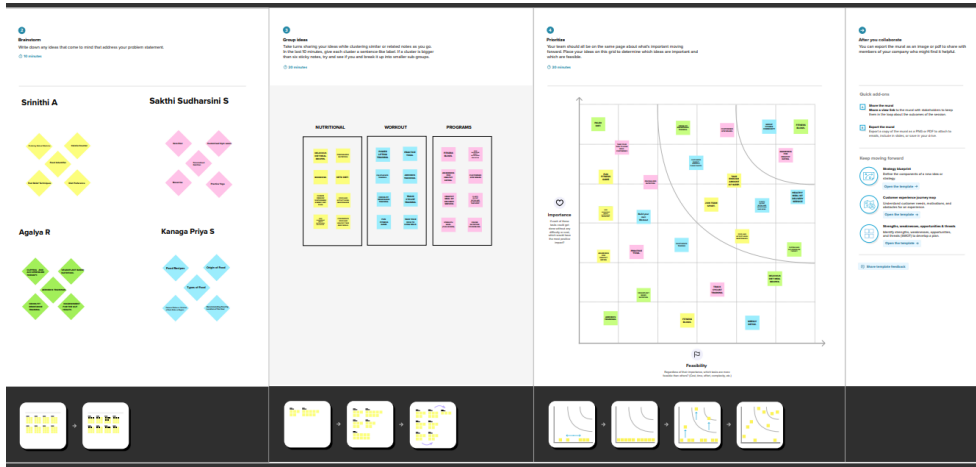
## 3. IDEATION AND PROPOSED SOLUTION

### 3.1 EMPATHY MAP CANVAS



### 3.2 IDEATION AND BRAIN STORMING





### 3.3 PROPOSED SOLUTION

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	A regular person must use cutting-edge AI- based analysing software to identify fruits and vegetables based on colour, texture, form, and other characteristics. At the time of identification, the user must also be aware of the nutritional content of that specific edible.
2.	Idea / Solution description	<p><b>Main Solution:</b></p> <ul style="list-style-type: none"> <li>● Clear and proper identification of the given input data.</li> <li>● Provide nutritional facts based on the obtained data.</li> <li>● Fitness analysis and maintenance as per the user's body conditions</li> </ul> <p><b>Additional benefits:</b></p> <ul style="list-style-type: none"> <li>● Analysis of daily dietary requirements</li> <li>● Daily tracking of dietary consumption thoroughly.</li> </ul>
3.	Novelty / Uniqueness	<ul style="list-style-type: none"> <li>● The availability of fitness plans with addon bonuses</li> <li>● Suggestion of home remedies and simple solutions for basic problems.</li> <li>● An individualized food plan based on health condition and deficiency.</li> <li>● Allowing for diet flexibility helps promote a healthy and effective eating pattern</li> </ul>
4.	Social Impact / Customer Satisfaction	<ul style="list-style-type: none"> <li>● Healthy lifestyle development</li> <li>● Constant calorie management monitoring results in a fitness mindset.</li> </ul>

5.	Business Model (Revenue Model)	<ul style="list-style-type: none"> <li>Consultation with nearest trainers and nutritionist for personalized plans.</li> </ul>
		<ul style="list-style-type: none"> <li>Adopt a specialized diet plan under the direction of an expert.</li> <li>Advertise and offer nutritional supplements and fitness gear.</li> <li>Promotion for fitness centers and hospitals.</li> </ul>
6.	Scalability of the Solution	<ul style="list-style-type: none"> <li>Improving accuracy by expanding the data collection using user input data</li> <li>Storage requirements of a specific food.</li> <li>User friendly UI for everyone to use and get benefit from it.</li> </ul>

### 3.4 PROBLEM SOLUTION FIT

Define CS, fit into CC	<b>1. CUSTOMER SEGMENT(S)</b> <span>CS</span>  People who wish to stay fit and live a healthy lifestyle.	<b>6. CUSTOMER CONSTRAINTS</b> <span>CC</span>  Our customers are unable to access our solution due to network issues and network faults, since there are no other limits because our solution is an application.	<b>5. AVAILABLE SOLUTIONS</b> <span>AS</span>  Exercise is an existing solution. Aerobics and Yoga Pros: The aim is to develop fitness habits that lead to long-term lifestyle changes and long-term improvements in health and well-being. Cons: Time consumption is increased, and there are no adequate instructions based on the user's health situation.	Explore AS, differentiate
	<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <span>J&amp;P</span>  We provide nutritional information about the foods they eat on a daily basis. Thereby providing fitness to the masses and assisting them in staying healthy.	<b>9. PROBLEM ROOT CAUSE</b> <span>RC</span>  The main cause of this problem is a lack of nutrition. Improper nutrition and a lack of regular exercise create a number of diseases, making it difficult to live a healthy life.	<b>7. BEHAVIOUR</b> <span>BE</span>  Customers that have health care, dietary, or fitness concerns will be listed in the chatbox. When you first log in. Customers contribute information about their health state. A solution will be provided after an analysis of the customer's situation.	
Focus on J&P, tap into BE, understand RC	<b>3. TRIGGERS</b> <span>TR</span> The customer will be driven to utilise our application after continual advertising of our application and hearing feedback from their friends and neighbours.	<b>10. YOUR SOLUTION</b> <span>SL</span>  Calories tracking is a key component in all fitness programmes that aids in illness prevention, so regular people can utilise it. The instructor displays the specific fruits calories and offers guided guidance so that the users may execute them correctly.	<b>8. CHANNELS OF BEHAVIOUR</b> <span>CH</span> 8.1 ONLINE The programme is accessed by scanning the fruit and providing nutritional information.	Extract online & offline CH of BE
	<b>4. EMOTIONS: BEFORE / AFTER</b> <span>EM</span> Customers would experience insecurity and poor health prior to using our application. Customers that use our application report improved health and increased self-motivation.		8.2 OFFLINE The user will perform physical activities based on the nutritional information.	
Identify strong TR & EM				

## 4. REQUIREMETN ANALYSIS

### 4.1 FUNCTIONAL REQUIREMENTS

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through form Registration through Gmail Registration through LinkedIn
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Give permission to enter dashboard	Having your details Healthy tips Common food review
FR-4	Diet plans	Mediterranean diet Low-carbohydrates diet High protein diet Diabetic diet
FR-5	Features of subscription	Individual guidance Individual food shedule Chat with mentor
FR-6	Notification	Notify a healthy quotes daily Notify to drink water Notify right time for right food

### 4.2 NON-FUNCTIONAL REQUIREMENTS

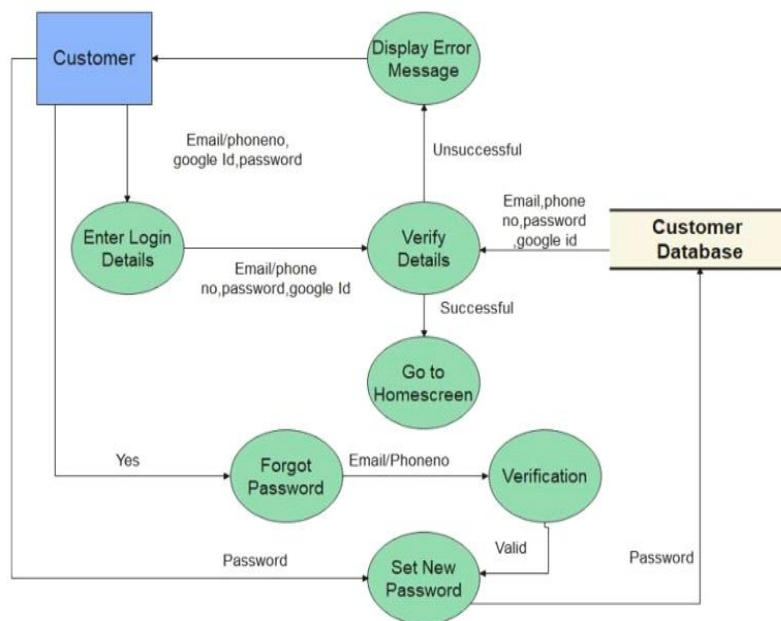
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	As usability is a prerequisite for success of health and wellness through mobile app make use by clients
NFR-2	Security	By using login page, verify through email and phone number by sending OTP
NFR-3	Reliability	Awareness and emphasis on the importance of sustaining personal health care and manage their health

		pervasively
NFR-4	Performance	Information was saved clearly and having a proper icons
NFR-5	Availability	Having proper internet this application will work any time
NFR-6	Scalability	If the client wants a seprate chart or modify the food chart they will proceed to deliver the opinion

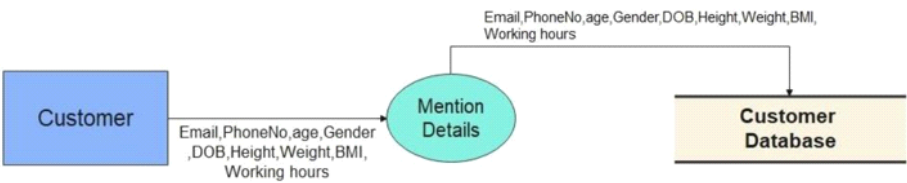
## 5. PROJECT DESIGN

### 5.1 DATA FLOW DIAGRAMS

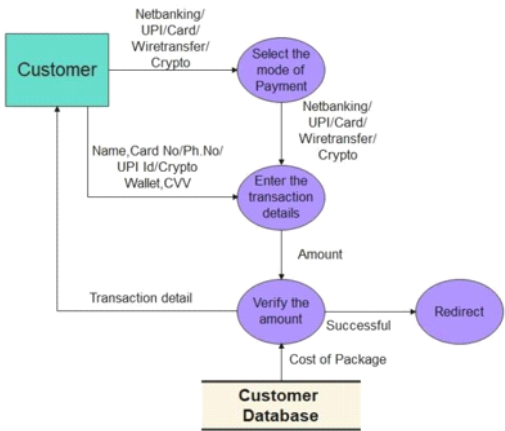
DFD-1(Login):



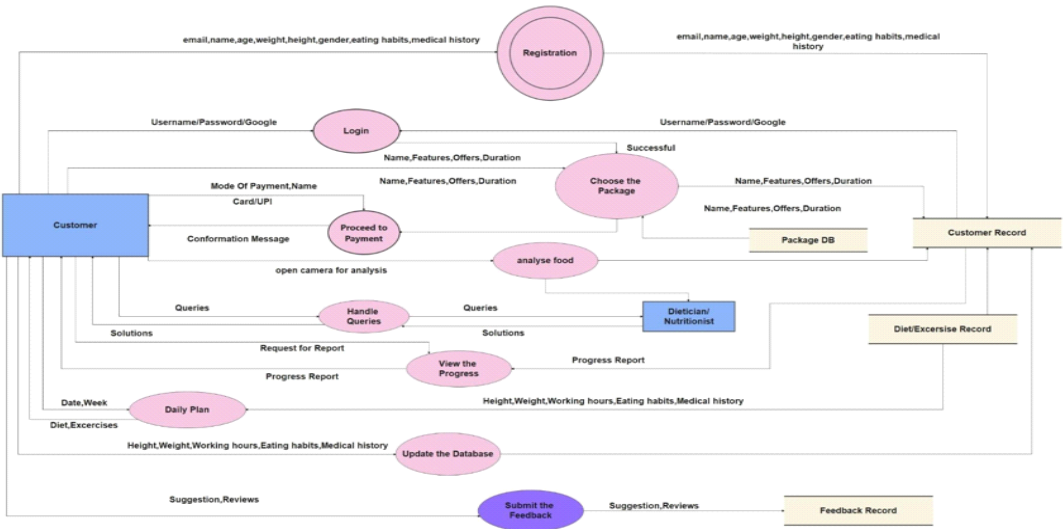
DFD-1(Registration):



DFD-1(Payment):

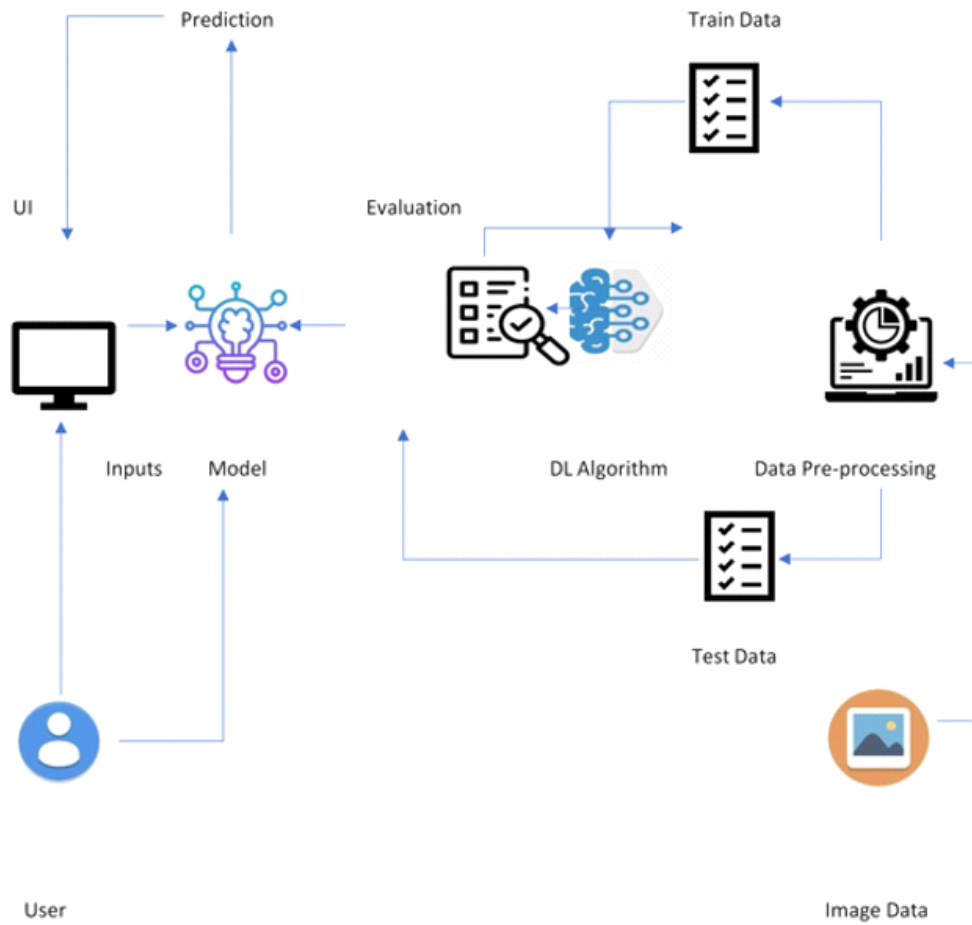


DFD-0:

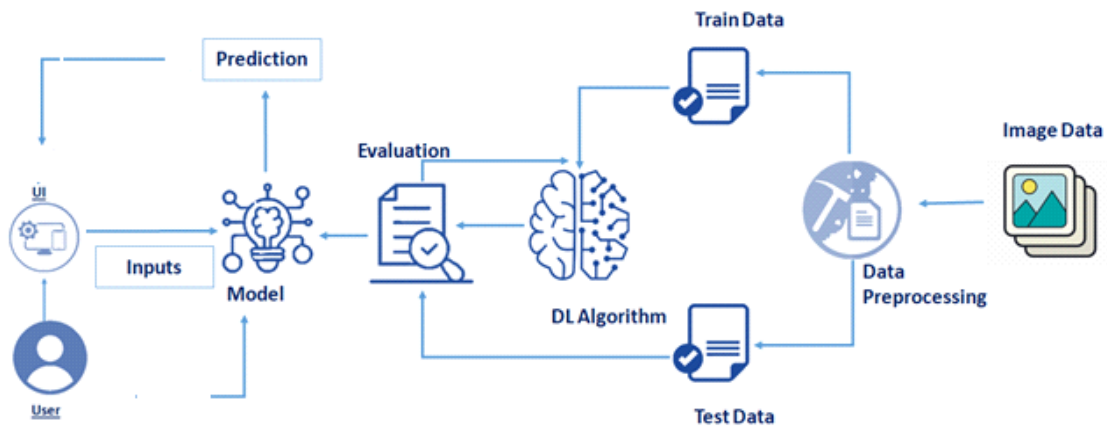


## 5.2 SOLUTION AND TECHNICAL ARCHITECTURE

### SOLUTION ARCHITECTURE:



### TECHNICAL ARCHITECTURE :





## 5.3 USER STORIES

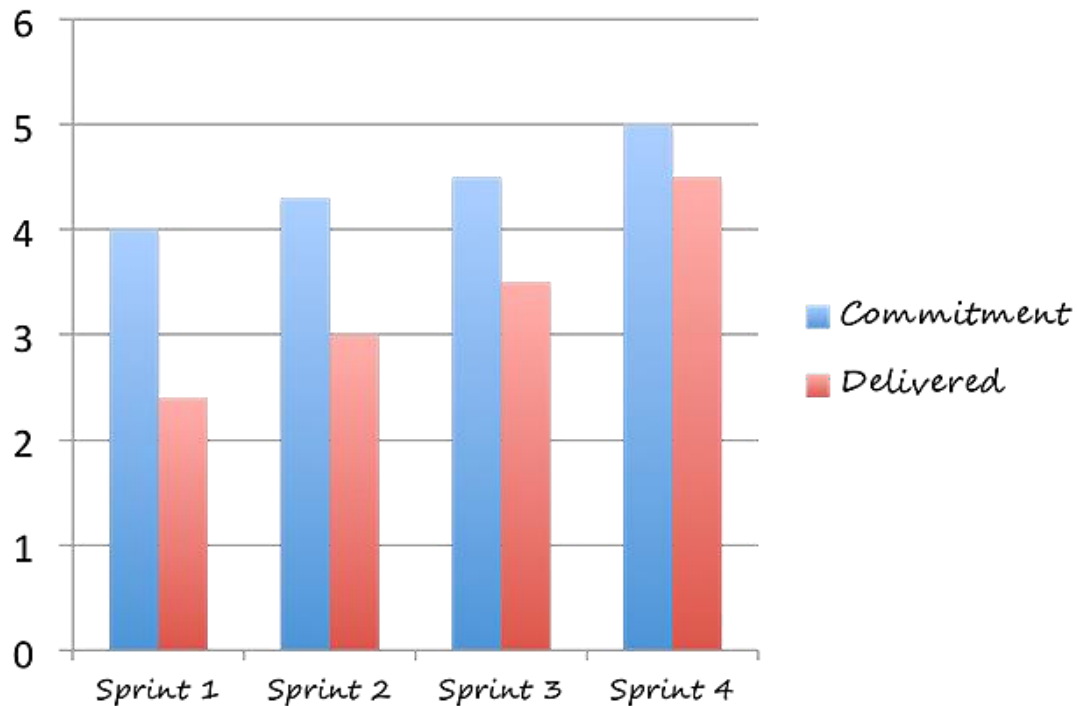
User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	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 Google	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Microsoft	I can access the Dashboard with Microsoft.	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can login the Application by entering password	High	Sprint-1
	Main Interface	USN-6	As a user I can view my calorie intake by clicking photo of the food I eat	Access the proper information about the nutrition and the calorie intake	High	Sprint-2
	Package DB, Dashboard	USN-7	As a user I can choose variety of packages based on my requirement	Selecting an appropriate package	Medium	Sprint-2
Customer Care Executive	Feedbacks DB , Tollfree number, chat bot	USN-8	As a customer care executive, I collect feedbacks from customers	Maintaining proper environment for the customers	High	Sprint-2
Dietitian	Customer Record	USN-9	As a dietitian I provide daily plans for the betterment of the user	Positive results from user	High	Sprint-2
Administrator	Dashboard	USN-10	As an administrator I take care of all the operations which takes place in the app	Zero issues from the user	High	Sprint-2

## 6. PROJECT PLANNING AND SHEDULING

### 6.2 SPRINT DELIVERY SHEDULE

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	31 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	07 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	15	14 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	25	19 Nov 2022

# VELOCITY CHART



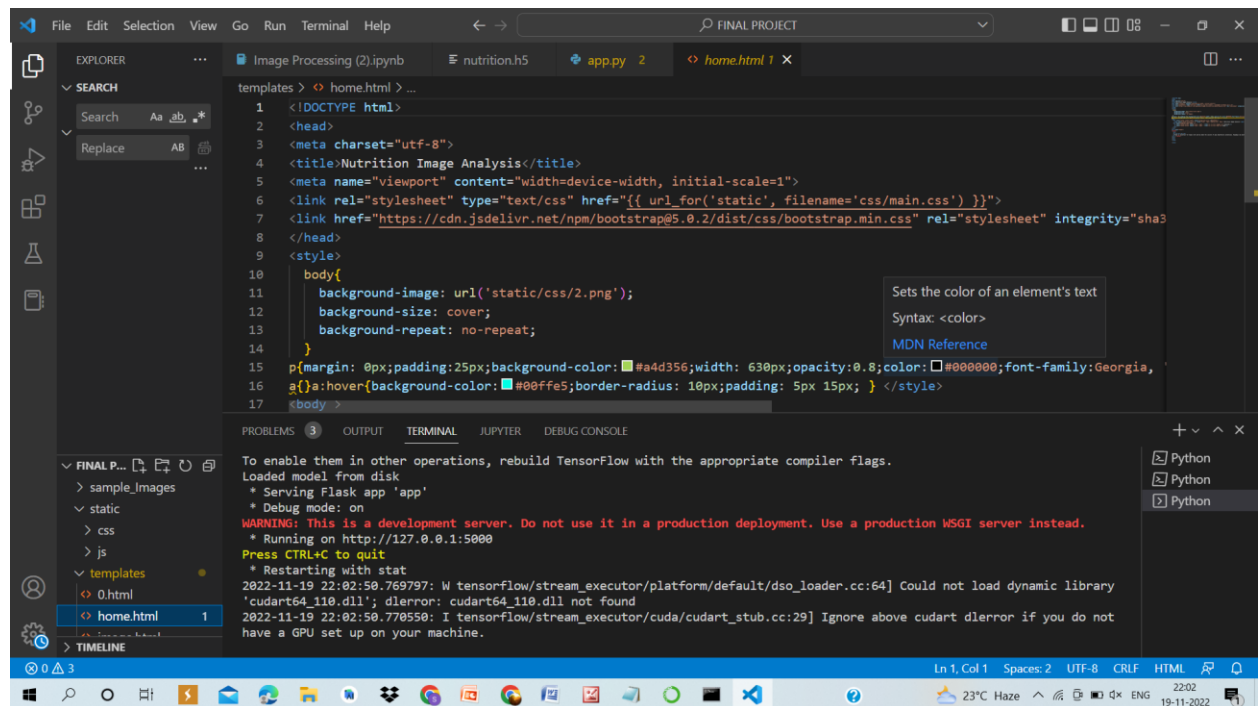
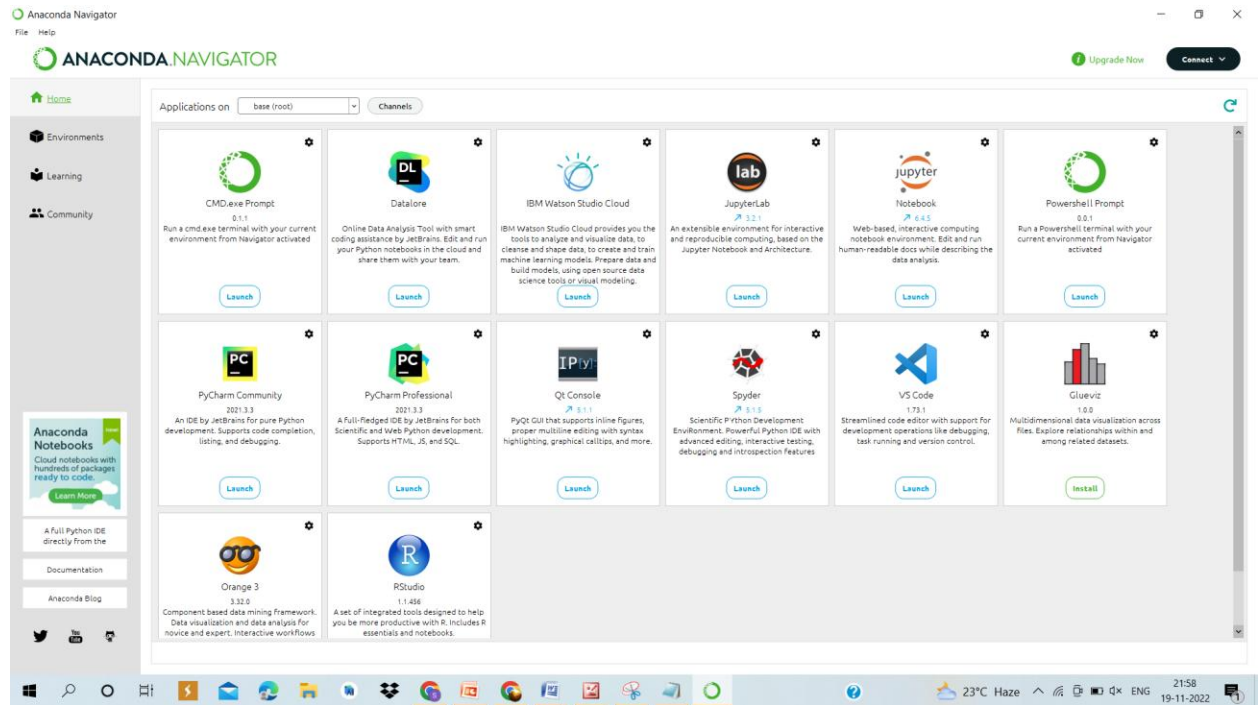
[www.agile-scrum.be](http://www.agile-scrum.be)

## 7. CODING AND SOLUTIONING

### 7.1 FEATURE 1

If you are using anaconda navigator, follow the below steps to download the required packages:

- 1) Open anaconda prompt as administrator
- 2) Type "pip install tensorflow==1.14.0" and click enter.
- 3) Type "pip install keras==2.2.4" and click enter
- 4) Type "pip install open cv-python and click enter
- 5) Type "pip install flask" and click enter



## 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')
```

### 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

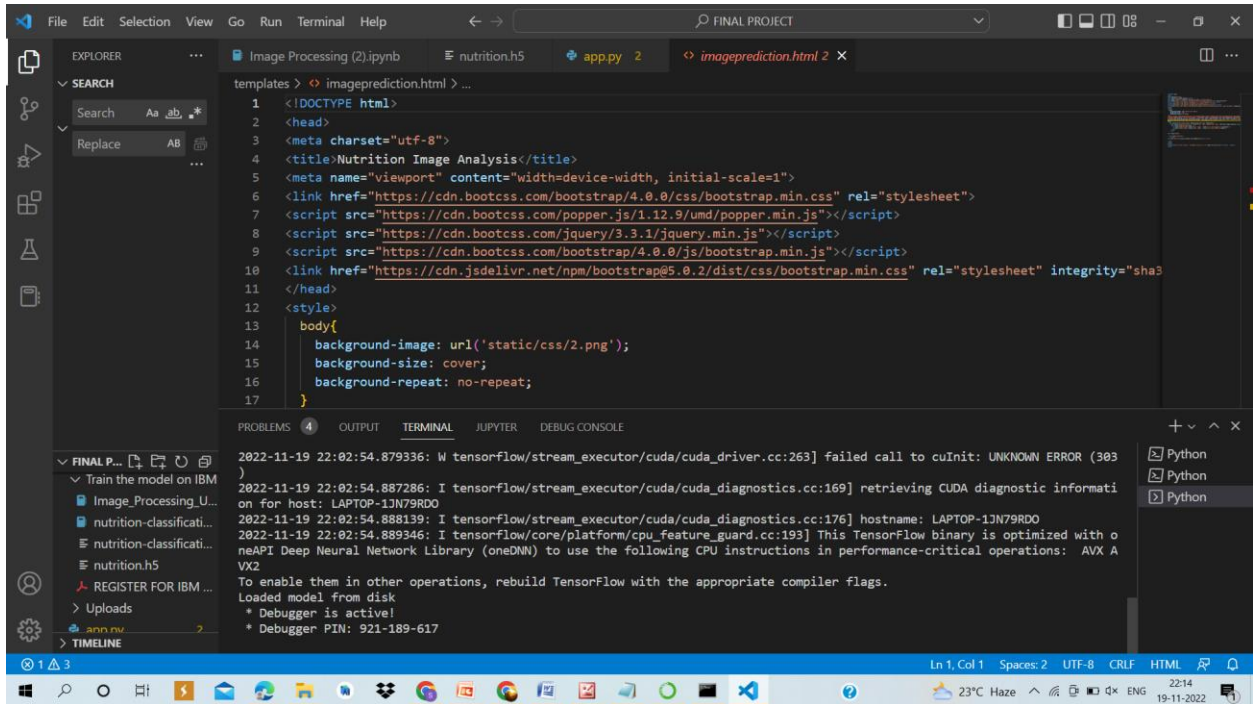
```
[ ] classifier.fit_generator(generator=x_train, steps_per_epoch = len(x_train), epochs=20, validation_data=x_test, validation_steps = len(x_test))

/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. P1
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



The screenshot shows the Visual Studio Code interface. The Explorer panel on the left shows the project structure with files like `imageprediction.html` and `nutrition.h5`. The main editor displays the content of `imageprediction.html`, which is an HTML template for a nutrition image analysis application. It includes Bootstrap CSS, jQuery, and Popper.js, and sets a background image. The terminal at the bottom shows the output of a Jupyter Notebook cell, indicating a TensorFlow installation error on a Windows machine. The error message states: "failed call to cuInit: UNKNOWN ERROR (303)".

```
templates > imageprediction.html > ...
1 <!DOCTYPE html>
2 <head>
3 <meta charset="utf-8">
4 <title>Nutrition Image Analysis</title>
5 <meta name="viewport" content="width=device-width, initial-scale=1">
6 <link href="https://cdn.bootcss.com/bootstrap/4.0.0/css/bootstrap.min.css" rel="stylesheet">
7 <script src="https://cdn.bootcss.com/popper.js/1.12.9/umd/popper.min.js"></script>
8 <script src="https://cdn.bootcss.com/jquery/3.3.1/jquery.min.js"></script>
9 <script src="https://cdn.bootcss.com/bootstrap/4.0.0/js/bootstrap.min.js"></script>
10 <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384"
11 </head>
12 <style>
13   body{
14     background-image: url('static/css/2.png');
15     background-size: cover;
16     background-repeat: no-repeat;
17   }
```

2022-11-19 22:02:54.879336: W tensorflow/stream\_executor/cuda/cuda\_driver.cc:263] failed call to cuInit: UNKNOWN ERROR (303)

2022-11-19 22:02:54.887286: I tensorflow/stream\_executor/cuda/cuda\_diagnostics.cc:169] retrieving CUDA diagnostic information for host: LAPTOP-13N79RDO

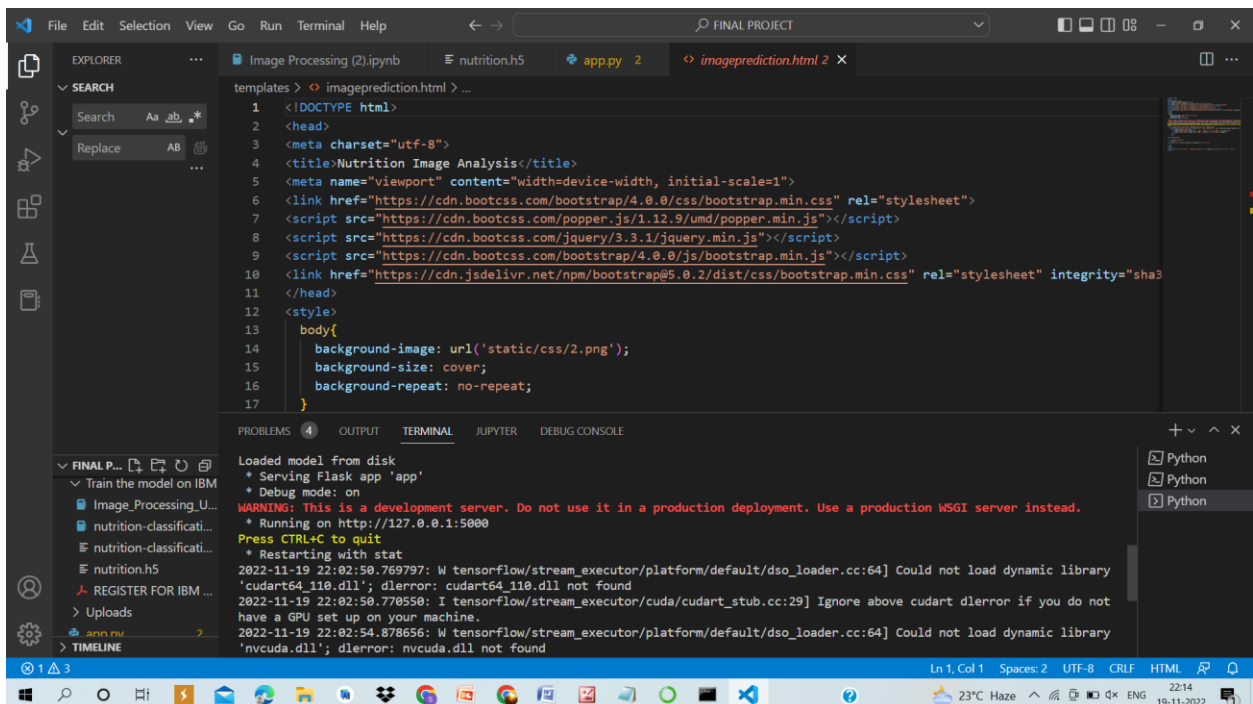
2022-11-19 22:02:54.888139: I tensorflow/stream\_executor/cuda/cuda\_diagnostics.cc:176] hostname: LAPTOP-13N79RDO

2022-11-19 22:02:54.889346: I tensorflow/core/platform/cpu\_feature\_guard.cc:193] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in performance-critical operations: AVX AVX2

To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.

Loaded model from disk

- \* Debugger is active!
- \* Debugger PIN: 921-189-617



The screenshot shows the Visual Studio Code interface. The Explorer panel on the left shows the project structure with files like `imageprediction.html` and `nutrition.h5`. The main editor displays the content of `imageprediction.html`, which is an HTML template for a nutrition image analysis application. It includes Bootstrap CSS, jQuery, and Popper.js, and sets a background image. The terminal at the bottom shows the output of a Jupyter Notebook cell, indicating a Flask application running on a development server. The output includes a warning about using a development server and a message about the Flask app 'app'.

```
templates > imageprediction.html > ...
1 <!DOCTYPE html>
2 <head>
3 <meta charset="utf-8">
4 <title>Nutrition Image Analysis</title>
5 <meta name="viewport" content="width=device-width, initial-scale=1">
6 <link href="https://cdn.bootcss.com/bootstrap/4.0.0/css/bootstrap.min.css" rel="stylesheet">
7 <script src="https://cdn.bootcss.com/popper.js/1.12.9/umd/popper.min.js"></script>
8 <script src="https://cdn.bootcss.com/jquery/3.3.1/jquery.min.js"></script>
9 <script src="https://cdn.bootcss.com/bootstrap/4.0.0/js/bootstrap.min.js"></script>
10 <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384"
11 </head>
12 <style>
13   body{
14     background-image: url('static/css/2.png');
15     background-size: cover;
16     background-repeat: no-repeat;
17   }
```

Loaded model from disk

- \* Serving Flask app 'app'
- \* Debug mode: on

WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.

\* Running on http://127.0.0.1:5000

Press CTRL+C to quit

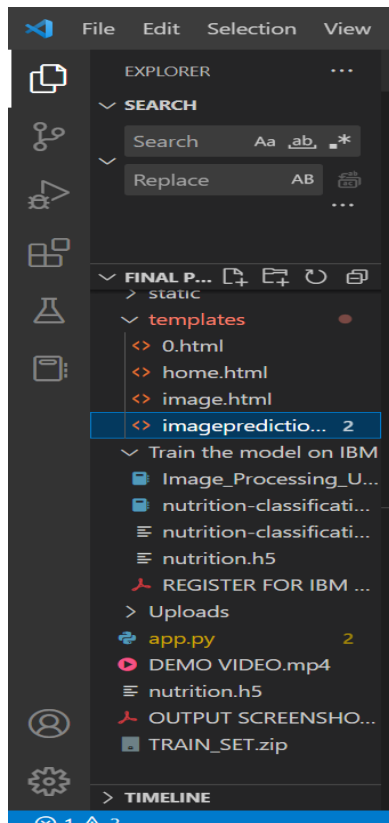
- \* Restarting with stat

2022-11-19 22:02:50.769797: W tensorflow/stream\_executor/platform/default/dso\_loader.cc:64] Could not load dynamic library 'cudart64\_110.dll'; dlopen: cudart64\_110.dll not found

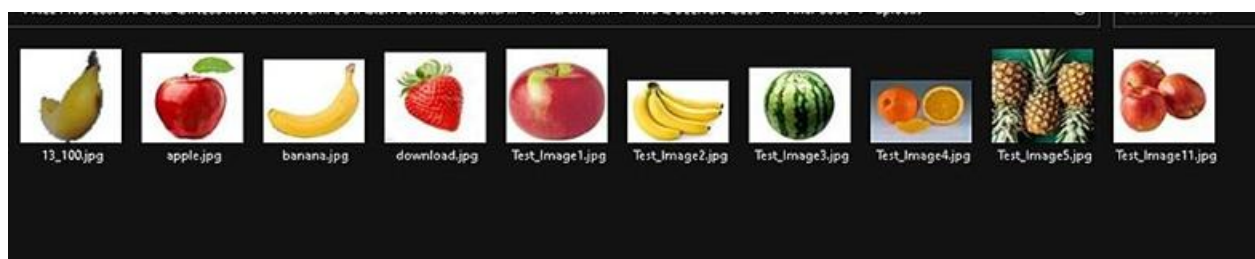
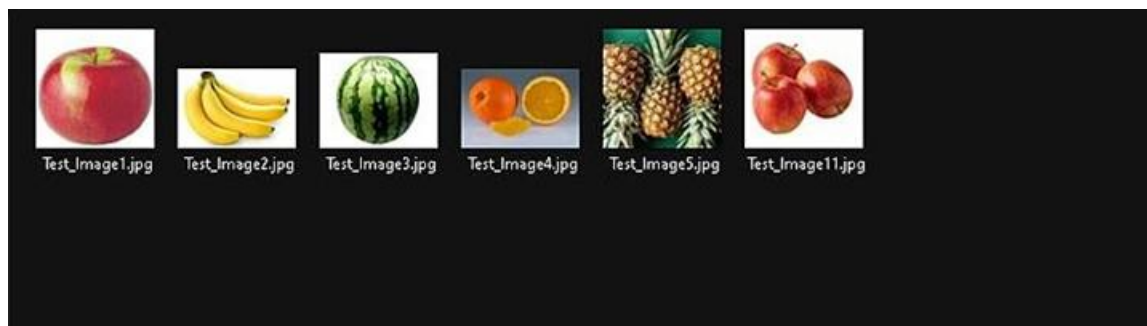
2022-11-19 22:02:50.770550: I tensorflow/stream\_executor/cuda/cudart\_stub.cc:29] Ignore above cudart dlerror if you do not have a GPU set up on your machine.

2022-11-19 22:02:54.878656: W tensorflow/stream\_executor/platform/default/dso\_loader.cc:64] Could not load dynamic library 'nvcuda.dll'; dlopen: nvcuda.dll not found

## 8. TESTING



### 8.1 TEST CASES



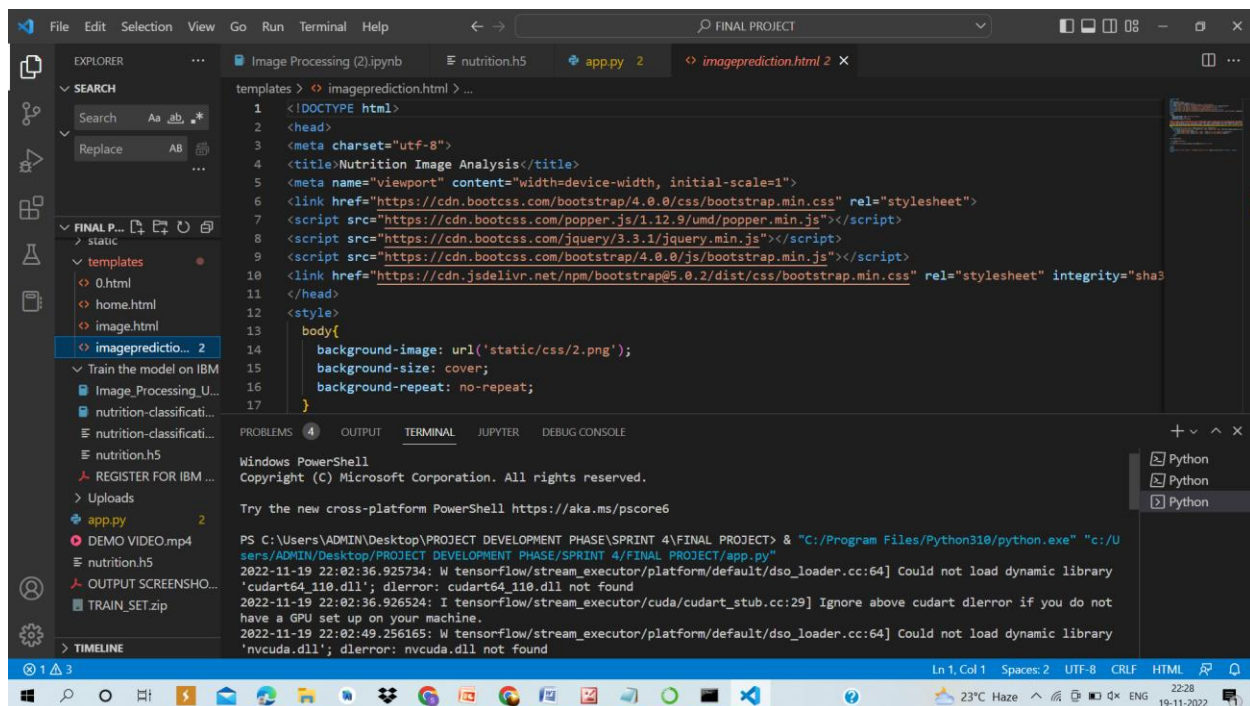


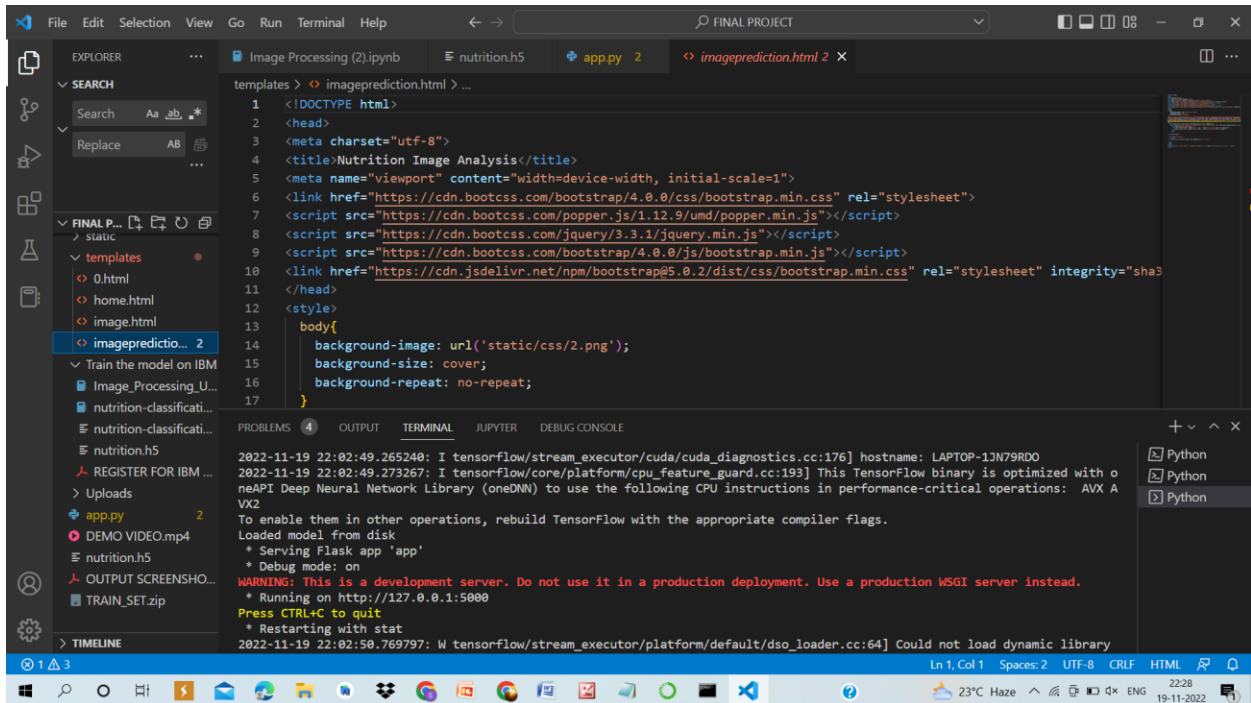
## 8.2 USER ACCEPTANCE TESTING

We are performing White Box Testing for select the package module.

### ➤ PSEUDOCODE FOR SELECT THE PACKAGE MODULE

- 1) Select the package and procedure begins.
- 2) READ the package name, features, offers and duration from the packages data base
- 3) Display the package name, features, offers and duration
- 4) Get the package name features, offers, and duration
- 5) Store the package selected to the customers database
- 6) Proceed to payment screen and other module
- 7) WHILE select package is NULL
- 8) END DO...WHILE
- 9) Procedure Ends





## 9. RESULTS

The AI-POWERED NUTRITION ANALYZER FOR FITNESS ENTHUSIASTS is runned successfully.

## 10. ADVANTAGES AND DIS ADVANTAGES

### ADVANTAGES

- Significant level of accuracy in detecting details.
- Provides a user-friendly interface

### DISADVANTAGES

- Couldn't keep track of the calorie intake into the body.
- Limited fruit classification.



## 11. CONCLUSION

Engaging in regular physical activity may produce improvements in an individual physical health, cognitive performance, and psychological well-being. Physical benefits include, but are not limited to, reduced risk for diseases, and improvements in physical functioning, fitness, and overall quality of life.

The purpose of a fitness app is to provide the user with instructions and examples of one or more types of exercise physical activity and nutritional programs.

## 12. FUTURE SCOPE

- Offers payment convenience in personal training subscriptions.
- Useful articles
- Video instructions
- Diet plans
- Individual Progress Tracking
- Live video From Training sessions

## 13. APPENDIX

### 0.HTML

```
<!DOCTYPE html>
<head>
<meta charset="utf-8">
<title>Nutrition Image Analysis</title>
<meta name="viewport" content="width=device-width, initial-scale=1">
</head>
<div class="results">
<p style="padding-top: 10px; color:#0000ff;text-decoration: none;"><h5 style="color:blue;text-decoration: none;">Food Classified is: <h5><b><h5 style="color:red;text-decoration: none;"><u>{{showcase1}}<h5><br><h5 style="color:red;text-decoration: none;"><u>{{showcase}}<h5></p>
</div>
</html>
```

## HOME.HTML

```
<!DOCTYPE html>
<head>
<meta charset="utf-8">
<title>Nutrition Image Analysis</title>
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" type="text/css" href="{{ url_for('static', filename='css/main.css') }}">
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="stylesheet"
integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTWFspD3yD65VohhpUuCOmLASjC" crossorigin="anonymous">
</head>
<style>
    body{
        background-image: url('static/css/2.png');
        background-size: cover;
        background-repeat: no-repeat;
    }
p{margin: 0px;padding:25px;background-color:#a4d356;width: 630px;opacity:0.8;color:#000000;font-family:Georgia,
'Times New Roman', Times, serif;font-style:initial;border-radius:20px;font-size:17px;}
a{a: hover{background-color:#00ffe5;border-radius: 10px;padding: 5px 15px; } </style>
<body >
    <nav class="navbar navbar-light" style="background-color: #48a9fda5;">
        <span class="navbar-brand mb-0 h1" style="float: right; padding-left: 80px;">Nutrition Image Analysis</span>
    <div style="padding-right:100px ;">
        <a class="navbar-brand" style="float: right; " href="{{ url_for('image1') }}">Classify</a>
        <a class="navbar-brand" style="float: right; " href="{{ url_for('home') }}">Home</a>
    </div>
</nav>
<div class="home1">
<center>
    <div>
        <br><br><br><br><br>
        <p>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.</p>
    </div></center>
</div>
</div>
</body>

</html>
```

## IMAGE.HTML

```
{% extends "imageprediction.html" %} {% block content %}
<div style="float:left; padding-top: 5px;">
<h5>Upload image to classify</h5>
<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" style=" display: none;">
    </form>
    <div><center>
```

```

        <div class="image-section" style="display:none;">
            <div class="img-preview" style="width: 256px;height: 256px;padding-left:0px; ">
                <div id="imagePreview" style=" width: 100%;height: 100%;background-size: 256px
256px;background-repeat: no-repeat;"></div>
            </center>
        </div>
        <center><div><button type="button" class="upload-label "
id="btn-predict">Classify</button></center></div></div>
        <div class="loader" style=" border: 8px solid #f3f3f3;border-top: 8px solid #48a9fda5;;border-radius:
50%;width: 50px;height: 50px;animation: spin 1s linear infinite;"></div>
        <h5 id="result" style="text-decoration: none;"><span><p ><h5>Food Classified is :
<h5><b><u>{{showcase}}</u>{{showcase1}}</p> </span></h5>
</div>

```

## IMAGE PREDICTION.HTML

```

<!DOCTYPE html>
<head>
<meta charset="utf-8">
<title>Nutrition Image Analysis</title>
<meta name="viewport" content="width=device-width, initial-scale=1">
<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="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="stylesheet"
integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTWfSpd3yD65VohhpUUCOmLASjC" crossorigin="anonymous">
</head>
<style>
    body{
        background-image: url('static/css/2.png');
        background-size: cover;
        background-repeat: no-repeat;
    }
    .home2{ height: 100%;background-size: cover;height:545px ;width: 1280px;margin-top: 0px;padding-top: 0px;padding:
0px;margin: 0px;"
    }.upload-label{display: inline-block;border: none;border-radius: 10px;padding: 10px 25px;background:
#48a9fda5;color: #fff;cursor: pointer;
    }.upload-label:hover{background: #48a9fda5;border: none;color: #ffffff;}@keyframes spin { 0% { transform:
rotate(0deg); } 100% { transform: rotate(360deg); } }
    a{a:hover{background-color:#00ffe5;border-radius: 10px;padding: 5px 15px; }</style>
</body>
    <nav class="navbar navbar-light" style="background-color: #48a9fda5;">
        <span class="navbar-brand mb-0 h1" style="float: right; padding-left: 80px;">Nutrition Image Analysis</span>
        <div style="padding-right:100px ;">
            <a class="navbar-brand" style="float: right; " href="{{ url_for('image1')}}">Classify</a>
            <a class="navbar-brand" style="float: right; " href="{{ url_for('home')}}">Home</a>
        </div>
    </nav>

<div class="home2">

    <div class="container">
        <center>
<div id="content">{% block content %}{% endblock %}</div></center>

    </div>
</body>
<footer>

```

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

## APP.PY

```
# -*- coding: utf-8 -*-
"""
Created on Sun Nov  6 11:55:47 2022

@author: HP
"""
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')
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)
        print("prediction",pred) #printing the prediction
        index=['APPLE','BANANA','ORANGE','PINEAPPLE','WATERMELON']

        result=str(index[pred[0]])
        print(result)
        x=result
        result=nutrition(result)
        print(result)

        return render_template("0.html",showcase=(result),showcase1=(x))
def nutrition(index):
```

```

import requests

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

querystring = {"query":index}

headers = {
    "X-RapidAPI-Key": "226fdb7ca6mshc43f1bfd5e9705dp164933jsn6809eaf3d5e3",
    "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=True)

```

## RUN APPLICATION

