

AI - POWERED NUTRITION ANALYZER FOR FITNESS ENTHUSIASTS

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1.INTRODUCTION

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.

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

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 .

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.

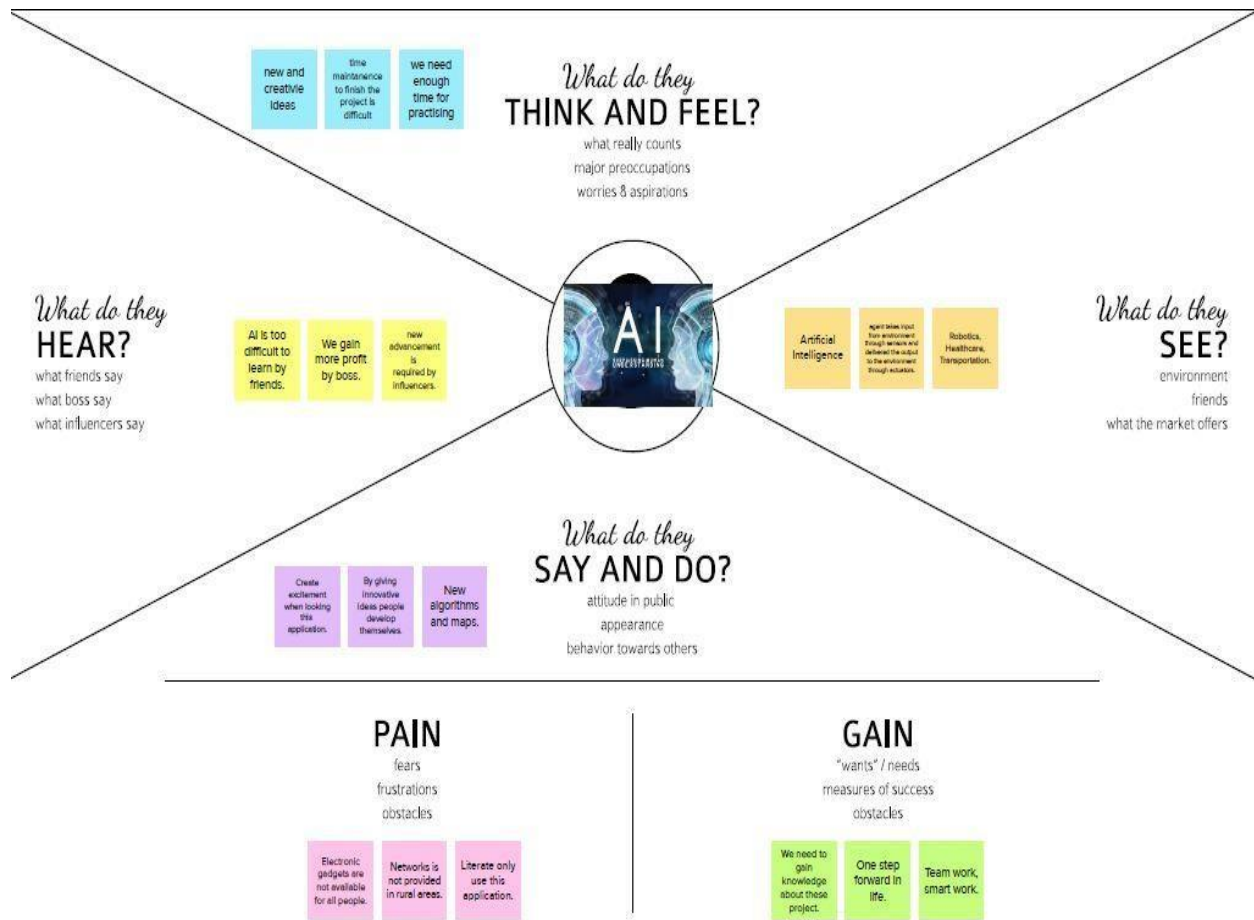
PROBLEM STATEMENT DEFINITION

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.

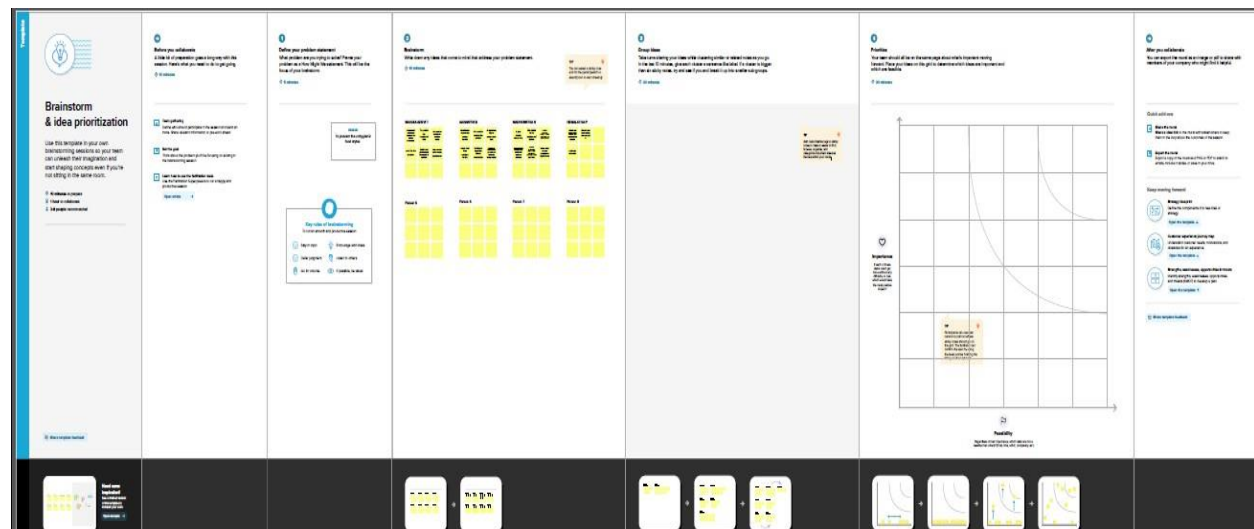
The World Health Organisation(WHO) data reveals that more than 60% of world's population is not physically active enough to induce health benefits.

3. IDEATION & PROPOSED SOLUTION

EMPATHY MAP CANVAS



IDEATION & BRAINSTORMING



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.).

PROBLEM SOLUTION FIT

Problem-Solution fit canvas 2.0		PROJECT TITLE: AI-POWERED NUTRITION ANALYZER FOR FITNESS ENTHUSIASTS TEAM ID: PNT2022TMID01196	
Purpose / Vision To choose a right college based on scores			
Define CS, fit into	1. CUSTOMER SEGMENT(S) CS Who is your customer? <div>Consults on Nutrition</div>	6. CUSTOMER CC What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices. <div>Lack of knowledge on understanding everything and go beyond the calorie counting, scared on getting help from the resources on analyser, whether the premium amount for the analyzer is acceptable by the customer.</div>	5. AVAILABLE SOLUTIONS AS Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notmaking <div>They can hire a personal Nutritionist. They can consult dietitians. They can use apps. There are many apps like My Fitness Pal, Chronometer, Life sum, etc..... which people resort to for good health.</div>
	2. JOBS-TO-BE-DONE / PROBLEMS J&P Which jobs-to-be-done (or problems) do you address for your customer? There could be more than one, explore different sides. <div>Healthy diet plan, Quality control of food, Nutrition rich food recommendations, Different nutrition pattern exploration, Nutritional analysis, Classification of food based on its nutrients.</div>	9. PROBLEM ROOT CAUSE RC What is the real reason that this problem exists? What is the back story behind the need to do this job? i.e. customers have to do it because of the change in regulations. <div>Due to fast paced lifestyle, Availability of low quality and nutrition less food, Improper diet plan, Lack of health related awareness, Emotional eating, not following strict food timings.</div>	7. BEHAVIOUR BE What does your customer do to address the problem and get the job done? i.e. directly related. Find the right solar panel installer, calculate usage and benefits, indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace) <div>Consulting Doctors or Nutritionist , Enquiries about the food to be consumes, Refer articles such as Magazine, Newspaper , Watching Exercises and Yoga and do it , Searching in Websites etc.....</div>
Focus on J&P, tap into BE, understand	3. TRIGGERS TR What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news. <div>To maintain good health and to regulate their eating and good intake of foods.</div>	10. YOUR SOLUTION SL If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour. <div>Food has the power to influence metabolism and health directly. If food is the reason, Nutrition is the result. Hence we should give high importance to proper nutrition. Our project "AI powered Nutrition Analyzer" helps people to get to know the nutrition content in their food and improve body health.</div>	8. CHANNELS of BEHAVIOUR CH 8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7 <div>Referring Articles, Checking Websites related on nutrition, consulting nutritionist on Online, etc.....</div>
	4. EMOTIONS: BEFORE / AFTER EM How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure > confident, in control - use it in your communication strategy & design. <div>Before Depressed, Exhausted, Confused, Tense on body shape After: Confidence, delighted, encouraged, motivated, customer became mentally and physically fit.</div>		8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development <div>Consulting Doctors, Enquiries about the food to be consumes, Eating Balanced food, Doing Exercises and Yoga etc.....</div>
Identify strong TR & EM			Extract online & offline CH of BE



4.REQUIREMENT ANALYSIS

FUNCTIONAL REQUIREMENTS

FR NO.	FUNCTIONAL REQUIREMENTS(EPIC)	SUB REQUIREMENT (STORY/SUBTASK)		
FR-1	USER REGISTRATION	❖ Registration through Gmail ❖ Registration through Mobile Number ❖ Registration through Face-book		
FR-2	USER CONFIRMATION	❖ Confirmation via Email ❖ 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. ❖ 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. ❖ With already given details the system can alert the consumer if any content of their allergies ,it can alert the consumer		

NON FUNCTIONAL REQUIREMENTS

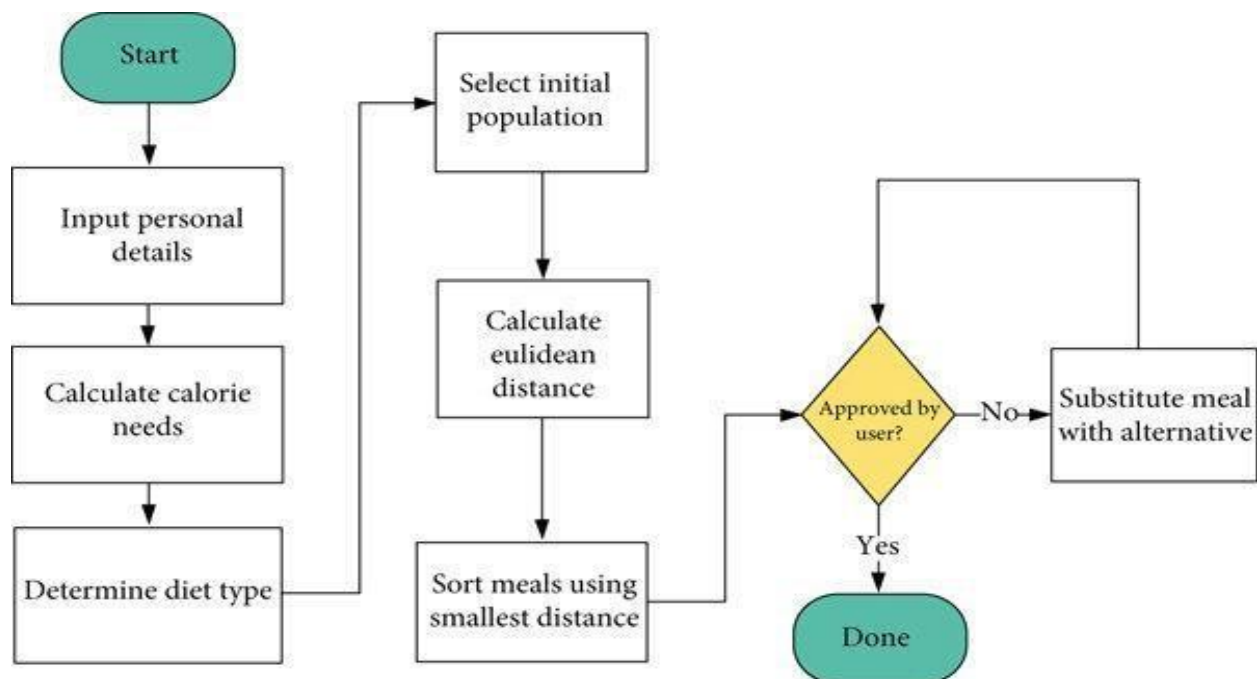
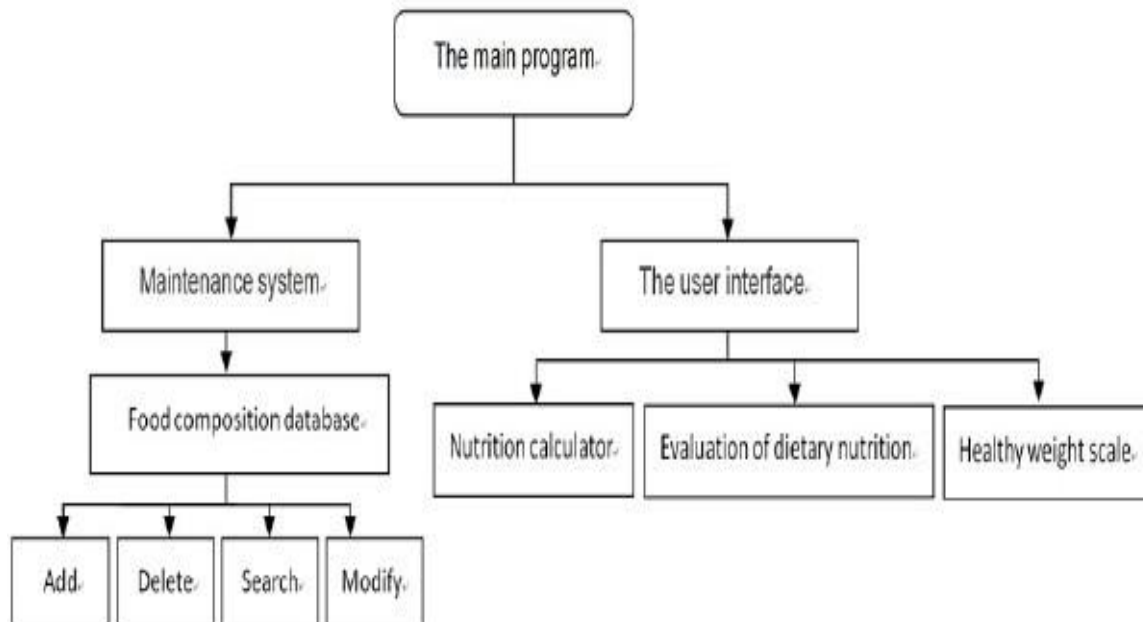
FR.NO	NON-FUNCTIONAL REQUIREMENTS	DESCRIPTION
NFR-1	USABILITY	<ul style="list-style-type: none"> ❖ No training is required to access the Nutrition Analyzer. ❖ The results should be loaded within 30 seconds. ❖ It should be user friendly and comfortable. ❖ It should be simple and easy to use. ❖ The results should be self explanatory so that it can be understood by common people.
NFR-2	SECURITY	<ul style="list-style-type: none"> ❖ AI powered nutrition analyzer for fitness should contain more security in which our data which entered or maintained should be more security. ❖ With the help of the username and password it provides more security in which it can access more securable and the data are private. ❖ It should be social-economic which should access to sufficient and safe to use.
		<ul style="list-style-type: none"> ❖ It is Important that the AI powered nutrition analyzer for fitness provides should Must reliable. ❖ 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. ❖ 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

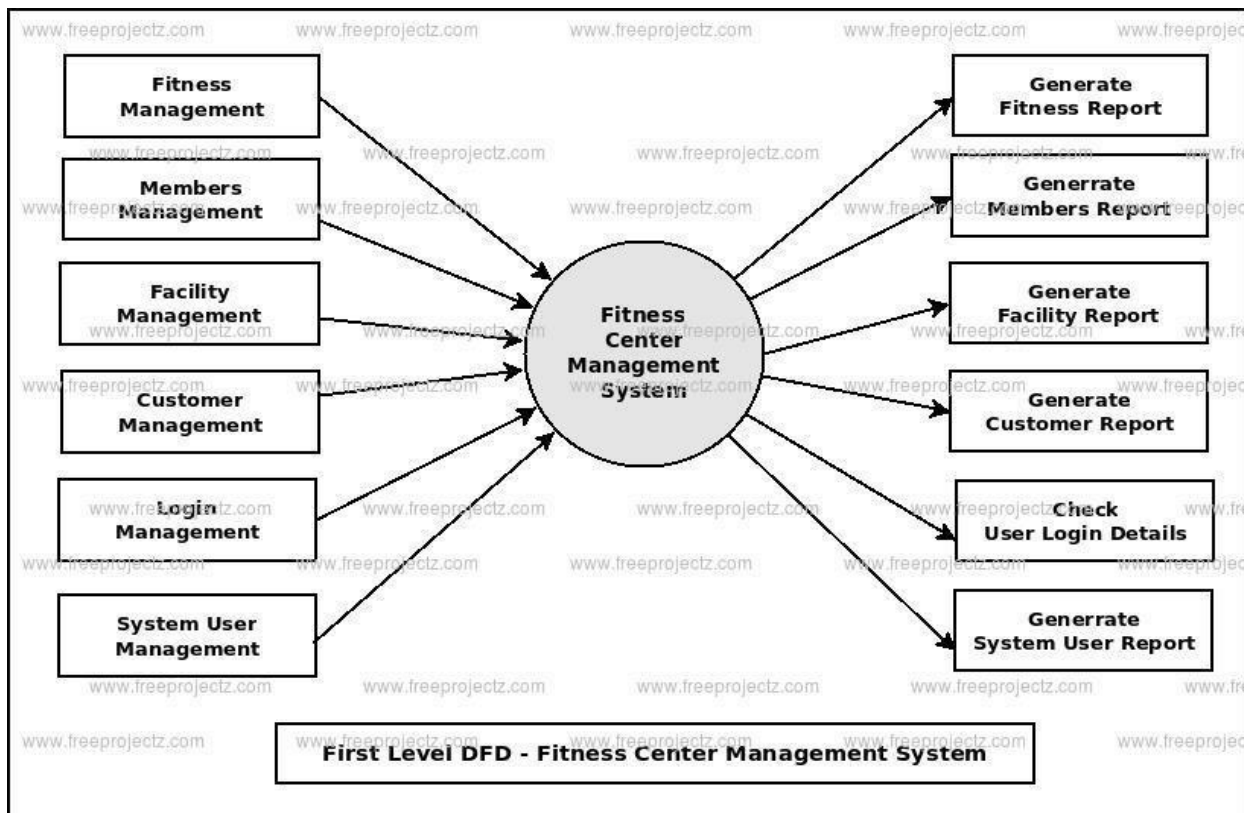
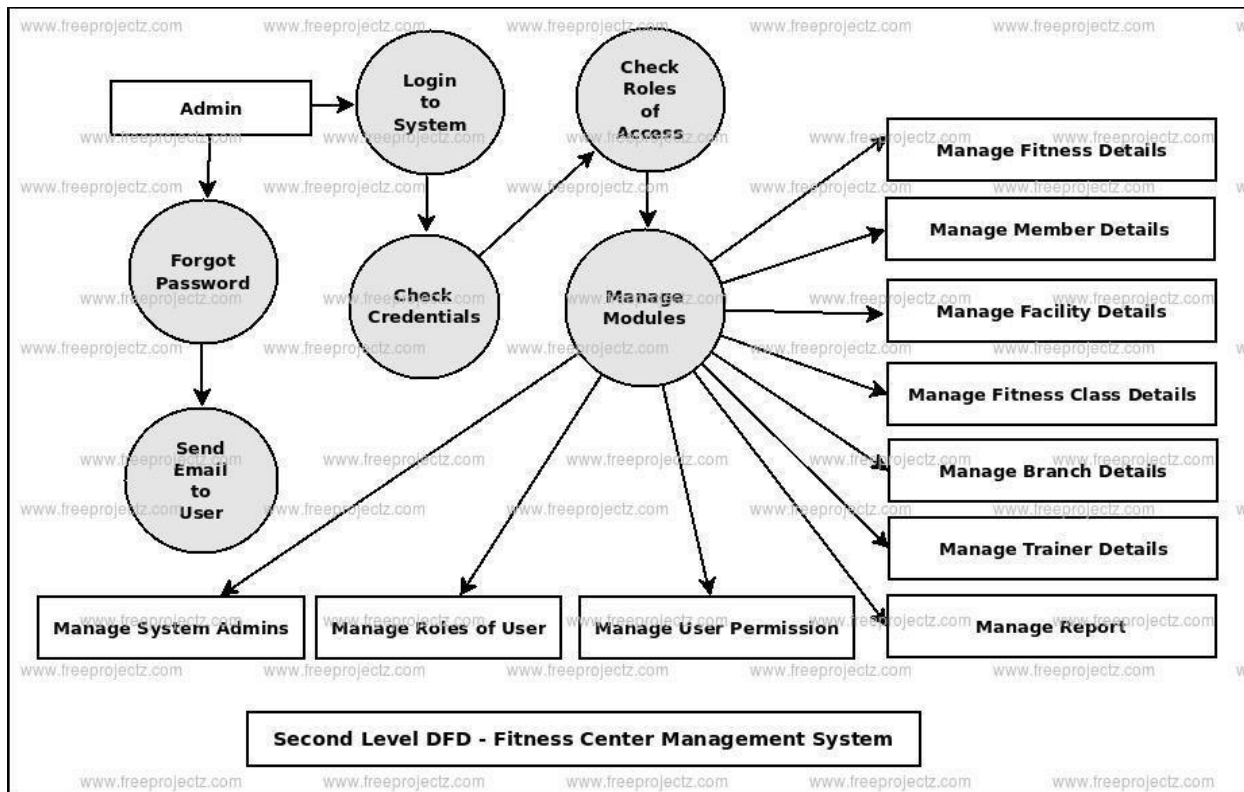
NFR-3	RELIABILITY	<p>fitness should have proper data and information in which we can get a correct information about it and also get a proper guidance about it.</p> <ul style="list-style-type: none"> ❖ With the proper guideness and proper information in which we can get a nutrition properly and we can have get a proper fitness plan. ❖ 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	<ul style="list-style-type: none"> ❖ It should provide more number of users to consume at any time and at any place. ❖ It should provide Reliability, Scalability, Security and Usability. ❖ It should contain minimum data while over-paging the websites or application and it is necessary that it should not exceed more than 20mb. ❖ While consuming the page it should provide the response as much as possible without any delay or time traffic. ❖ The connection should e properly maintained so that it can use while travelling or in remote places. ❖ The nutritious food to meet their dietary needs and the food

		<p>preferences for an active and healthy life.</p> <ul style="list-style-type: none"> ❖ It should be consistently access, availability and affordability of foods and beverages that promote well-being and prevent from diseases. ❖ It should suitable in all situations that exists to all people, at all times.
NFR-5	AVAILABILITY	<ul style="list-style-type: none"> ❖ Easy to access Data. ❖ Avoids Data redundancy and inconsistency. ❖ Fast and Efficient. ❖ User Friendly.
NFR-6	SCALABILITY	<ul style="list-style-type: none"> ❖ 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. ❖ 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. ❖ The premium amount for analyzer is very much optimum.

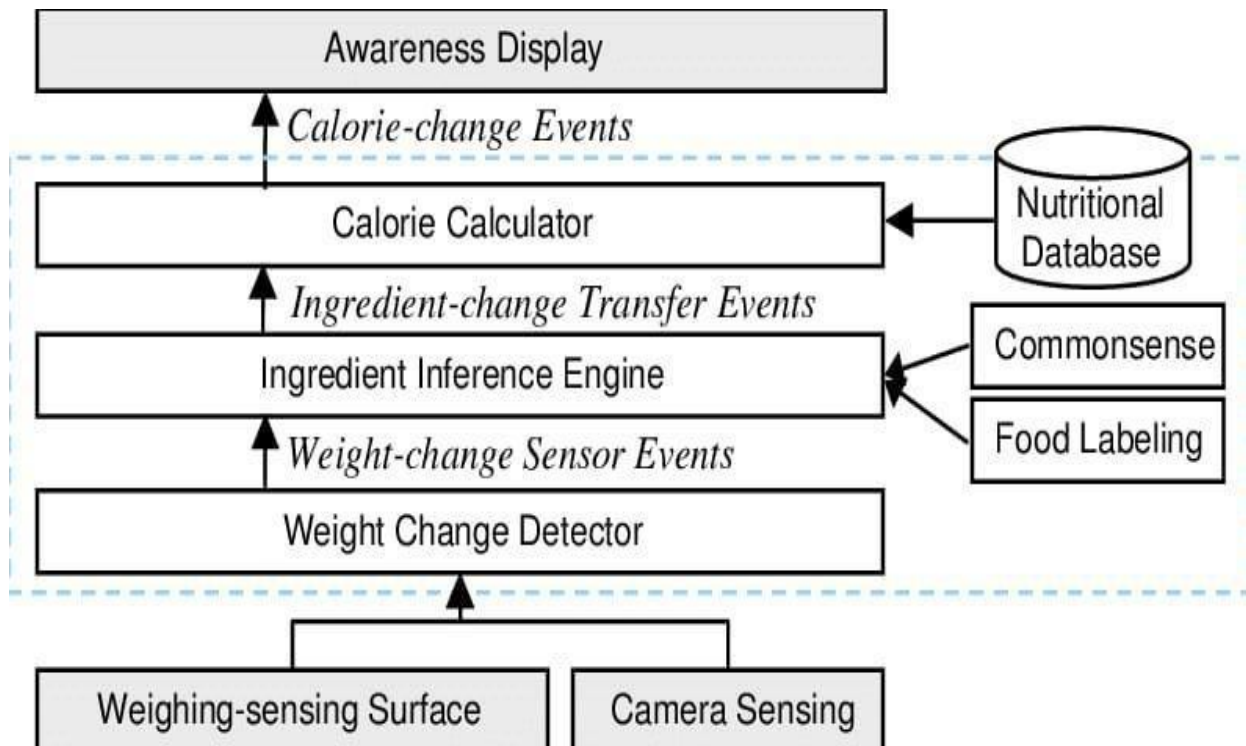
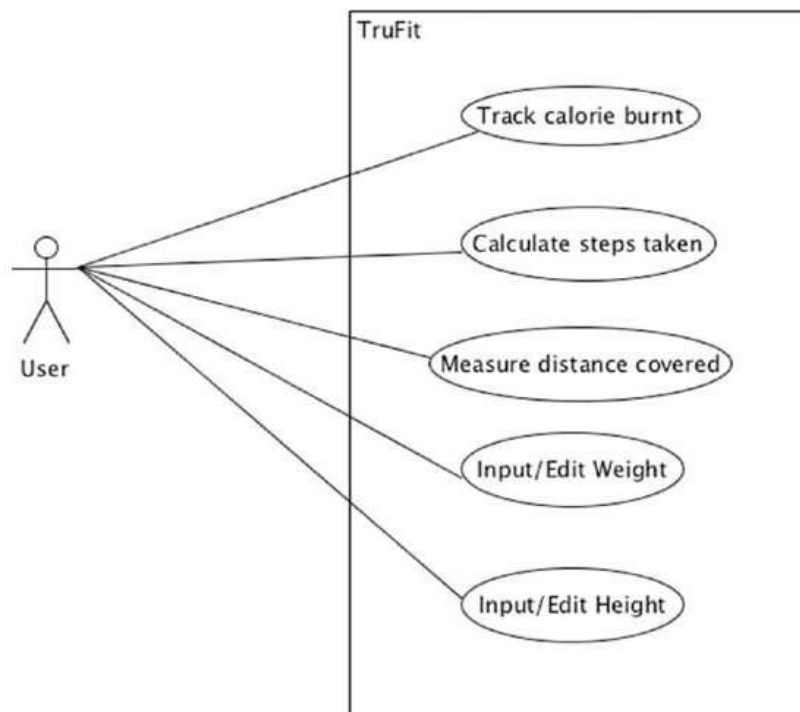
5.PROJECT DESIGN

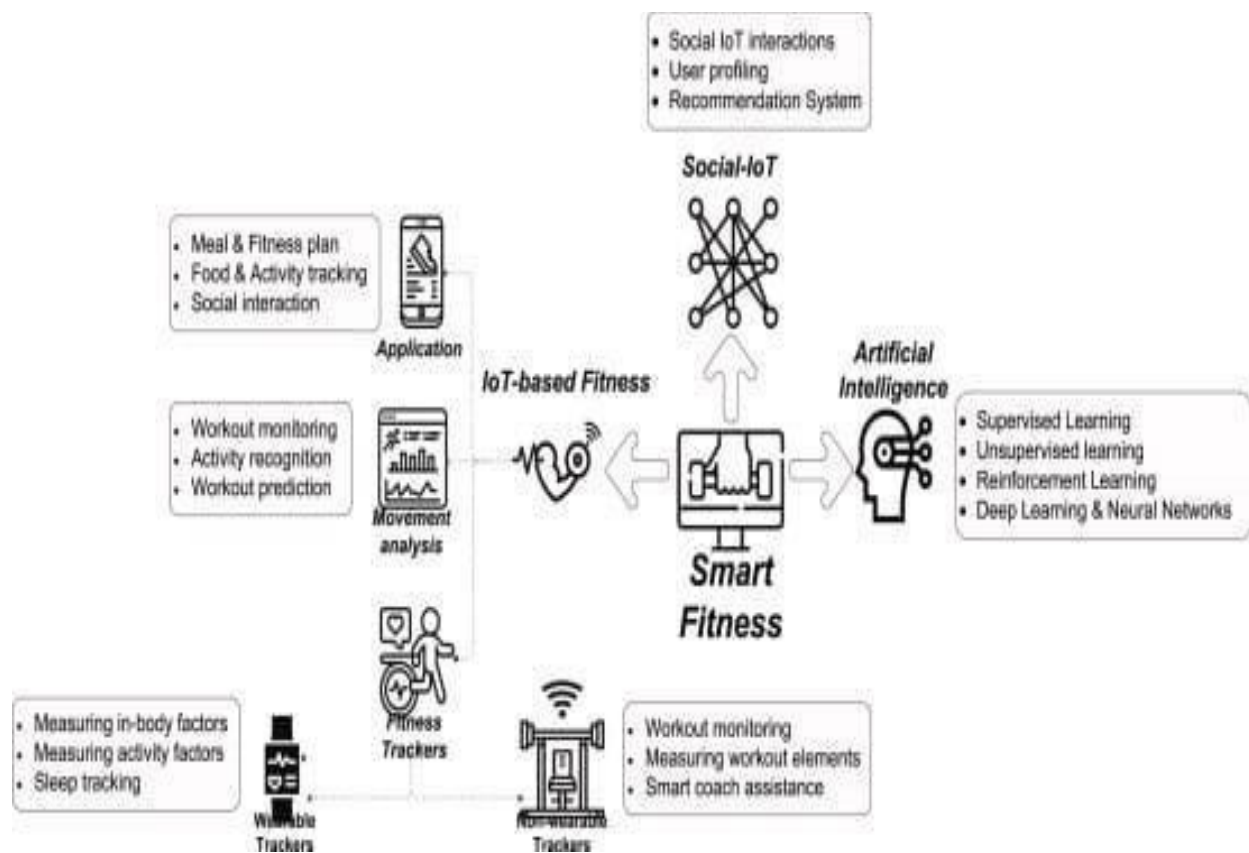
DATA FLOW DIAGRAMS

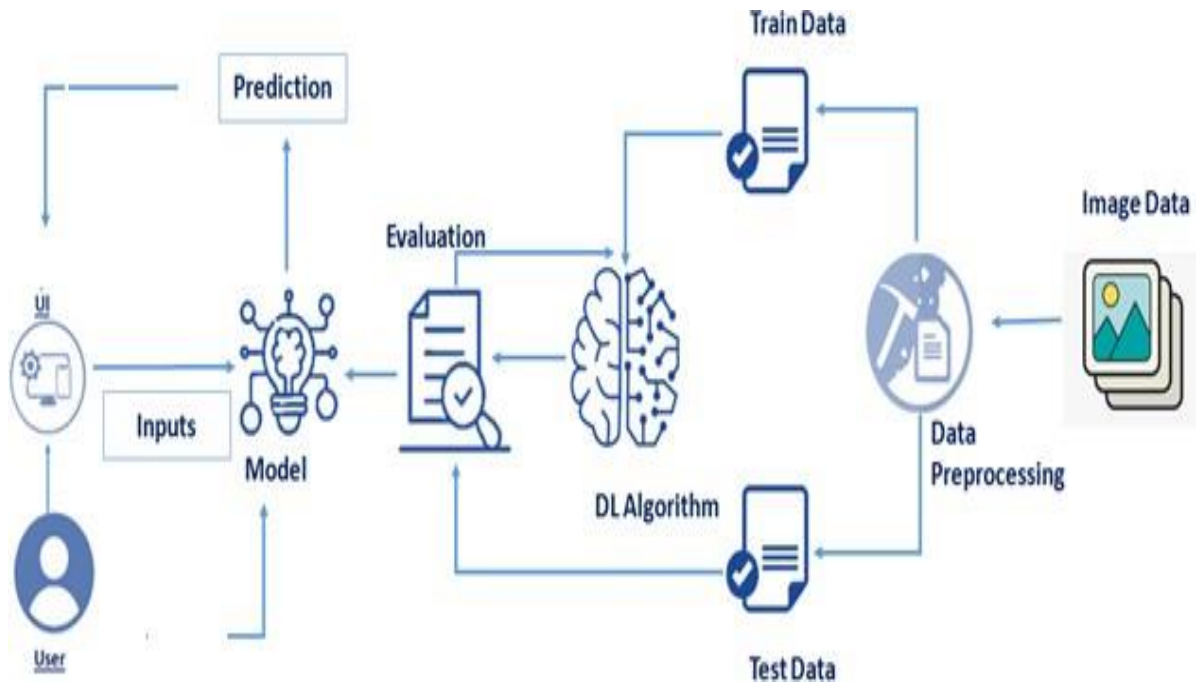




SOLUTION & TECHNICAL ARCHITECTURE







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

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

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	5	High	Rakshana devi

			supporting the model			
Sprint-1		USN-1	As a user, I can register for the application by entering my email, password, and confirming my password	5	High	Manju
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	5	High	soundarya
Sprint-2		USN-3	As a user, I will receive confirmation email once I have registered for the application	3	Low	Vigneshwaran
Sprint-1		USN-4	As a user, I can register	3	Medium	Rakshana devi

			for the application through Gmail			
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	5	High	Manju
Sprint-2	Model Building	USN-6	As a user, I can log into the application by entering email & password	5	High	Soundarya
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	Vigneshwaran
Sprint-2	Package, Dashboard	USN-8	As a user I can choose variety of packages based on my requirement	4	Medium	Rakshana devi

Sprint-3	Diet plan for free users	USN-9	As a dietitian I provide daily plans for the betterment of the user	5	High	Manju
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	Soundarya
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	Vigneshwaran
Sprint-3	Improve efficiency of AI model	-	As a developer I have to give a better model that will analyse food precisely and	3	Medium	Rakshana devi

			provide accurate results			
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	Manju
Sprint-4	Fitness tips and basic exercises	USN-13	As a user I can follow some fitness tips and I can maintain weight as required	5	Medium	Soundarya
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	Vigneshwaran
Sprint-4	Optimize the user experien		As a developer I have to	5	High	Rakshana devi

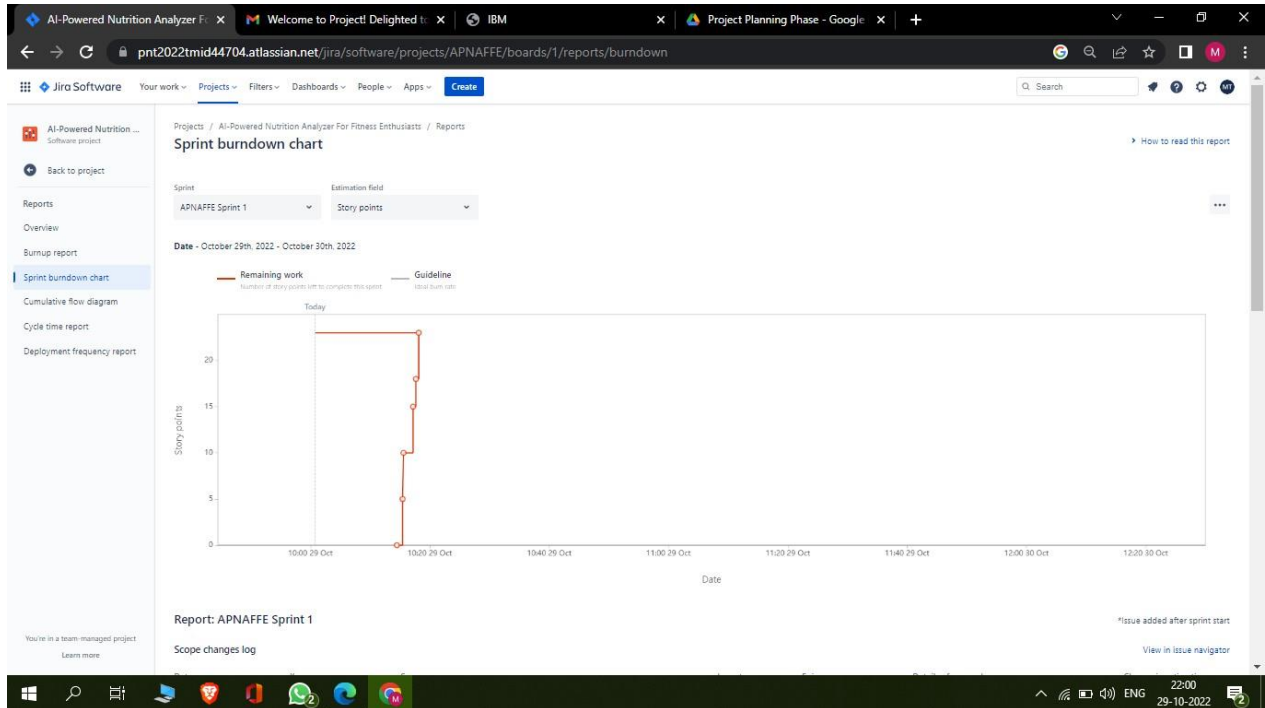
	ce with the app		provide clean and smooth interface to my user			
Sprint-4	Payment Gateway for purchasing package		As a developer I have to create a environment which makes user feel ease to complete his/her Payments with various Payment options	3	Medium	Manju

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
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REPORTS FROM JIRA



7. CODING & SOLUTIONING

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.

#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]])
```

```
        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)

    print(response.text)

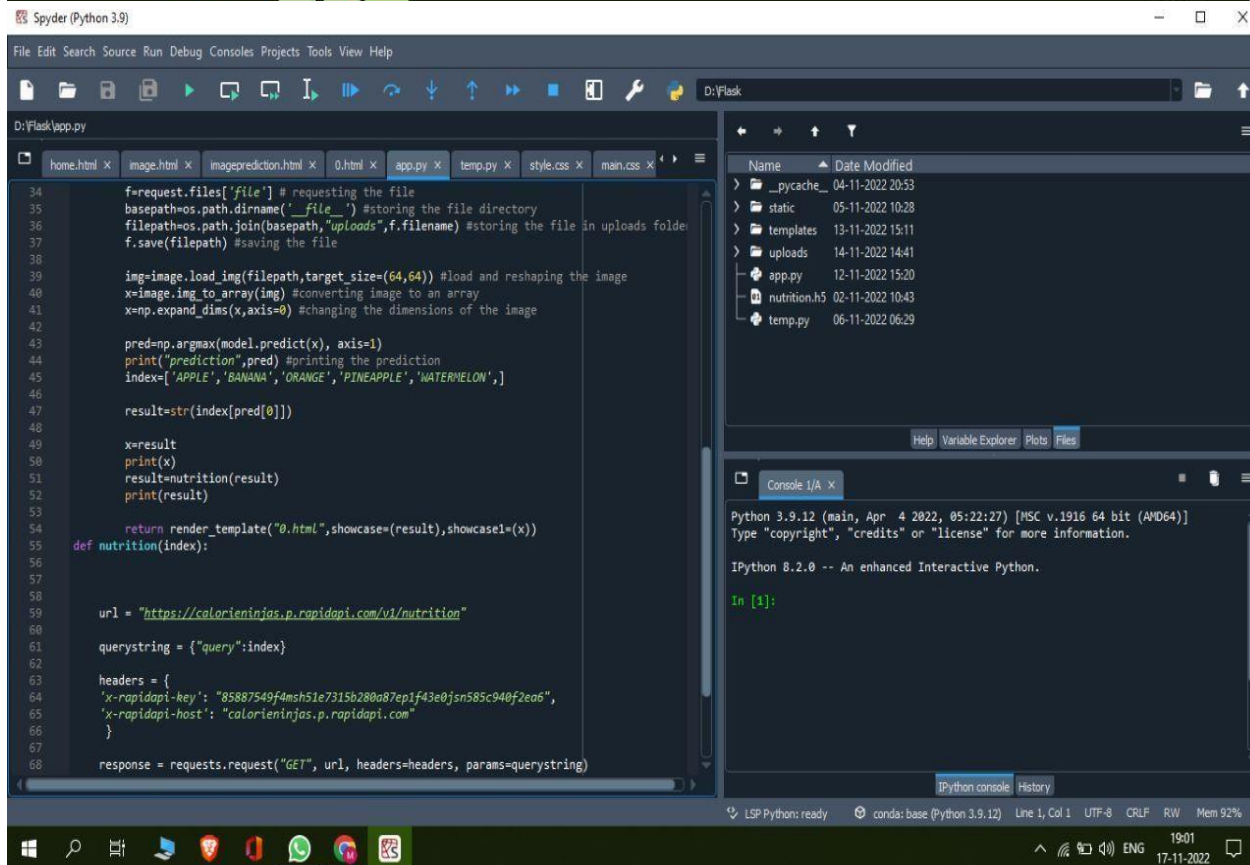
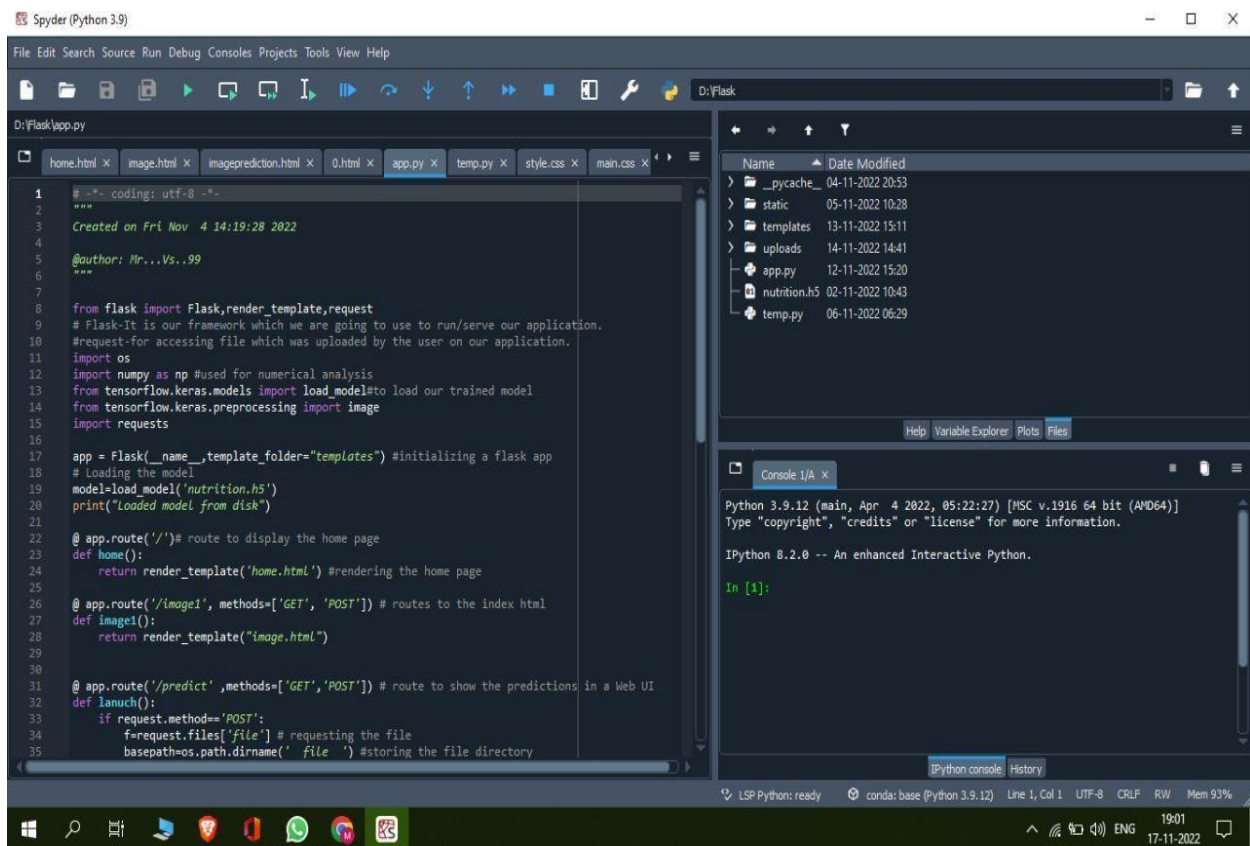
    return response.json()['items']

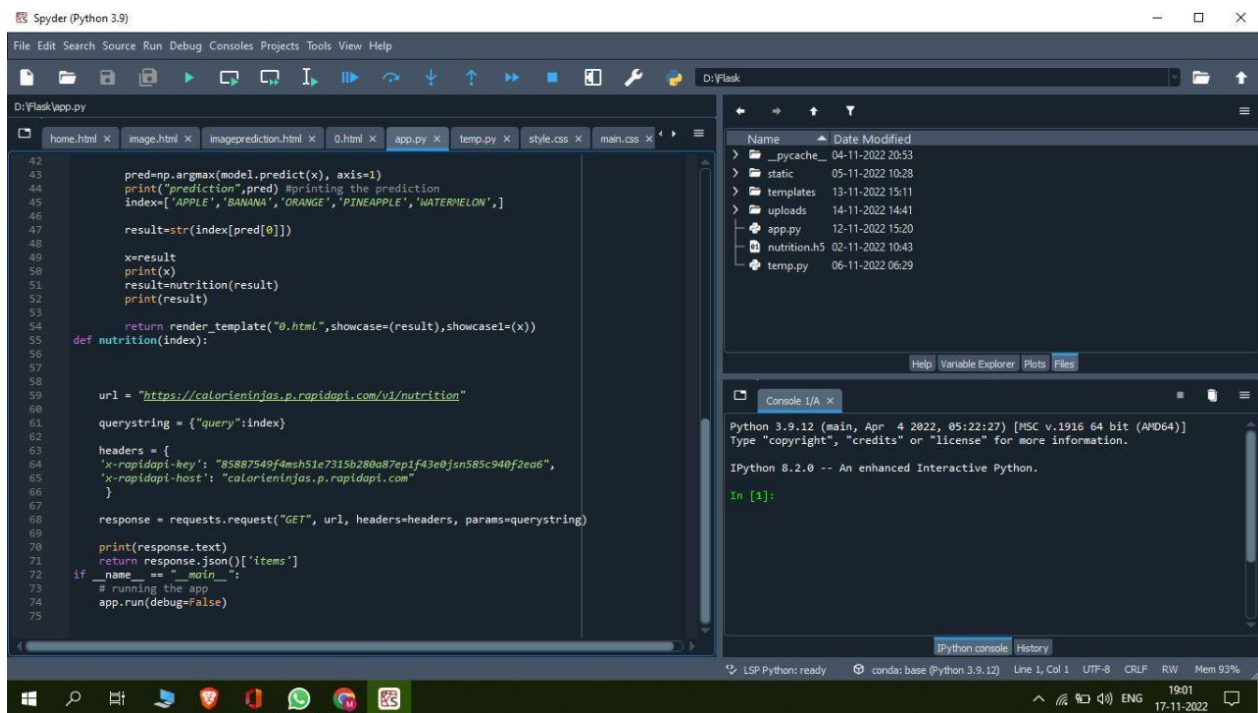
if __name__ == "__main__":

    # running the app

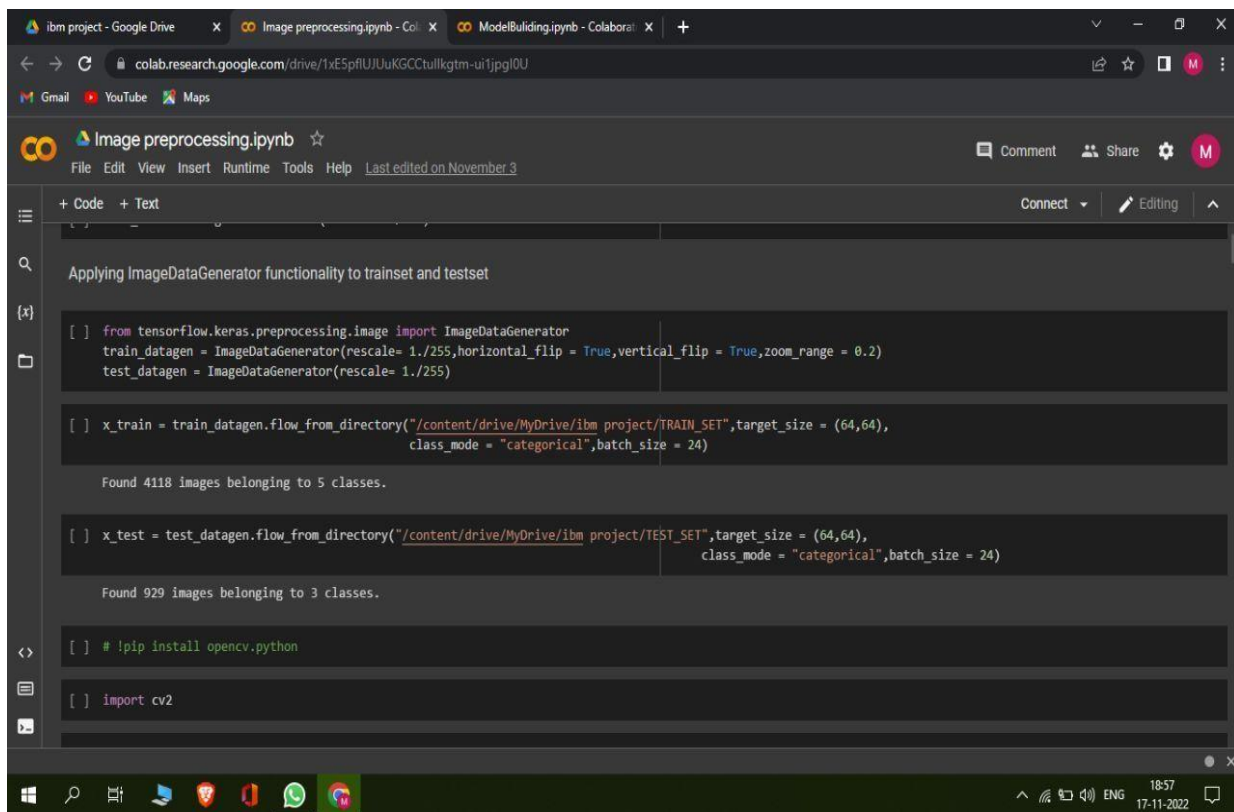
    app.run(debug=False)

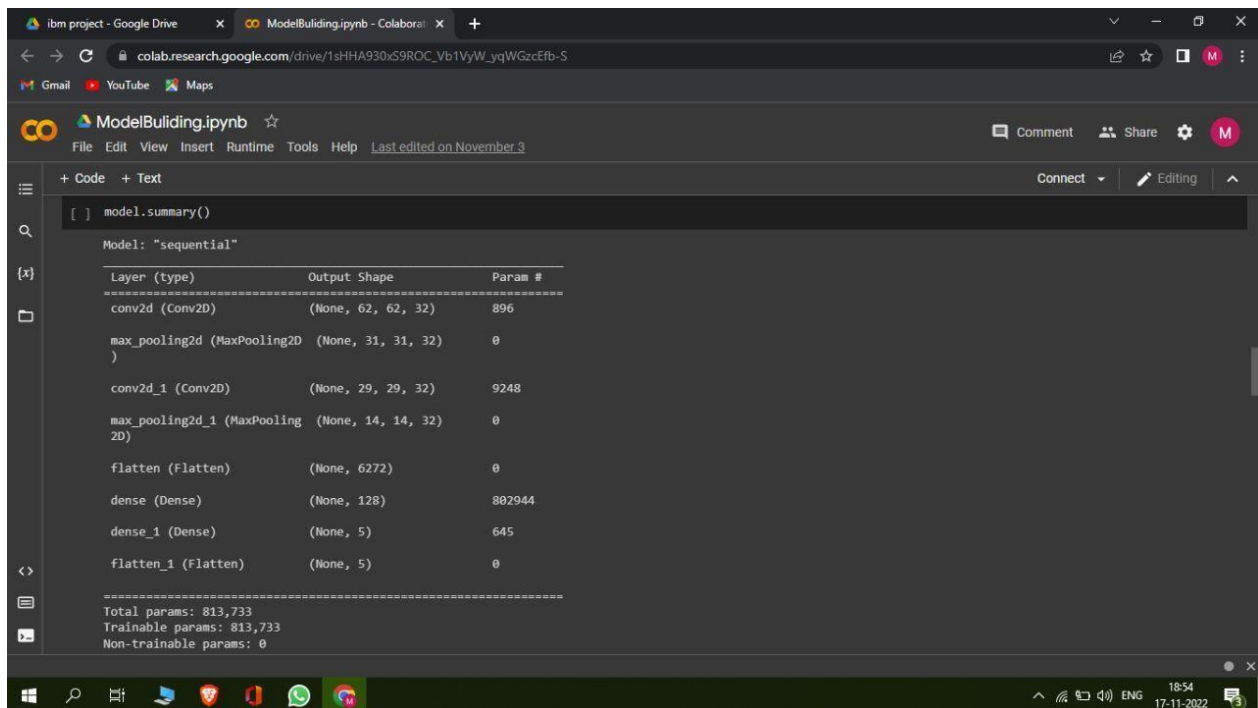
```





FEATURE-2





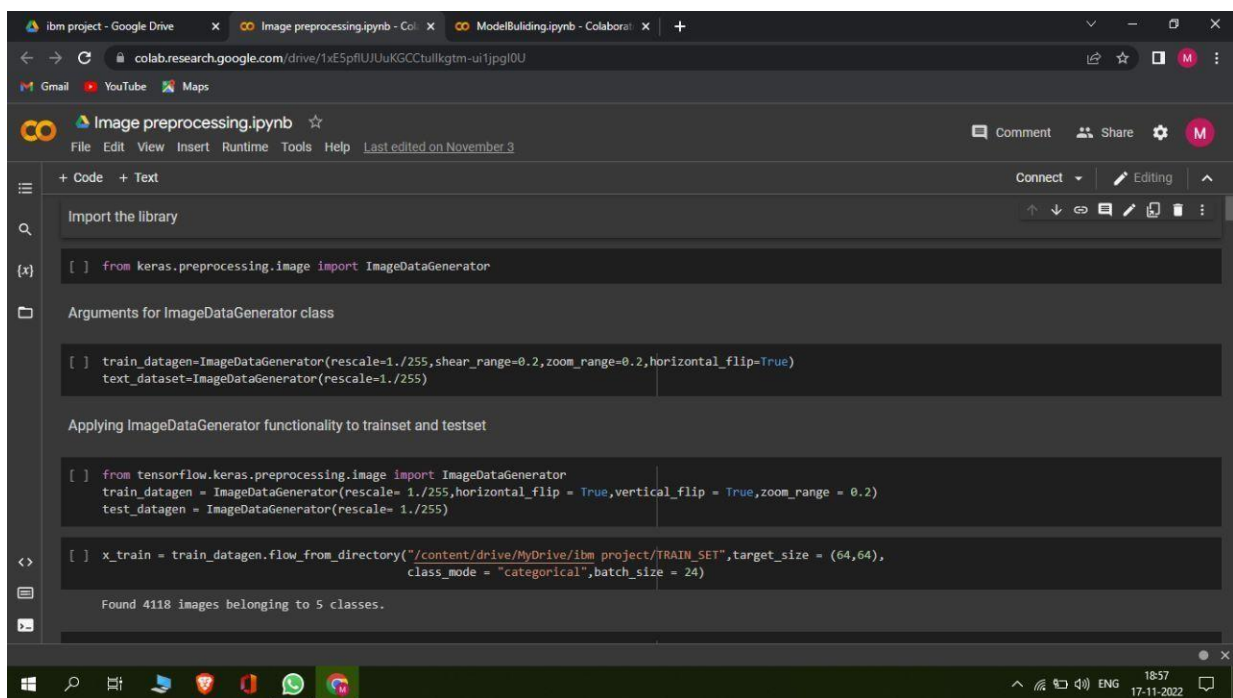
The screenshot shows a Google Colab notebook interface. The browser address bar displays the URL: `colab.research.google.com/drive/1sHHA930xS9ROC_Vb1VyW_yqWGzcEfb-S`. The notebook title is "ModelBuilding.ipynb". The code cell contains the command `model.summary()`. The output is a detailed summary of a sequential model, including a table of layers with their types, output shapes, and parameter counts.

```
[ ] 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 (MaxPooling2D)	(None, 14, 14, 32)	0
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



The screenshot shows a Google Colab notebook interface. The browser address bar displays the URL: `colab.research.google.com/drive/1xE5pRlUuKGCctulkgtm-ut1jplIOU`. The notebook title is "Image preprocessing.ipynb". The code cell contains the following code:

```
[ ] 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.

The screenshot shows a Google Colab notebook with the following code cells:

```
[ ] 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 as input to your ANN
```

The screenshot shows the same Google Colab notebook with the following code cells:

```
[ ] 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
```


The screenshot shows a Google Colab notebook interface. The browser address bar displays the URL: `colab.research.google.com/drive/1sHHA930xS9ROC_Vb1VyW_yqWGzcEfb-S`. The notebook title is "ModelBuilding.ipynb" and it was last edited on November 3. The code is written in Python and uses Keras for image classification. It imports necessary libraries, sets up image preprocessing and augmentation, and loads training and testing data from Google Drive.

```
#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")

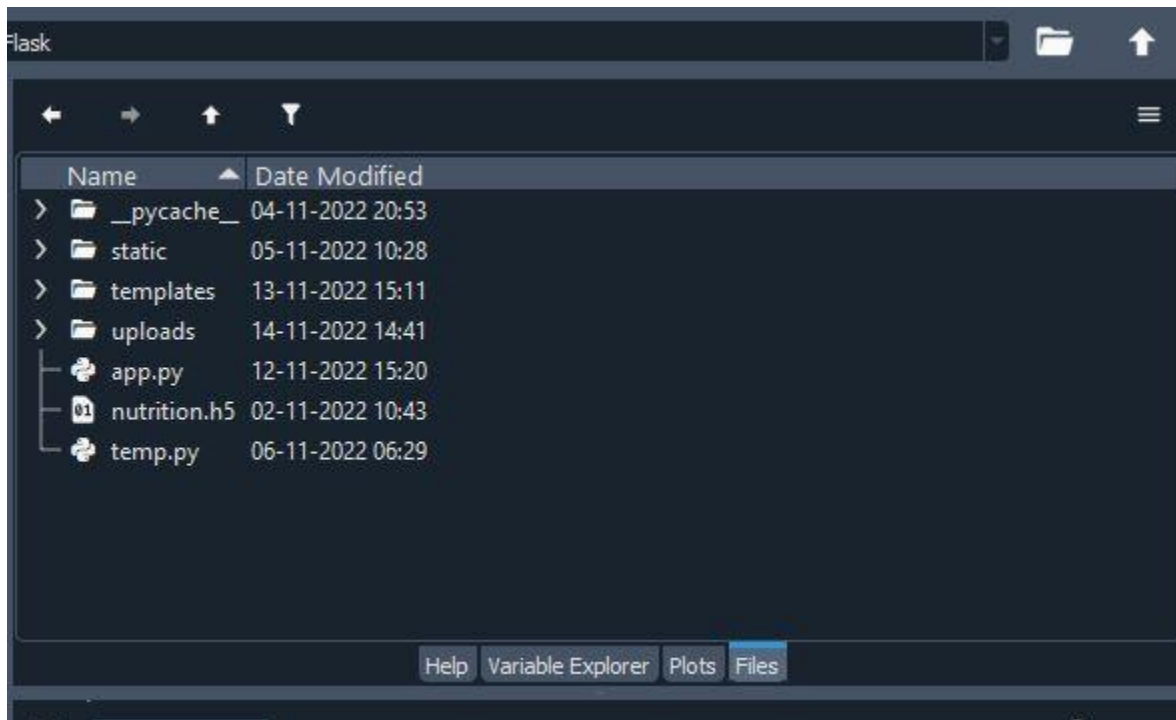
Found 4118 images belonging to 5 classes.

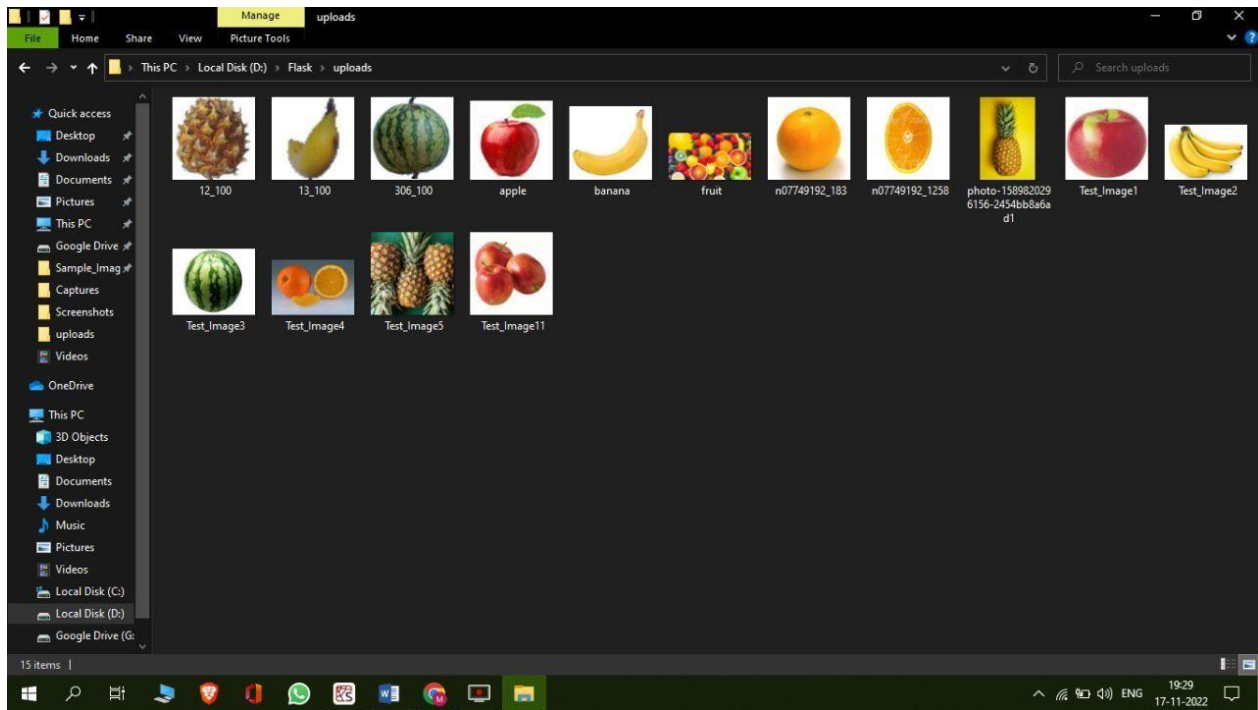
[ ] x_test = test_datagen.flow_from_directory("/content/drive/MyDrive/ibm project/TEST_SET", target_size=(64,64), batch_size=32, class_mode="binary")

Found 929 images belonging to 3 classes.
```

8. TESTING

TEST CASE





USER ACCEPTANCE 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	15	4	2	3	25
Duplicate	1	0	3	0	4
External	2	3	0	1	6

Fixed	11	2	4	20	37
Not Reproduced	0	0	1	0	1
Skipped	0	0	0	0	0
Won't Fix	0	0	0	0	0
Totals	24	14	13	26	77

3. TEST CASE ANALYSIS

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

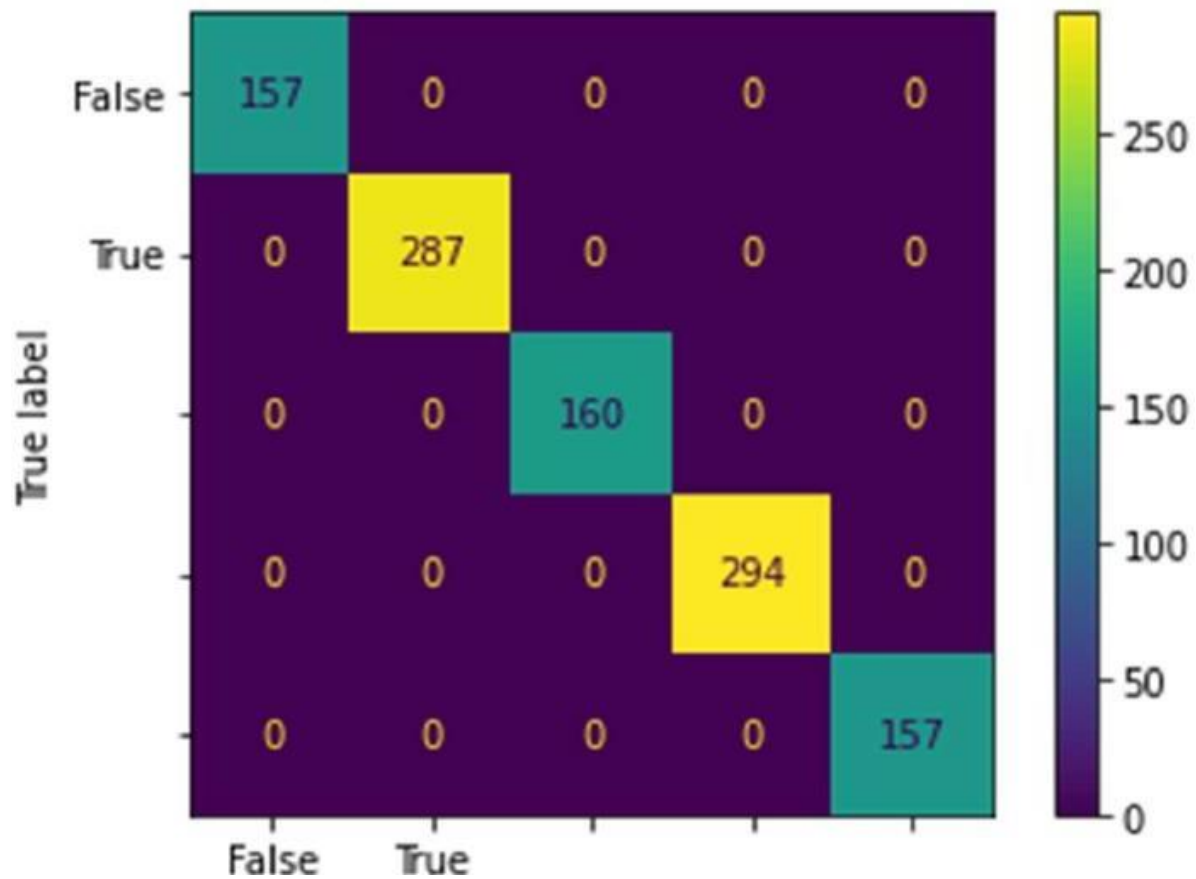
Section	Total Cases	Not Tested	Fail	Pass
Print Engine	5	0	0	5
Client Application	15	0	0	15
Security	2	0	0	2
Outsource shipping	3	0	0	3
Exception Reporting	15	0	0	15
Final Report Output	5	0	0	5
Version Control	2	0	0	2



9. RESULTS

PERFORMANCE METRICS

1. Confusion Matrix



```
print(metrics.classification_report(test_data['label'].values, test_data['model_preds'].values))
```

	precision	recall	f1-score	support
0	1.00	1.00	1.00	157
1	1.00	1.00	1.00	287
2	1.00	1.00	1.00	160
3	1.00	1.00	1.00	294
4	1.00	1.00	1.00	157
accuracy			1.00	1055
macro avg	1.00	1.00	1.00	1055
weighted avg	1.00	1.00	1.00	1055

2. Accuracy – 100 %

```
[8] print(f"the accuracy is {metrics.accuracy_score(test_data['label'].values, test_data['model_preds'].values)}")  
the accuracy is 1.0
```

3. Precision – 100 %

```
[11] print(f"the precision is {metrics.precision_score(test_data['label'].values, test_data['model_preds'].values, average = 'weighted')}")  
the precision is 1.0
```

4. Recall – 100 %

```
[12] print(f"the recall is {metrics.recall_score(test_data['label'].values, test_data['model_preds'].values, average = 'weighted')}")  
the recall is 1.0
```

5. Specificity – 100 %

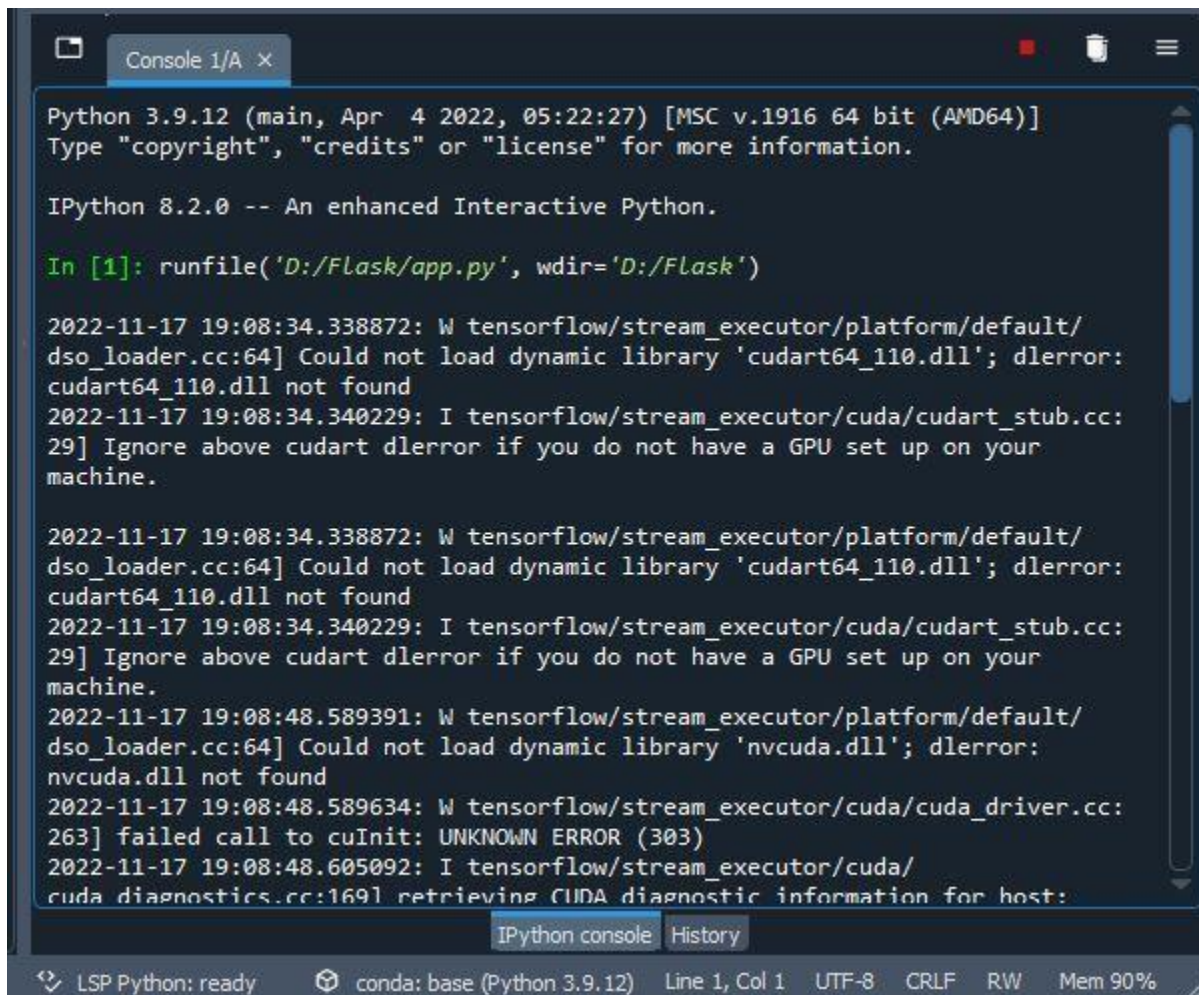
specificity = 100 %

```
print(f"the specificity is {metrics.recall_score(test_data['label'].values, test_data['model_preds'].values, pos_label=0, average = 'weighted')}")  
the specificity is 1.0
```

F1-Score = 100 %

6. F1-Score – 100 %

```
[13] print(f"the f1 score is {metrics.f1_score(test_data['label'].values, test_data['model_preds'].values, average = 'weighted')}")  
the f1 score is 1.0
```



```
Python 3.9.12 (main, Apr  4 2022, 05:22:27) [MSC v.1916 64 bit (AMD64)]  
Type "copyright", "credits" or "license" for more information.  
  
IPython 8.2.0 -- An enhanced Interactive Python.  
  
In [1]: runfile('D:/Flask/app.py', wdir='D:/Flask')  
  
2022-11-17 19:08:34.338872: W tensorflow/stream_executor/platform/default/  
dso_loader.cc:64] Could not load dynamic library 'cudart64_110.dll'; dlerror:  
cudart64_110.dll not found  
2022-11-17 19:08:34.340229: 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.  
  
2022-11-17 19:08:34.338872: W tensorflow/stream_executor/platform/default/  
dso_loader.cc:64] Could not load dynamic library 'cudart64_110.dll'; dlerror:  
cudart64_110.dll not found  
2022-11-17 19:08:34.340229: 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.  
2022-11-17 19:08:48.589391: W tensorflow/stream_executor/platform/default/  
dso_loader.cc:64] Could not load dynamic library 'nvcuda.dll'; dlerror:  
nvcuda.dll not found  
2022-11-17 19:08:48.589634: W tensorflow/stream_executor/cuda/cuda_driver.cc:  
263] failed call to cuInit: UNKNOWN ERROR (303)  
2022-11-17 19:08:48.605092: I tensorflow/stream_executor/cuda/  
cuda_diagnostics.cc:169] retrieving CUDA diagnostic information for host:  
  
IPython console History  
LSP Python: ready conda: base (Python 3.9.12) Line 1, Col 1 UTF-8 CRLF RW Mem 90%
```

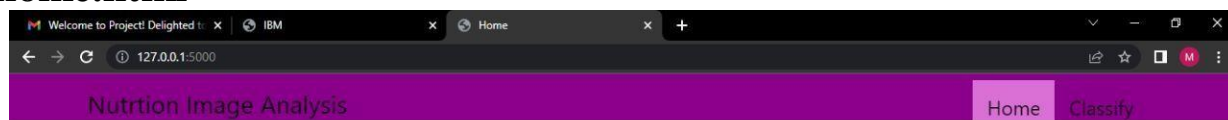


```
Console 1/A x
29] Ignore above cudart dllerror if you do not have a GPU set up on your
machine.
2022-11-17 19:08:48.589391: W tensorflow/stream_executor/platform/default/
dso_loader.cc:64] Could not load dynamic library 'nvcuda.dll'; dllerror:
nvcuda.dll not found
2022-11-17 19:08:48.589634: W tensorflow/stream_executor/cuda/cuda_driver.cc:
263] failed call to cuInit: UNKNOWN ERROR (303)
2022-11-17 19:08:48.605092: I tensorflow/stream_executor/cuda/
cuda_diagnostics.cc:169] retrieving CUDA diagnostic information for host:
LJ574P5
2022-11-17 19:08:48.605427: I tensorflow/stream_executor/cuda/
cuda_diagnostics.cc:176] hostname: LJ574P5
2022-11-17 19:08:48.614346: 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
* Serving Flask app "app" (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production
  deployment.
  Use a production WSGI server instead.
* Debug mode: off
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)

IPython console History
LSP Python: ready conda: base (Python 3.9.12) Line 1, Col 1 UTF-8 CRLF RW Mem 92%
```

OUTPUTS

home.html



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.



image.html

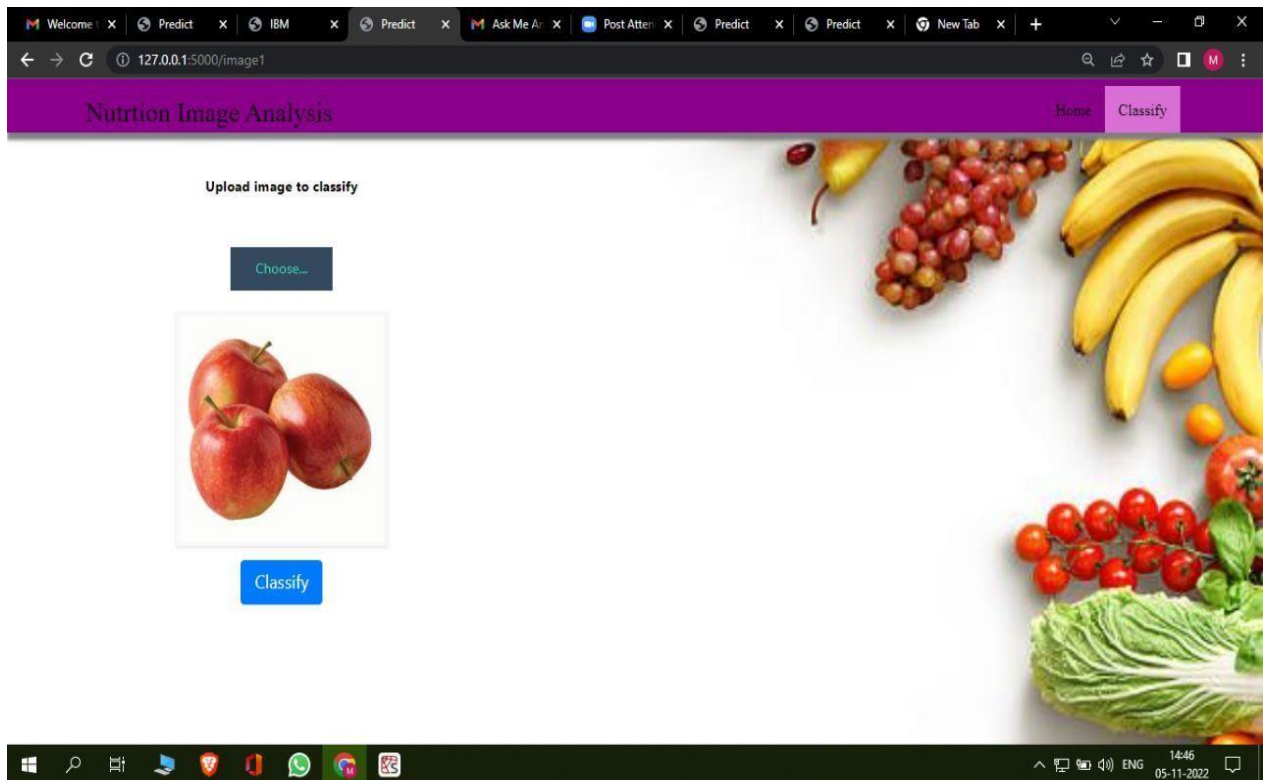
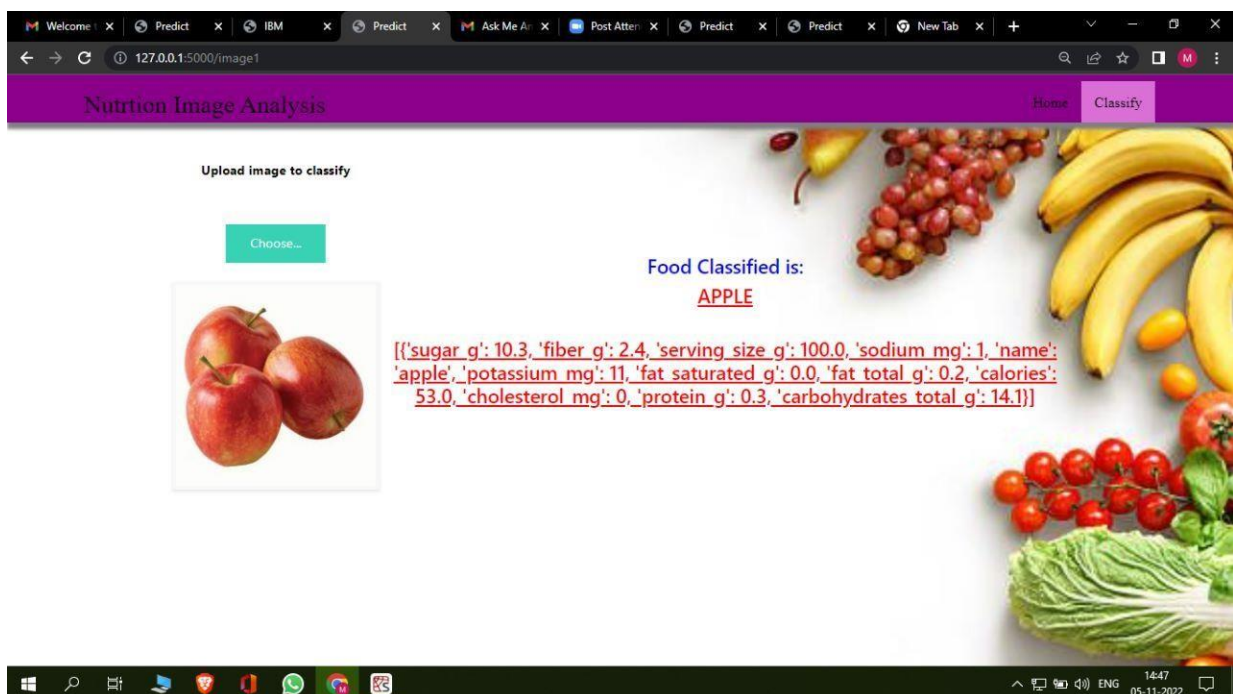


image prediction.html



Welcome x Predict x IBM x Predict x Ask Me A x Post Atten x Predict x Predict x New Tab x +


127.0.0.1:5000/image1

Nutrition 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}]
```

14:41 05-11-2022

Welcome x Predict x IBM x Predict x Ask Me A x Post Atten x Predict x Predict x New Tab x +


127.0.0.1:5000/image1

Nutrition Image Analysis

Home Classify

Upload image to classify

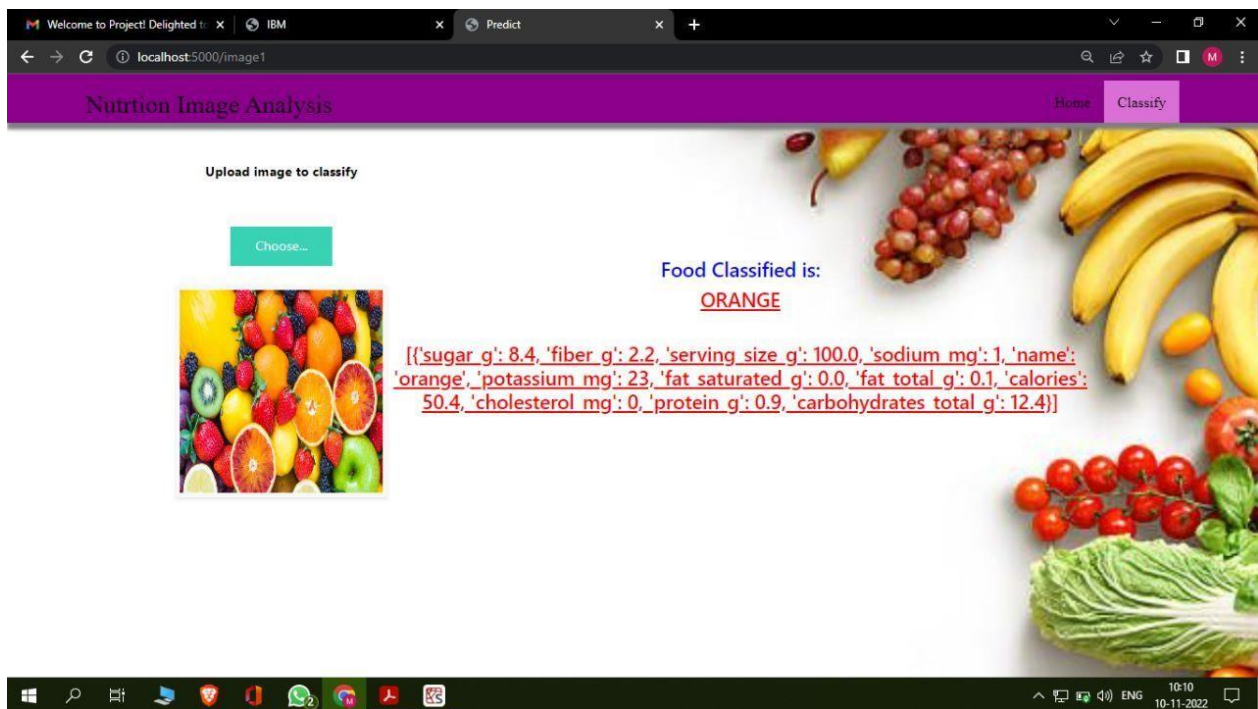
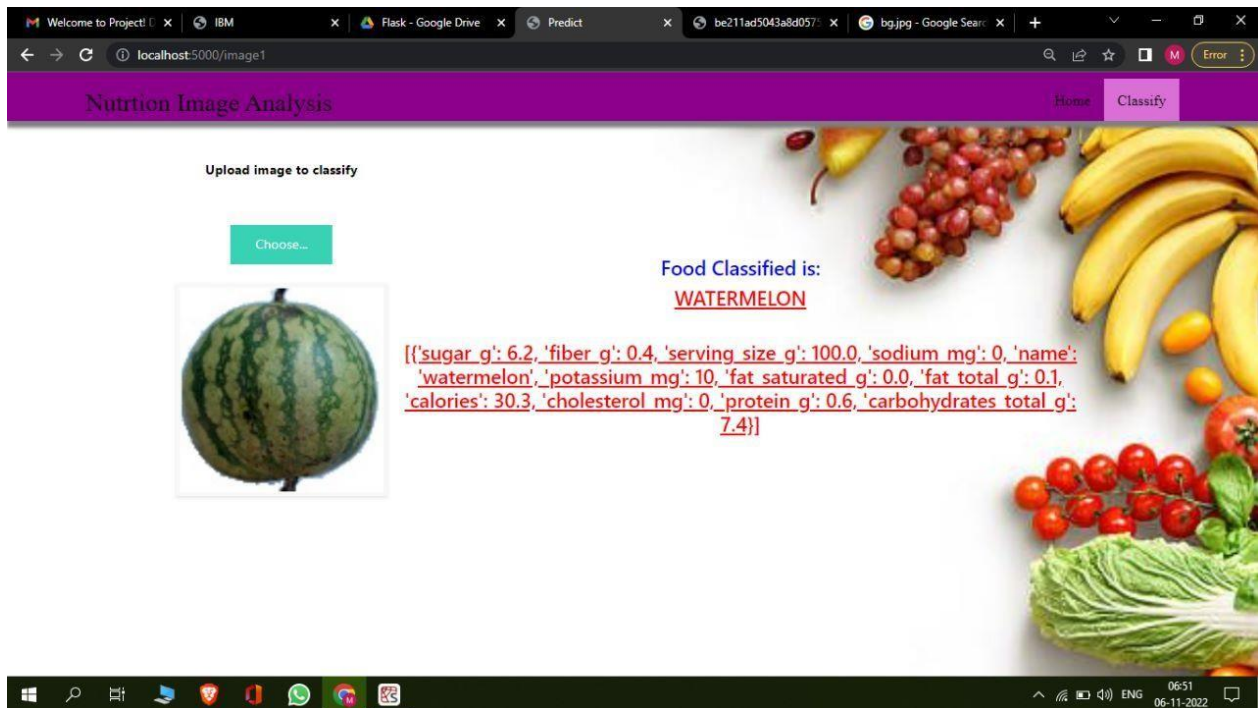
Choose...



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}]
```

14:44 05-11-2022



10. ADVANTAGESD & DISADVANTAGES

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.

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

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')

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]])

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=querrstring)

print(response.text)

return response.json()['items']

if __name__ == "__main__":

    # running the app

    app.run(debug=False)

```

HOME.HTML

```

<!DOCTYPE html>

<html>

<head>

    <meta charset="UTF-8">

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

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

    <title>Home</title>

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

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

```

```

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

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

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

<style>

body

{

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

    background-size: cover;

}

.bar

{

margin: 0px;

padding:20px;

background-color:white;

opacity:0.6;

color:black;

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

font-style: italic;

border-radius:20px;

font-size:25px;

}

h3

{

```

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

```
padding-left:10px;

}

.div1{

background-color: lightgrey;

width: 500px;

border: 10px solid peach;

padding: 20px;

margin: 20px;

height: 500px;

}
```

```
.header {    position: relative;

              top:0;

              margin:0px;

              z-index: 1;

              left: 0px;

              right: 0px;

              position: fixed;

              background-color: #8B008B ;

              color: white;
```



```

        box-shadow: 0px 8px 4px grey;

        overflow: hidden;

        padding-left: 20px;

        font-family: 'Josefin Sans'

        font-size: 2vw;

        width: 100%;

        height: 8%;

        text-align: center;

    }

    .topnav {

        overflow: hidden;

        background-color: #FCAD98;

    }

    .topnav-right a {

        float: left;

        color: black;

        text-align: center;

        padding: 14px 16px;

        text-decoration: none;

        font-size: 22px;

    }

    .topnav-right a:hover {

```

```
background-color: #FF69B4;
color: black;
}
```

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

```
.topnav-right {
float: right;
padding-right: 100px;
}
```

```
</style>
```

```
</head>
```

```
<body>
```

```
<!--Brian Tracy-->
```

```
<div class="header">
```

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

```
<div class="topnav-right" style="padding-top:0.5%;">
```

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

Classify

</div>

</div>

</div>

<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">

<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">

</form>

<center> <div class="image-section" style="display:none;">

<div class="img-preview">

<div id="imagePreview">

</div></center>

</div>

<center><div>

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

</center></div>

</div>

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

<h3 id="result">

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

</h3>

</div>

</div>

```
{ % endblock % }
```

IMAGE PREDICTION.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>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;  
border-radius:20px;  
font-size:25px;  
}  
  
a  
  
{  
color:grey;  
float:right;  
text-decoration:none;  
font-style:normal;  
padding-right:20px;  
}  
  
a:hover{  
background-color:black;  
color:white;
```

```
border-radius:15px;0
```

```
font-size:30px;
```

```
padding-left:10px;
```

```
}
```

```
.div1{
```

```
background-color: lightgrey;
```

```
width: 500px;
```

```
border: 10px solid peach;
```

```
padding: 20px;
```

```
margin: 20px;
```

```
height: 500px;
```

```
}
```

```
.header {    position: relative;
```

```
        top:0;
```

```
        margin:0px;
```

```
        z-index: 1;
```

```
        left: 0px;
```

```
        right: 0px;
```

```
        position: fixed;
```



```

        background-color: #8B008B ;
        color: white;
        box-shadow: 0px 8px 4px grey;
        overflow: hidden;
        padding-left: 20px;
        font-family: 'Josefin Sans';
        font-size: 2vw;
        width: 100%;
        height: 8%;
        text-align: center;
    }

    .topnav {
        overflow: hidden;
        background-color: #FCAD98;
    }

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

```

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

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

```
.topnav-right {  
    float: right;  
    padding-right: 100px;  
}
```

```
</style>
```

```
</head>
```

```
<body>
```

```
<div class="header">
```

```
<div style="width:50%;float:left;font-size:2vw;text-align:left;color:black; padding-  
top:1%;padding-left:5%;">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>

</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;
  background-repeat: no-repeat;
  background-position: center;
}
```

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

```
.upload-label{
  display: inline-block;
  padding: 12px 30px;
  background: #39D2B4;
  color: #fff;
  font-size: 1em;
```

```
    transition: all .4s;

    cursor: pointer;
}
```

```
.upload-label:hover{

    background: #34495E;

    color: #39D2B4;
}
```

```
.loader {

    border: 8px solid #f3f3f3; /* 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

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

```
.container{  
    width:80%;  
    margin:auto;  
    overflow:hidden;  
}
```

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

```
.parallax {
```

```
/* The image used */
```

```
background-image: url("doc.jpg");
```

```
/* Set a specific height */
```

```
min-height: 750px;
```

```
/* Create the parallax scrolling effect */
```

```
background-attachment: fixed;
```

```
background-position: center;
```

```
background-repeat: no-repeat;
```

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

```
}
```

```
html {
```

```
scroll-behavior: smooth;
```

```
}
```

```
#section2 {
```

```
height: 500px;
```

```
background: ;
```

```
}
```

```
div.background {
```

```
background: url("static/bgg2.jpg");
```

```
min-height: 5px;
```

```
background-attachment: fixed;
```

```
background-position: center;
background-repeat: no-repeat;
background-size: cover;
}
```

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

```
#navbar ul{
    padding:0;
    list-style: none;
}
```

```
#navbar li{
    display:inline;
}
```

```
#navbar a{
    color:#fff;
    text-decoration: none;
    font-size:18px;
```



```
padding-right:15px;
}

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

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

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

```
}
```

```
#main{
```

```
    float:left;
```

```
    color:#fff;
```

```
    width:65%;
```

```
    padding:0 30px;
```

```
    box-sizing: border-box;
```

```
}
```

```
#sidebar{
```

```
    float:right;
```

```
    width:35%;
```

```
    background-color: #ffcccc;
```

```
    color:#000;
```

```
    padding-left:10px;
```

```
    padding-right:10px;
```

```
    padding-top:1px;
```

```
    box-sizing: border-box;
```

```
}
```

```
.img-preview {
```

```
    width: 10px;
```

```
height: 10px;

position: relative;

border: 5px solid #F8F8F8;

box-shadow: 0px 2px 4px 0px rgba(0, 0, 0, 0.1);

margin-top: 1em;

margin-bottom: 1em;

}
```

```
.img-preview>div {

width: 10%;

height: 10%;

background-size: 100px 10px;

background-repeat: no-repeat;

background-position: center;

}
```

```
input[type="file"] {

display: none;

}
```

```
.upload-label{

display: inline-block;

padding: 12px 30px;

background: #39D2B4;
```

```
color: #fff;

font-size: 1em;

transition: all .4s;

cursor: pointer;

}
```

```
.upload-label:hover{

background: #34495E;

color: #39D2B4;

}
```

```
.myButton {

border: none;

text-align: center;

cursor: pointer;

text-transform: uppercase;

outline: none;

overflow: hidden;

position: relative;

color: #fff;

font-weight: 700;

font-size: 12px;

background-color: #ff0000;

padding: 10px 15px;
```

```
margin: 0 auto;
box-shadow: 0 5px 15px rgba(0,0,0,0.20);
}
```

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

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

```
.myButton:hover:after {
```

```
-webkit-transform: translateX(-9%) translateY(-25%) rotate(45deg);  
transform: translateX(-9%) translateY(-25%) rotate(45deg);  
}
```

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

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

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

```
}
```

```
@media(max-width:600px){
```

```
  #main{
```

```
    width:100%;
```

```
    float:none;
```

```
  }
```

```
  #sidebar{
```

```
    width:100%;
```

```
    float:none;
```

```
  }
```

```
}
```

MAIN.JS

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

```
  // 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!');
    },
});
```

});

});