

PROJECT REPORT
AI-POWERED NUTRITION ANALYZER FOR FITNESS ENTHUSIASTS
TEAM ID : PNT2022TMID07088

TABLE OF CONTENTS

1. INTRODUCTION

- 1.1. Project Overview
- 1.2. Purpose

2. LITERATURE SURVEY

- 2.1.Existing problem
- 2.2.References
- 2.3.Problem statement definition

3. IDEATION & PROPOSED SOLUTION

- 3.1.Empathy Map Canvas
- 3.2.Ideation and Brainstorming
- 3.3.Proposed Solution
- 3.4.Problem Solution Fit

4. REQUIREMENT ANALYSIS

- 4.1.Functional Requirements
- 4.2.Non Functional Requirements

5. PROJECT DESIGN

- 5.1. Data Flow Diagrams
- 5.2. Solution & Technical Architecture
- 5.3. User Stories

6. PROJECT PLANNING & SCHEDULING

6.1. Sprint Planning & Estimation

6.2. Sprint Delivery Schedule

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

7.1. Feature1

7.2. Feature 2

8. TESTING

8.1. Test Cases

8.2. User Acceptance Testing

9. RESULTS

9.1. Performance Metrics

10. ADVANTAGES & DISADVANTAGES

11. CONCLUSION

12. FUTURE SCOPE

13. APPENDIX

Source Code Output GitHub & Project Demo Link

1. INTRODUCTION

1.1. Project overview

A nutritional analyzer is a device that is used to analyze the nutrient contents of food. Nutritional analyzers can be used to determine the Calorie, Fat, Protein, Carbohydrate, and the Fiber contents of food. Nutritional analyzers can also be used to determine the vitamin and mineral contents of food.

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.

1.2.Purpose

The purpose of a nutritional analyzer is to provide users with information about the nutritional content of their food. This information can be used to make informed decisions about what to eat and how to maintain a healthy diet.

The goal of this project is to develop a nutritional analyzer that can be used to quickly and easily assess the nutritional value of foods. The analyzer will be able to identify the nutrient content of foods, as well as the caloric value. Additionally, the analyzer will be able to provide recommendations on how to improve one's diet.

2. LITERATURE SURVEY

2.1.Existing Problem

- Progressive Spinal Net architecture for FC layers - In this paper the Progressive Spinal Net progressive computational network for FC layers of deep- networks is introduced as an upgraded version of the DNN concept. - Praveen Chopra
- Spinal Net: Deep Neural Network with Gradual Input - In this research, the Spinal Net DNN model was introduced. The chordate nervous system, which has a special way of connecting a lot of sensing data and making local decisions, is mimicked in the construction of Spinal Net. - H M Dipu Kabir
- Classification of Fruits Using Deep Learning Algorithms - In this study a deep learning-based system for classifying fruits is suggested. A DCNN model, an Alex Net model, and a MobileNetV2 model were investigated in the proposed framework. Three datasets with different sizes and levels of complexity were used to test the recommended framework. - Mirra K B

- A Comprehensive Study on Torch vision Pre- trained Models for Fine-grained Interspecies Classification - This study attempts to investigate various pretrained models provided in the PyTorch library's Torch vision package. And look into how well they can classify fine- grained photos. - Feras Albardi
- Fruits classification by using machine learning - An experiment using popular approaches on local data - In this paper, we examine the methods for classifying images that can be used to categorise fruits. The study's findings can be used to place fruit on the correct shop shelves, spot fruit mismatches there, or check fruit prices without using a barcode scanner. Three well-known classification models—Random Forest, K-Nearest Neighbours (KNN), and Support Vector Machine—are employed in this study (SVM). - Nguyen Vuong Thinh
- Fruit Recognition and Classification with Deep Learning Support on Embedded System (fruit net) - This suggested study employs image processing techniques for fruit recognition. Convolutional Neural Networks (ConNN)* deep learning model for classification is created in the study. The Keras platform was used to construct the suggested model. - Haci Bayram Unal
- Using Natural Language Processing and Artificial Intelligence to Explore the Nutrition and Sustainability of Recipes and Food - According to this paper's point of view, Interdisciplinary approaches should be used to address food and recipe research in order to address health and sustainability issues. These approaches should combine NLP and other AI techniques with historical food research, food science, nutrition, and sustainability expertise. - Marieke van Erp
- Fruits Classification using Convolutional NeuralNetwork - This study investigates a CNN-based classification of fruits. For five scenarios utilising the fruits-360 dataset, the accuracy and loss curves were created using various combinations of hidden layers. This paper discusses several computer vision-based approaches and algorithms for fruit recognition and classification. - Mehenag Khatun
- Fruit classification by HPA-SLFN -In this study, we introduced a brand-new fruit classification method called HPASLFN. The findings indicated that HPAClassification SLFN's accuracy of 89.5% was superior to those of other classification techniques.-Siyuan Lu

- Date fruits classification using texture descriptors and shape-size features -In this study a suggested technique breaks down a visual image of a date into its component colours. The local texture descriptor, such as a Weber local descriptor (WLD) histogram or a local binary pattern (LBP), is then applied to each component in order to encode the texture pattern of the date. To characterise the image, the texture patterns from each component are combined.-Ghulam Muhammad.

2.2. References

- [1] Muhammad, Ghulam. "Date fruits classification using texture descriptors and shape size features." *Engineering Applications of Artificial Intelligence* 37 (2015): 361-367.
- [2] Lu, Siyuan, et al. "Fruit classification by HPA-SLFN." *2016 8th International Conference on Wireless Communications & Signal Processing (WCSP)*. IEEE, 2016.
- [3] Khatun, Mehenag, et al. "Fruits Classification using Convolutional Neural Network." *GRD Journals-Global Research and Development Journal for Engineering* 5.8 (2020). [4] Ünal, Hacı Bayram, et al. "Fruit recognition and classification with deep learning support on embedded system (fruitnet)." *2020 Innovations in Intelligent Systems and Applications Conference (ASYU)*. IEEE, 2020.
- [5] Thanh, Nguyen Vuong, et al. "Fruits classification by using machine learning-An experiment using popular approaches on local data." *2021 IEEE International Conference on Machine Learning and Applied Network Technologies (ICMLANT)*. IEEE, 2021.
- [6] Albardi, Feras, et al. "A comprehensive study on torchvision pre-trained models for finegrained inter-species classification." *2021 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*. IEEE, 2021.
- [7] KB, Mirra, and R. Rajakumari. "Classification of Fruits Using Deep Learning Algorithms." Available at SSRN 4068366.
- [8] Chopra, Praveen. "Progressivespinalnet architecture for fc layers." *arXiv preprint arXiv:2103.11373* (2021).

[9] Kabir, HM Dipu, et al. "Spinalnet: Deep neural network with gradual input." IEEE Transactions on Artificial Intelligence (2022).

[10] Van Erp, Marieke, et al. "Using natural language processing and artificial intelligence to explore the nutrition and sustainability of recipes and food." Frontiers in artificial intelligence 3 (2021): 621577.

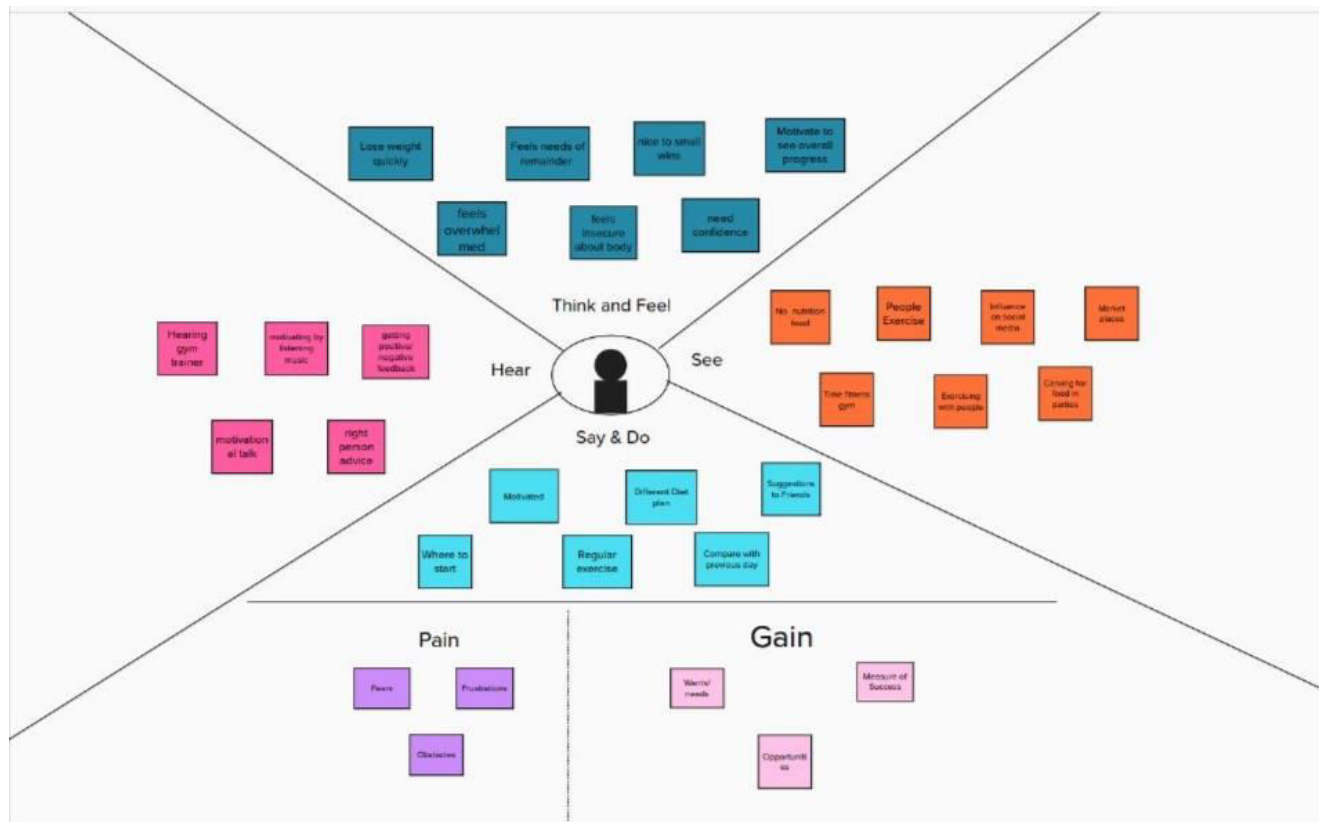
2.3.Problem Statement Definition

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.)

3. IDEATION & PROPOSED SOLUTION

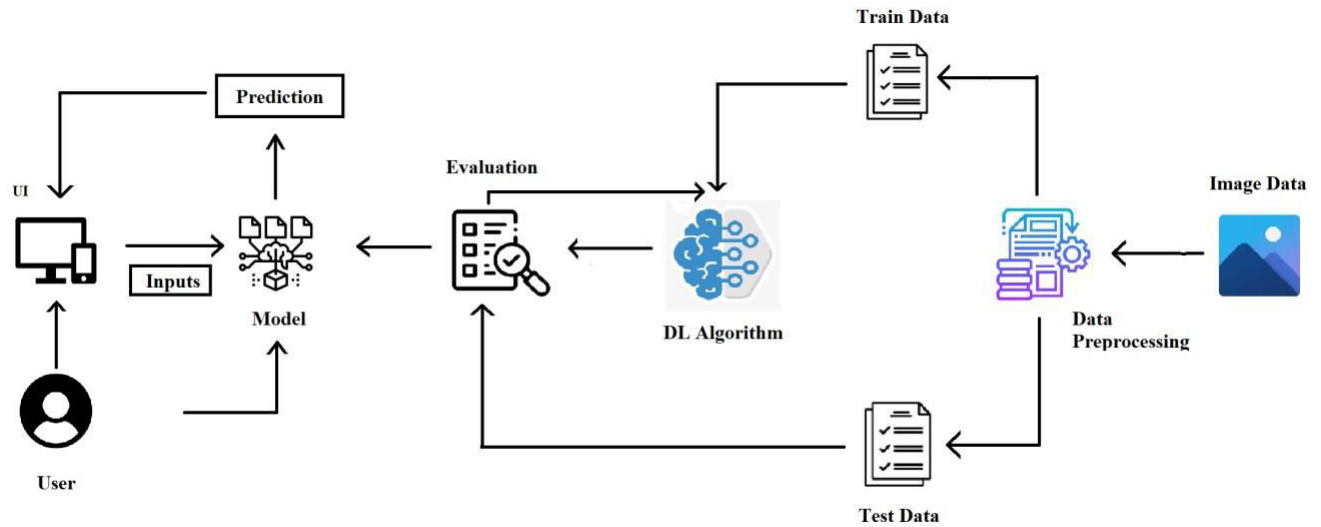
3.1.Empathy Map Canvas

An empathy map is a collaborative tool teams can use to gain a deeper insight into their customers. Much like a user persona, an empathy map can represent a group of users, such as a customer segment. The empathy map was originally created by Dave Gray and has gained much popularity within the agile community.

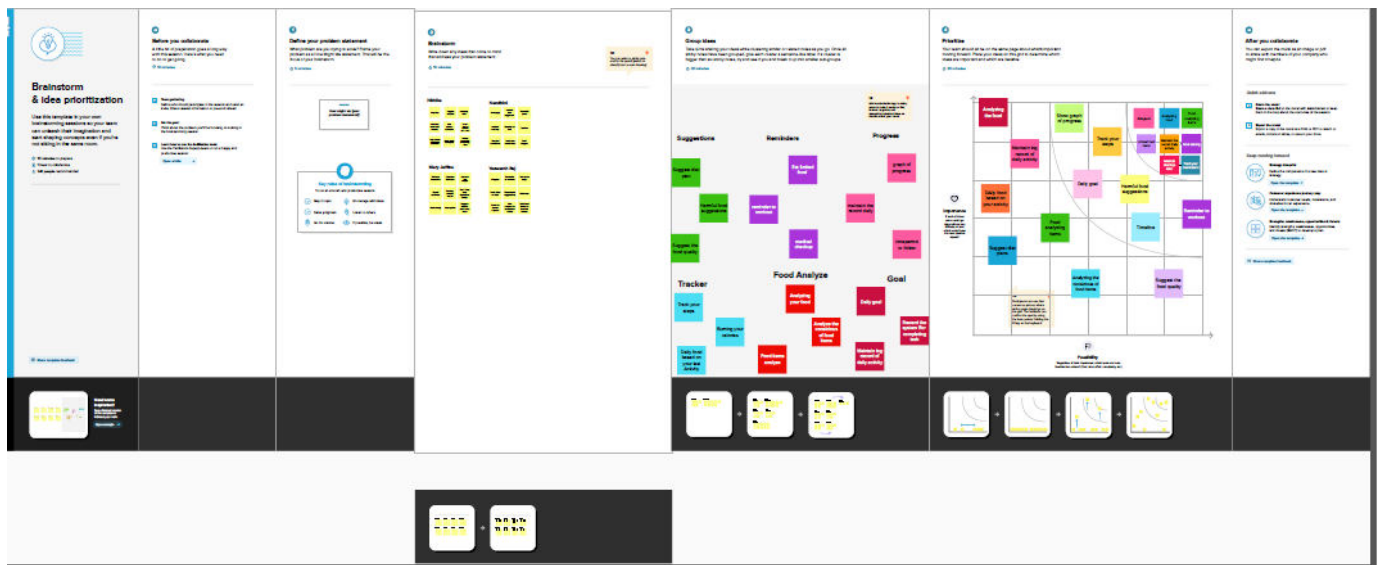


3.2.IDEATION AND BRAINSTORMING

Ideation is the process of forming ideas from conception to implementation, most often in a business setting. Ideation is expressed via graphical, written, or verbal methods, and arises from past or present knowledge, influences, opinions, experiences, and personal convictions.



Ideation is often closely related to the practice of brainstorming, a specific technique that is utilized to generate new ideas. A principal difference between ideation and brainstorming is that ideation is commonly more thought of as being an individual pursuit, while brainstorming is almost always a group activity



3.3.Proposed Solution

S.No.	Parameter	Descrip on
1.	Problem Statement (Problem to be solved)	<ul style="list-style-type: none">● The emergence of technology has made our life more inactive● The App Store and Google Play are already saturated with fitness and sports apps. Thus, users are finding it difficult to make a choice.● I am a fitness enthusiast, I'm trying to maintain fitness but unable to maintain fitness because of improper intake of nutrition which makes me feel the need to intake proper amount of nutrition
2.	Idea / Solu on descrip on	<ul style="list-style-type: none">● The online artificial dietitian is a bot, with artificial intelligence about human diets.● It acts as a diet consultant like a real dietitian.● This type of app helps the users have a well-fine-tuned workout experience.
3.	Novelty / Uniqueness	<ul style="list-style-type: none">● AI augments the capabilities of differently abled individuals● fitness apps raise the bar when it comes to the user's standard of wellness.● AI operates 24x7 without interruption or breaks and has no downtime.

4.	Social Impact / Customer Satisfaction	<ul style="list-style-type: none"> ● The main objective of this study is to know the influence of the use of the fitness application (app) on sports habits, customer satisfaction and maintenance intention of fitness centre users.
5.	Business Model (Revenue Model)	<ul style="list-style-type: none"> ● It can be developed with minimum cost and provide high effective process at less time ● Due to the cost of app development technology, the amount of physical work has almost diminished which is the root cause of various problems.
6.	Scalability of the Solution	<ul style="list-style-type: none"> ● In the further advancement, users can post their queries and get more advice from other users ● In the further advancement, users can integrate this app with fitness trackers

3.4.Problem Solution Fit

The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem.

4.REQUIRMENT 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	User Access	Should be able to Access the current as well as the previous data.
FR-4	User Security	Application should be secured and also it should have two step verification.
FR-5	Performance	Application should be able to access huge amount of data and provide information in a span of time
FR-6	Display	The Application should display the information in same page and their should be a download option

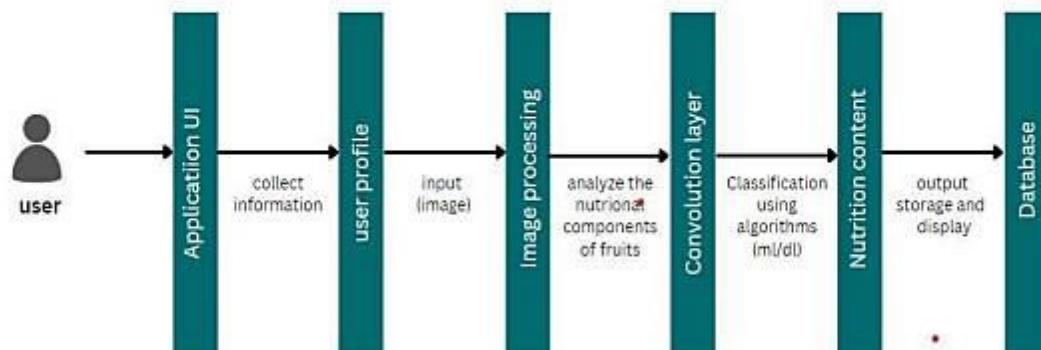
4.2.Non Functional Requirements

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	A user can access the information through the application without consuming time .
NFR-2	Security	confidentiality and authentication of user information is maintained.
NFR-3	Reliability	A user can access the information that is previously stored at any time.
NFR-4	Performance	Web application loading time is not more than few seconds.
NFR-5	Availability	A user can access the resources at free of cost they can collect the information which they required.
NFR-6	Scalability	It can be accessed easily with an increased number of users.

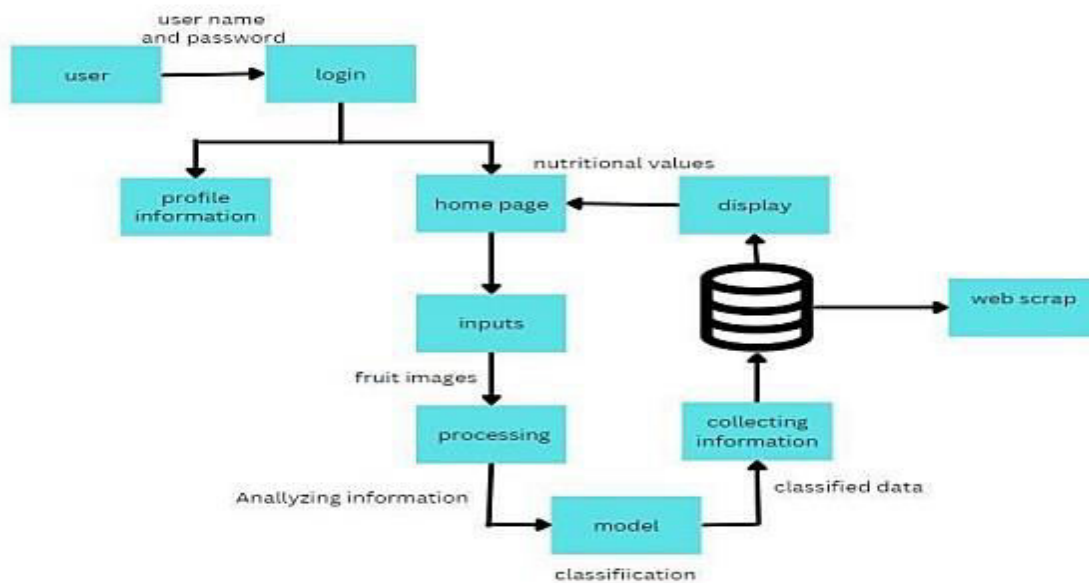
5.PROJECT DESIGN

5.1.Data Flow Diagrams

Simplified diagram

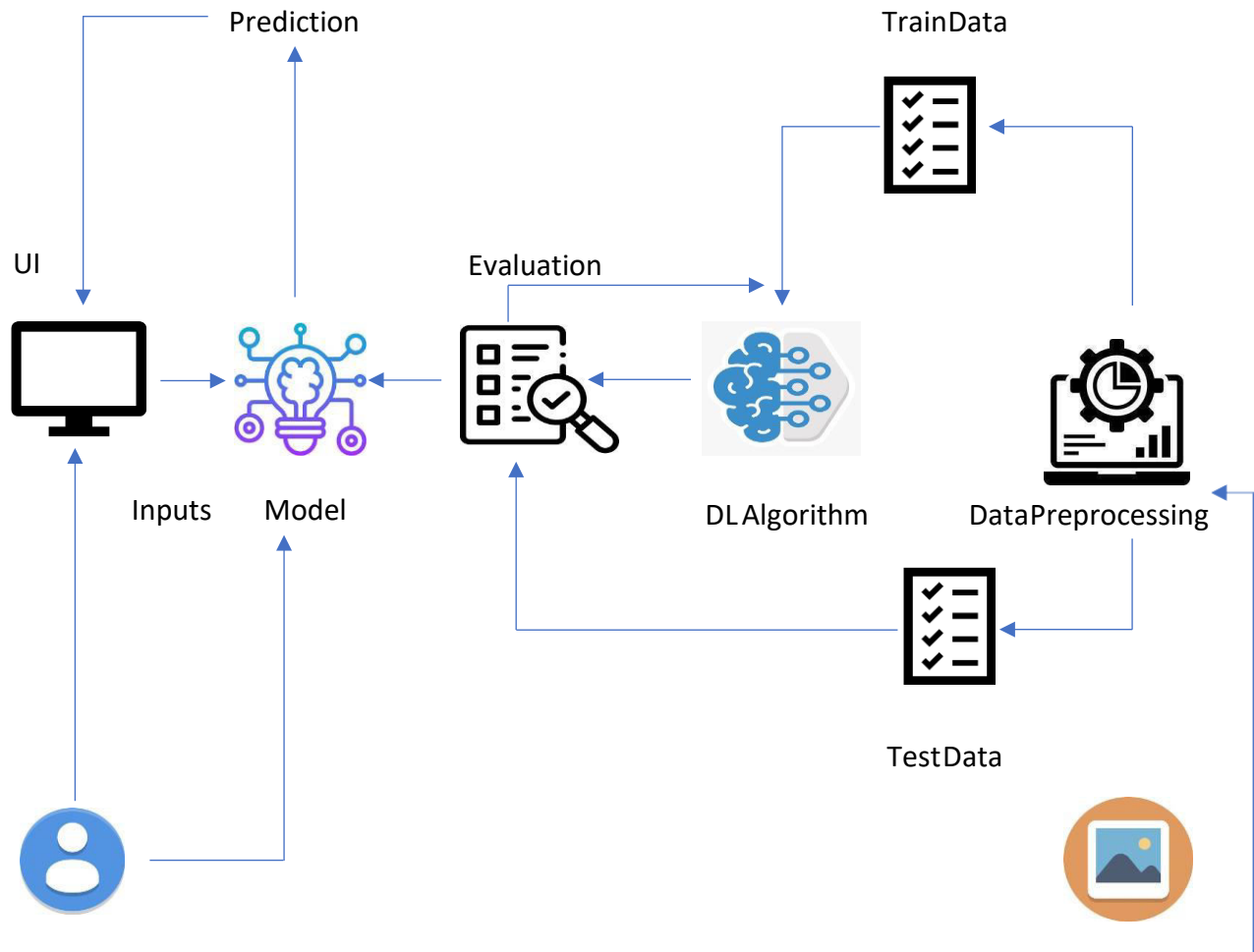


DFD Level 0 (Industry Standard)



5.2.Solution and Technical Architecture

Based on the complexity of the deployment, a solution architecture diagram may actually be a set of diagrams documenting various levels of the architecture. The diagram relates the information that you gather on the environment to both physical and logical choices for your architecture in an easily understood manner.



5.3. User Stories

A user story is an informal, general explanation of a software feature written from the perspective of the end user or customer. The purpose of a user story is to articulate how a piece of work will deliver a particular value back to the customer.

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Collection	USN-1	Download Food Nutrition Dataset	5	High	Nithika S
Sprint-1	Data Preprocessing	USN-2	Importing The Dataset into Workspace	5	High	Yeswanth Raj M
Sprint-1		USN-3	Handling Missing Data	5	High	Nandhini S
Sprint-1		USN-4	Feature Scaling	5	High	Mary Jeffina A
Sprint-1		USN-5	Data Visualization	4	Medium	Nithika S
Sprint-1		USN-6	Splitting Data into Train and Test	5	High	Nandhini S
Sprint-1		USN-7	Creating A Dataset with Sliding Windows	5	High	Mary Jeffina A
Sprint-2	Model Building	USN-8	Importing The Model Building Libraries	4	Medium	Nandhini S

6.PROJECT PLANING AND SCHEDULING

6.1. Sprint Planning & Estimation

Sprint-2		USN-9	Initializing The Model	4	Medium	Yeswanth Raj M
----------	--	-------	------------------------	---	--------	----------------

Sprint-2		USN-10	Adding LSTM Layers	3	Low	Nandhini S
Sprint-2		USN-11	Adding Output Layers	3	Low	Mary Jeffina A
Sprint-2		USN-12	Configure The Learning Process	4	Medium	Nithika S
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-2		USN-13	Train The Model	5	High	Nithika S
Sprint-2		USN-14	Model Evaluation	4	Medium	Yeswanth Raj M
Sprint-2		USN-15	Save The Model	5	High	Nandhini S
Sprint-2		USN-16	Test The Model	4	Medium	Mary Jeffina A
Sprint-3	Application Building	USN-17	Create An HTML File	5	High	Nandhini S
Sprint-3		USN-18	Build Python Code	4	Medium	Yeswanth Raj M
Sprint-3		USN-19	Run The App in Local Browser	5	High	Mary Jeffina A
Sprint-3		USN-20	Showcasing Prediction On UI	5	High	Nithika S
Sprint-4	Train The Model On IBM	USN-21	Register For IBM Cloud	3	Low	Yeswanth Raji M
Sprint-4		USN-22	Train The Model On IBM	8	High	Mary Jeffina A
Sprint-4		USN-23	Integrate Flask with Scoring End Point	8	High	Nandhini S

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	28 Oct 2022

Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	04 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	11 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	17 Nov 2022

6.2.Sprint Delivery Schedule

7. CODING & SOLUTIONING

7.1 Feature 1

The aim of pre-processing is an improvement of the image data that suppresses unwilling distortions or enhances some image features important for further processing, although geometric transformations of images (e.g. rotation, scaling, translation) are classified among pre-processing methods here since similar techniques are used.

Code:

```
from google.colab import drive drive.mount('/content/drive')
cd//content/drive/MyDrive/Colab Notebooks/Dataset

import numpy as np#used for numerical analysis import tensorflow #open source used for both ML and DL for
computation from tensorflow.keras.models import Sequential #it is a plain stack of layers from tensorflow.keras
import layers #A layer consists of a tensor-in tensor-out computation function #Dense layer is the regular deeply
connected neural network layer from tensorflow.keras.layers import Dense,Flatten
#Faltten-used fot flattening the input or change the dimension
from tensorflow.keras.layers import Conv2D,MaxPooling2D,Dropout #Convolutional layer #MaxPooling2D-for
downsampling the image from keras.preprocessing.image import ImageDataGenerator

#setting parameter for Image Data agumentation to the training data train_datagen =
ImageDataGenerator(rescale=1./255, shear_range=0.2, zoom_range=0.2, horizontal_flip
```

```

=True)
#Image Data agumentation to the testing data test_datagen=ImageDataGenerator(rescale=1./255)

#performing data agumentation to train data x_train =
train_datagen.flow_from_directory(
    r'/content/drive/MyDrive/content/TRAIN_SET',
    target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse') #performing data agumentation to test data x_test
= test_datagen.flow_from_directory(
    r'/content/drive/MyDrive/content/TEST_SET',
    target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse') print(x_train.class_indices)#checking the number of
classes print(x_test.class_indices)#checking the number of classes

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

```

7.2.Feature 2 model training on IBM Watson Studio

```
!pip install watson-machine-learning-client
```

```

from ibm_watson_machine_learning import APIClient wml_credentials = {
    "url" : "https://us-south.ml.cloud.ibm.com",
    "apikey" : "o49g8_rjLtMfFOxWPrBuja8eQPmNZtIK-uGy3_MzolZp" }
client = APIClient(wml_credentials)

client = APIClient(wml_credentials)

def giud_from_space_name(client,space_name):
    space = client.spaces.get_details()
    return(next(item for item in space['resources'] if
item['entity']['name'] == space_name)['metadata']['id'])
    space_uid = giud_from_space_name(client,'Nutrition Analyzer') print("Space UID = "+
                                space_uid)

client.set.default_space(space_uid)

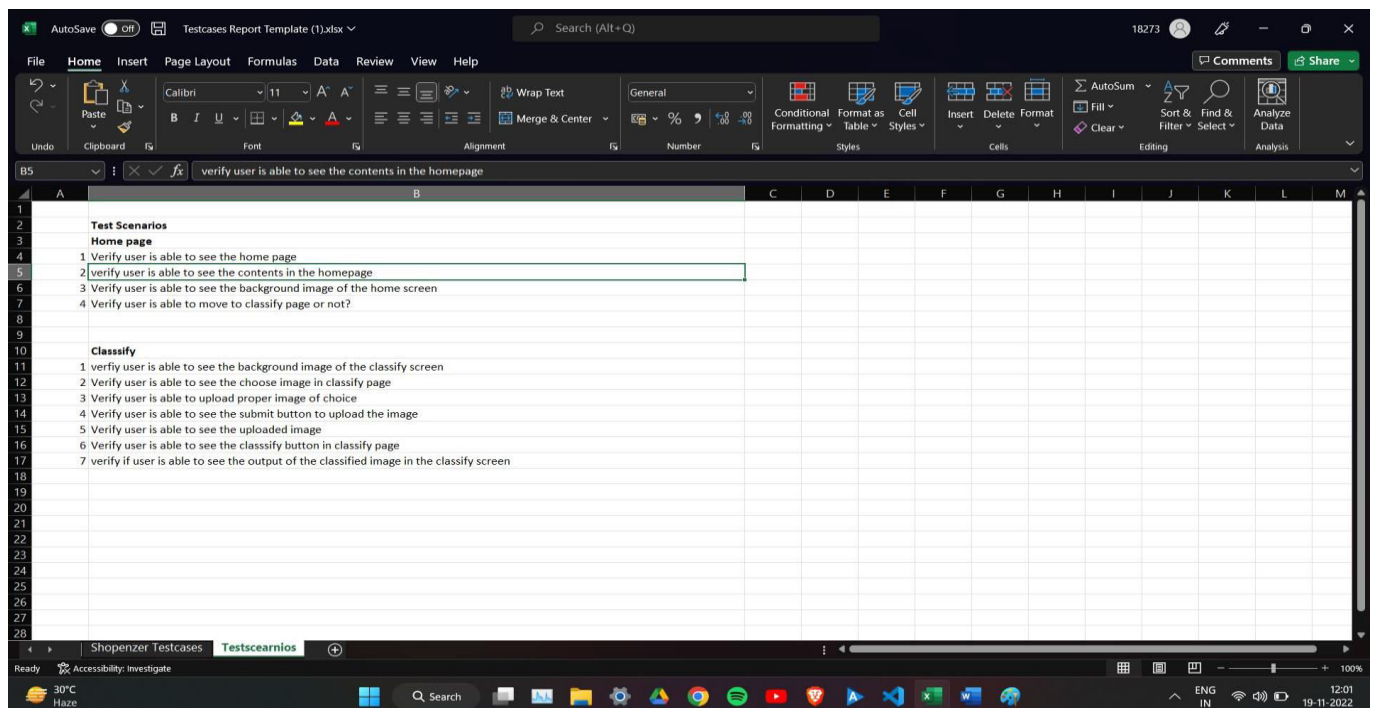
client.repository.download('4e26aed0-bb0c-4b3d-8476-9630f3617dc2', 'my_model.tar.gz')

```

8. TESTING

8.1. Test Cases

A test case is a set of actions performed on a system to determine if it satisfies software requirements and functions correctly. A test case is a document, which has a set of test data, preconditions, expected results and postconditions, developed for a particular test scenario.



AutoSave Testcases Report.xlsx

Search (Alt+Q)

18273

File Home Insert Page Layout Formulas Data Review View Help

Undo Clipboard Font Alignment Number Styles Cells Editing Analysis

H10 user should be able to view the details of the processed image

Feature Type	Component	Test Scenario	Pre-Prerequisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
UI	Home Page	Verify user is able to see the contents on the homepage		1.Enter URL and click go	http://192.0.0.1:5000	The contents of the homepage must be visible in a browser	Working as expected	Pass				Karthikeyan
UI	Home Page	Verify if user is able to click on upload button		1.Enter URL and click go 2.Click on upload	http://192.0.0.1:5000	User must be able to click on upload button	Working as expected	Pass				Velan
Functional	upload page	Verify user is able to press the upload button		1.Enter URL and click go 2.Click on upload 3.press upload image button	http://192.0.0.1:5000	User should be able to click the upload image button	Working as expected	Pass				Deepak
UI	upload page	Verify user is able to preview the image uploaded		1.Enter URL and click go 2.Click on upload 3.press upload image button	http://192.0.0.1:5000	User should be able to preview the image uploaded	Working as expected	Pass				
UI	upload page	Verify user is able to see the content after the image is processed		1.Enter URL and click go 2.Click on upload 3.press upload image button 4.click details	http://192.0.0.1:5000	User should be able to view the details of the processed image	Working as expected	Pass				Vijayamurugan

Shoppenzer Testcases Testscenarios

Ready Accessibility: Investigate

29°C Haze

Search

ENG IN 13:31 19-11-2022

8.2. User Acceptance Testing

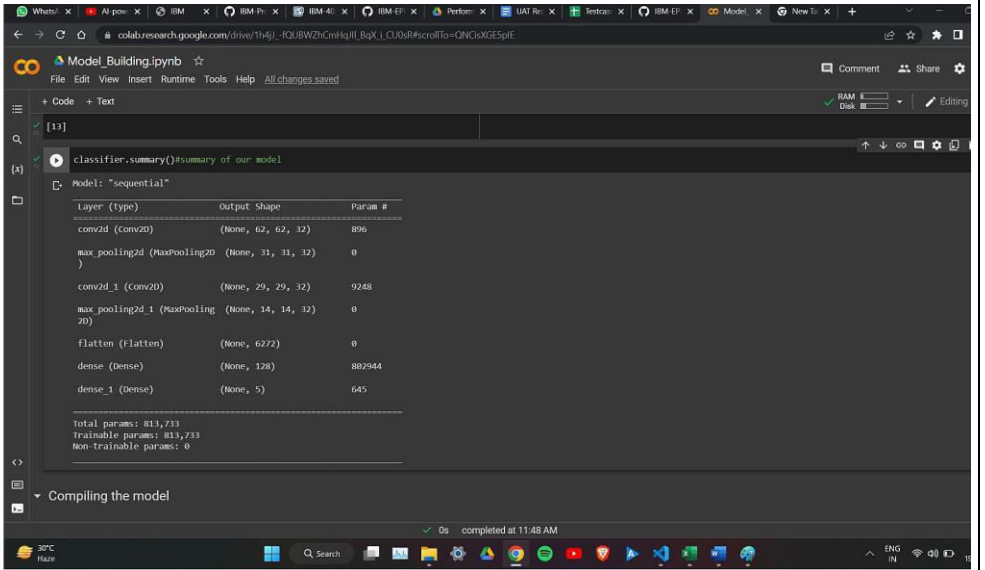
User acceptance testing (UAT), also called application testing or end-user testing, is a phase of software development in which the software is tested in the real world by its intended audience. UAT is often the last phase of the software testing process and is performed before the tested software is released to its intended market. The goal of UAT is to ensure software can handle real-world tasks and perform up to development specifications. In UAT, users are given the opportunity to interact with the software before its official release to see if any features have been overlooked or if it contains any bugs. UAT can be done in-house with volunteers, by paid test subjects using the software or by making the test version available for download as a free trial. The results from the early testers are forwarded to the developers, who make final changes before releasing the software commercially. UAT is effective for ensuring quality in terms of time and software cost, while also increasing transparency with users.

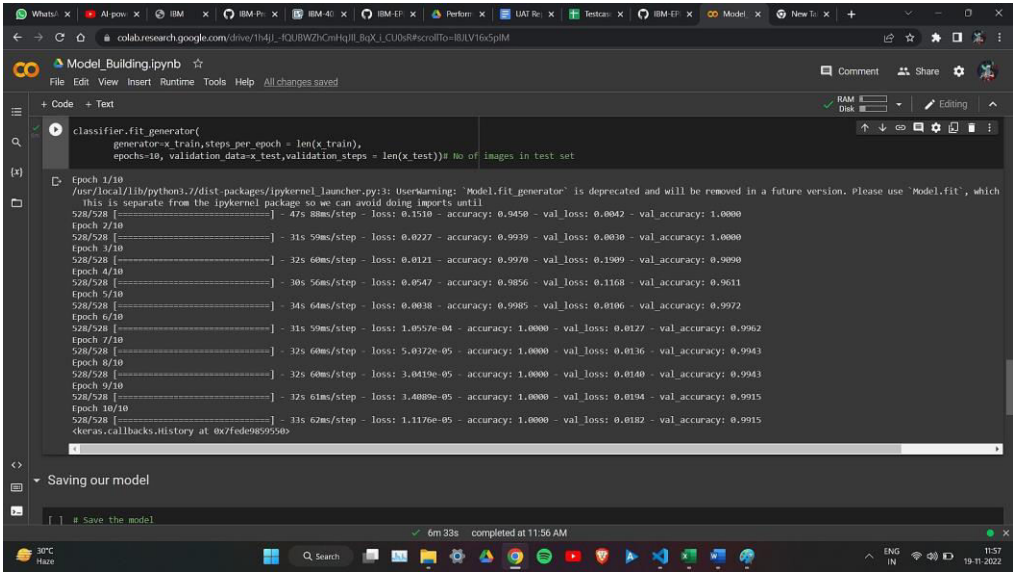
Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
No background image	6	3	2	3	20
Image not uploaded	2	0	3	0	4
Output not visible	3	2	0	1	6
Fixed	9	4	4	20	37
No preview of uploaded image	0	0	1	0	1
Skipped	0	0	1	1	2
Won't Fix	0	5	2	1	8
Totals	20	14	13	26	77

Section	Total Cases	Not Tested	Fail	Pass
Homepage	2	0	0	2
Contents of homepage	5	0	0	51
Background image in homepage	4	0	0	2
Moving to classify page	6	0	0	3
Choose image	4	0	0	9
Uploaded image preview	4	0	0	4
Contents of the output	3	0	0	2

9. RESULTS

9.1. Performance Metrics

S.No.	Parameter	Values	Screenshot
1.	Model Summary	Total params: 813,733 Trainable params: 813,733 Non-trainable params: 0	

2.	Accuracy	Training Accuracy - 99.2% Valida on Accuracy – 98.3%	
----	----------	---	--

10. ADVANTAGES & DISADVANTAGES

ADVANTAGES

There are many advantages to using an AI-powered nutrition analyzer for fitness enthusiasts. Some of these advantages include:

1. The software is powerful and can be used for a long time

The software is easy to operate, powerful, and can be used for a long time. Provide customers with free software upgrades for life.

2. Automated analysis of nutrient content

The instrument is equipped with a spectrum of nutrient analysis software for automatic analysis of nutrient content.

3. It is suitable for food research and development, clinical nutrition, dietitian and other departments

It is suitable for food research and development, clinical nutrition, dietitian and other departments. According to the analysis results, the nutrition of the human body is improved, and the weight loss effect is obvious.

4. To solve the problem of food nutrition labeling

The instrument can quickly and accurately analyze the nutrient content of food, and is an indispensable instrument for solving food nutrition labeling.

5. The instrument is easy to operate, accurate and reliable

The instrument is easy to operate, accurate and reliable. It is an ideal instrument for food analysis, quality control and food research.

DISADVANTAGES

Some of the potential disadvantages of an AI-powered nutrition analyzer for fitness enthusiasts include:

1. They can be expensive.
2. They require you to have a specific food item in order to get accurate results.
3. They can be time-consuming to use.
4. The results can be difficult to interpret.
5. They are not always accurate.
6. They can be frustrating to use.
7. You may not get the results you want.
8. You may not be able to find the right food item.
9. You may not be able to use the results.
10. You may not be able to find the right nutritional analyzer.

11. CONCLUSION

Overall, we believe that the AI-powered nutrition analyzer is a great tool for fitness enthusiasts. It can help them track their diet and ensure that they are getting the nutrients they need. Additionally, it can help them identify areas where they may need to make changes in their diet

12. FUTURE SCOPE

Further enhancement can be made in the future advancement, to develop personalized nutrition plans. The plans could be based on an individual's age, weight, height, gender, activity level, and other factors. The plans could also be customized for specific medical conditions. There is a lot of potential for the Nutritional Analyzer to be used in a variety of settings. For example, it could be used in restaurants to help customers make healthier choices. It could also be used in schools to help students learn about nutrition. Additionally, the Nutritional Analyzer could be used in hospitals and other healthcare settings to help patients make better choices about their diet.

13. APPENDIX

Source Code:

```
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
launch():
    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=['APPLES','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': "5d797ab107mshe668f26bd044e64p1ffd34jsnf47bfa9a8ee4",    'x-
    rapidapi-host': "calorieninjas.p.rapidapi.com"
}

```

```

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

```

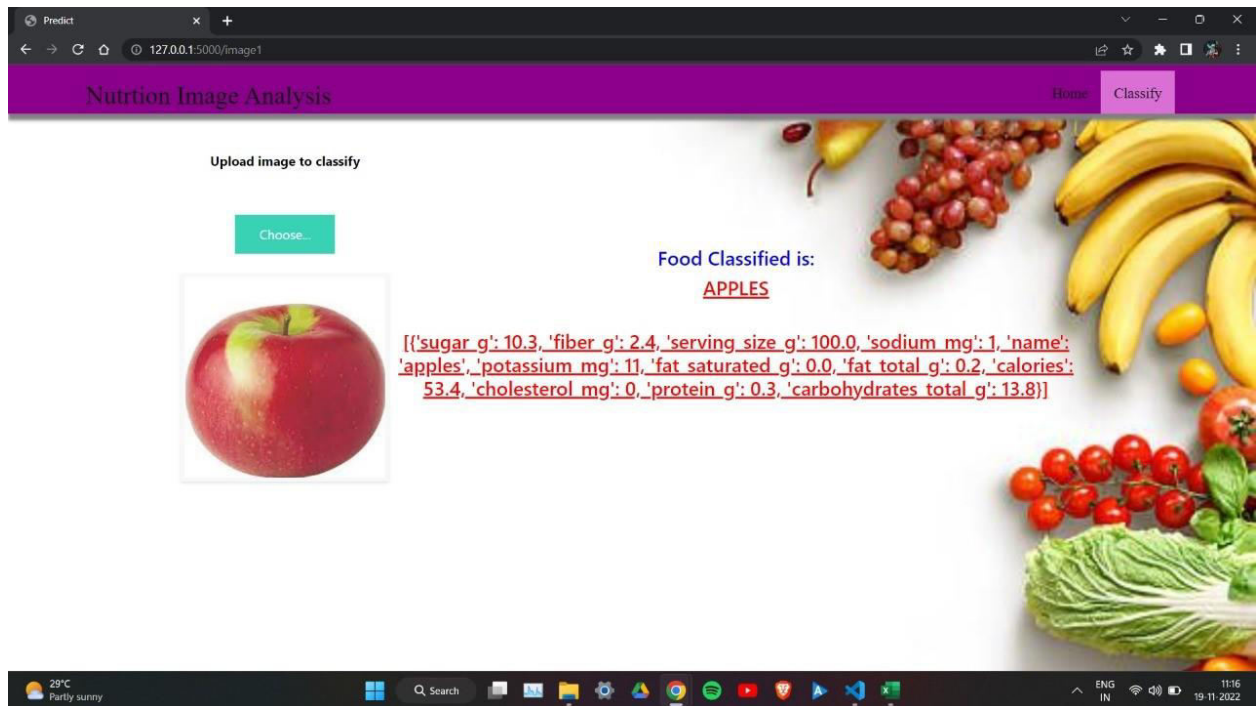
```

print(response.text)    return
response.json()['items'] if
__name__ == "__main__": #
running the app
    app.run(debug=False)

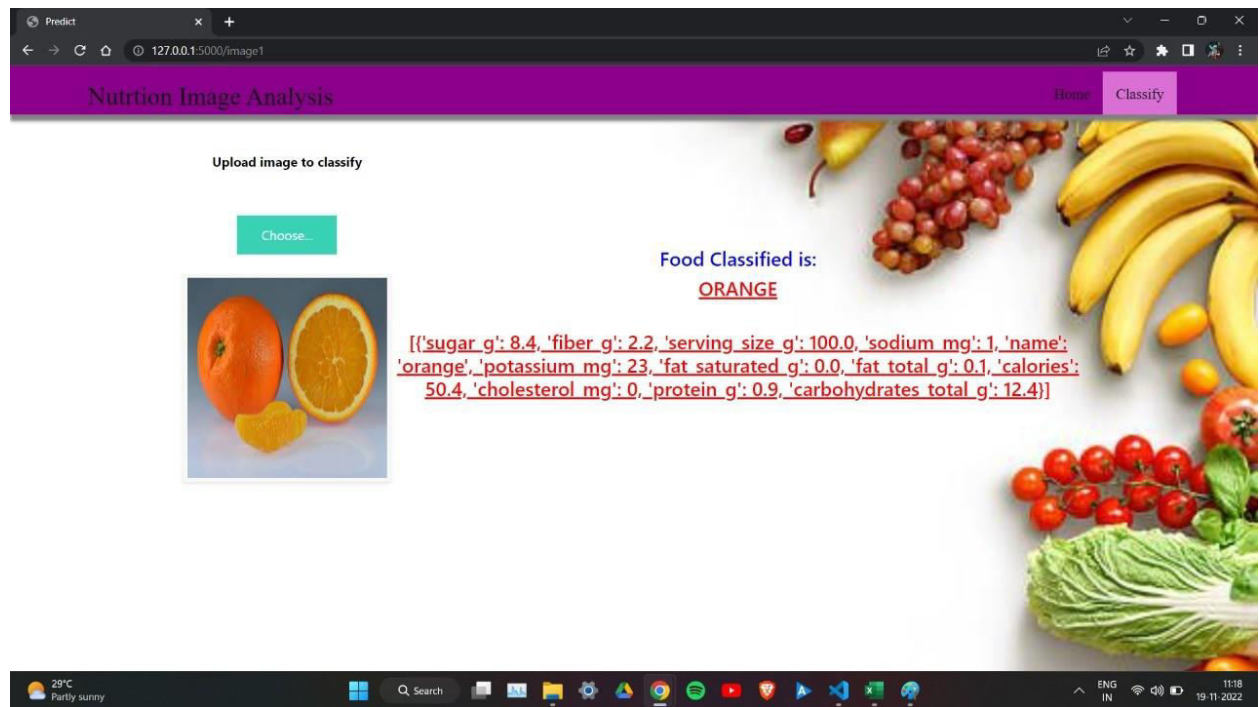
```

Output:

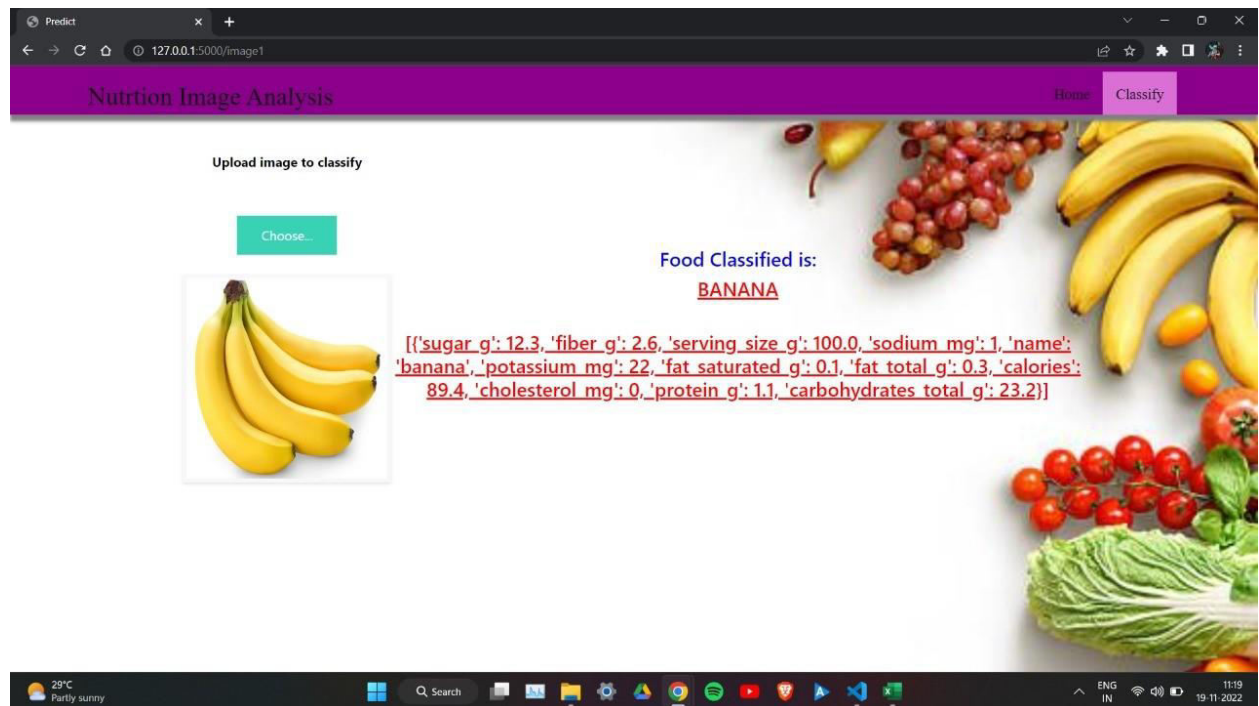
sample 1:



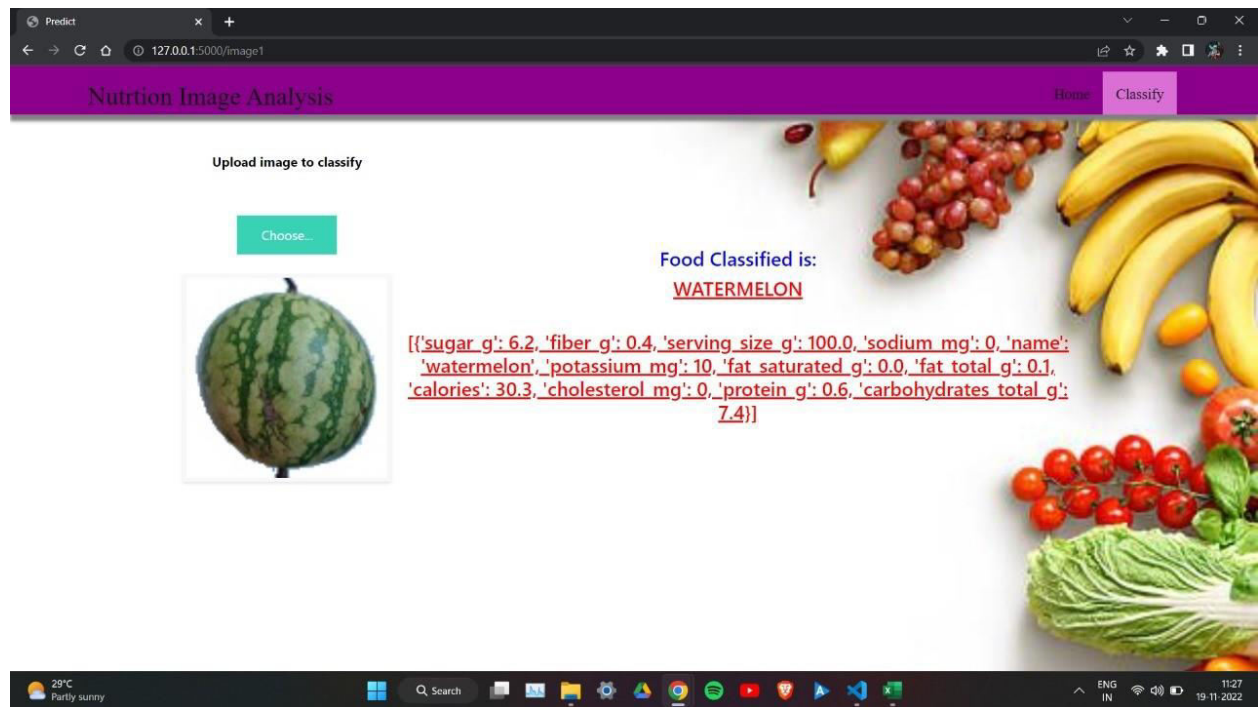
sample 2:



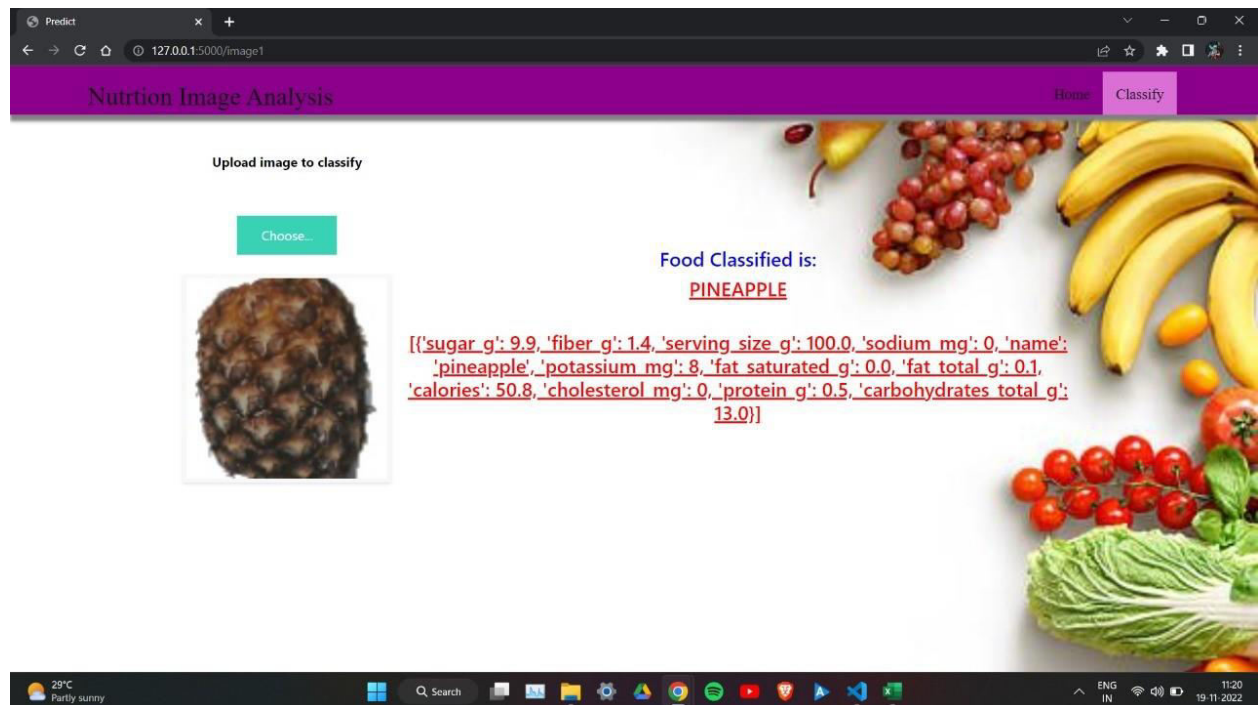
sample 3:



sample 4:



sample 5:



GitHub Link: <https://github.com/IBM-EPBL/IBM-Project-40391-1660628900>

Project Demo Link: <https://youtu.be/F8WHFTWDHj4>

