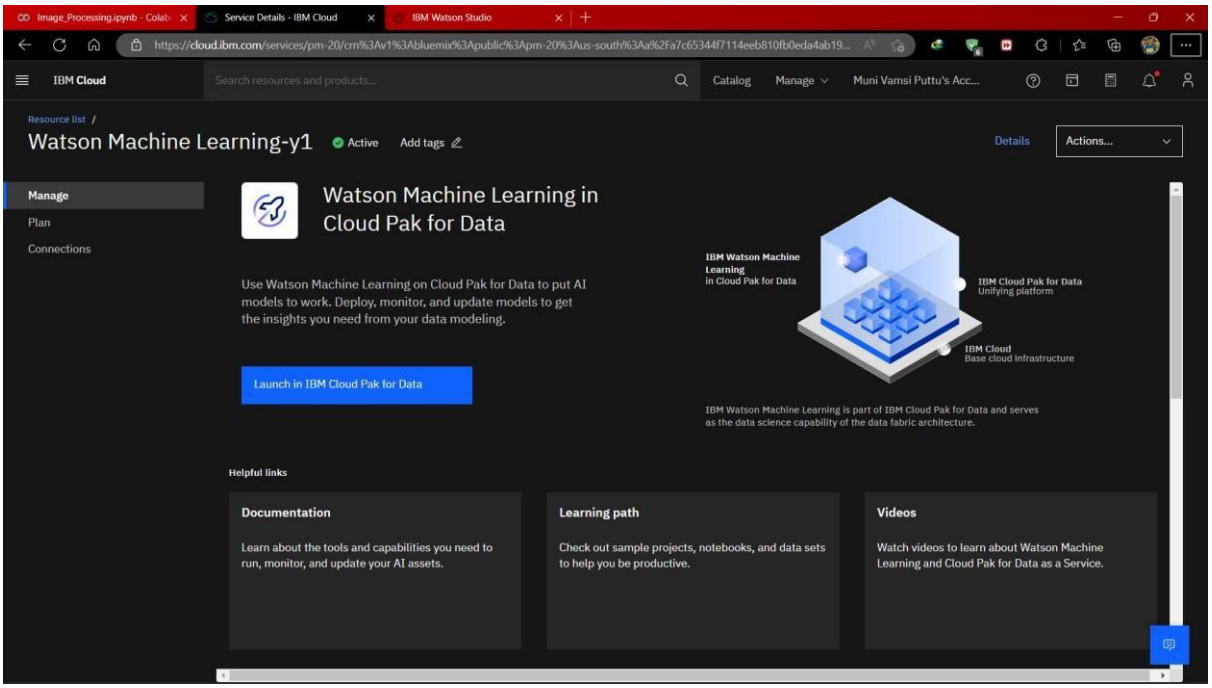
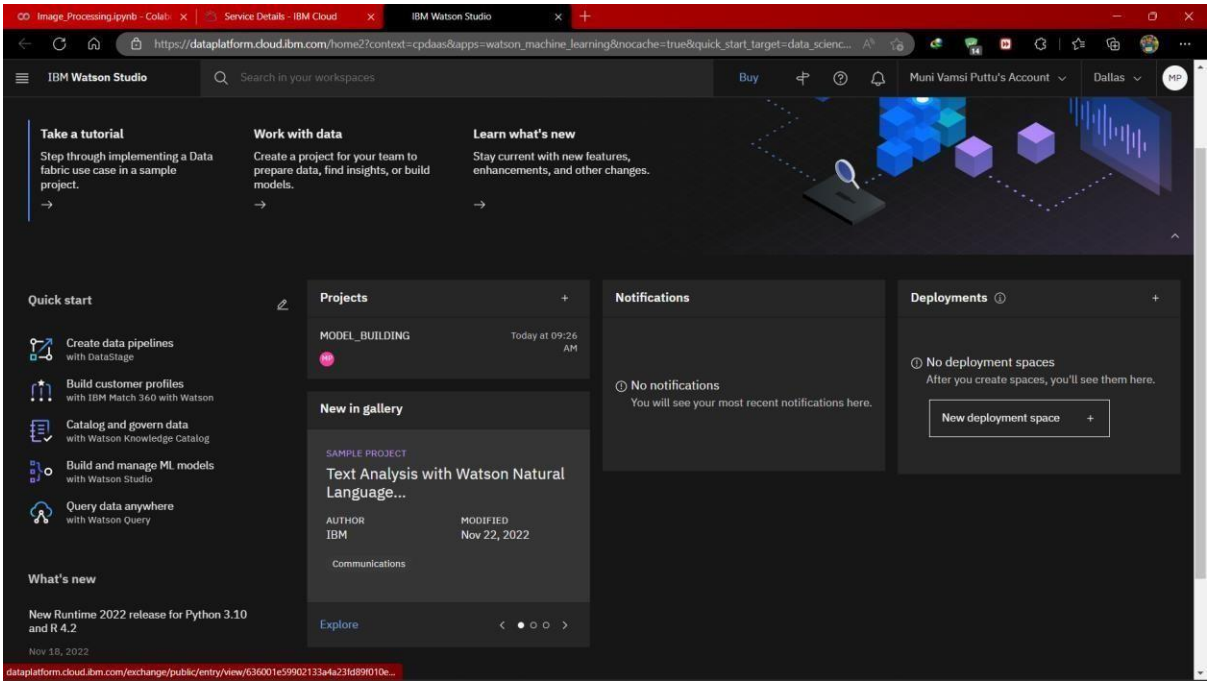
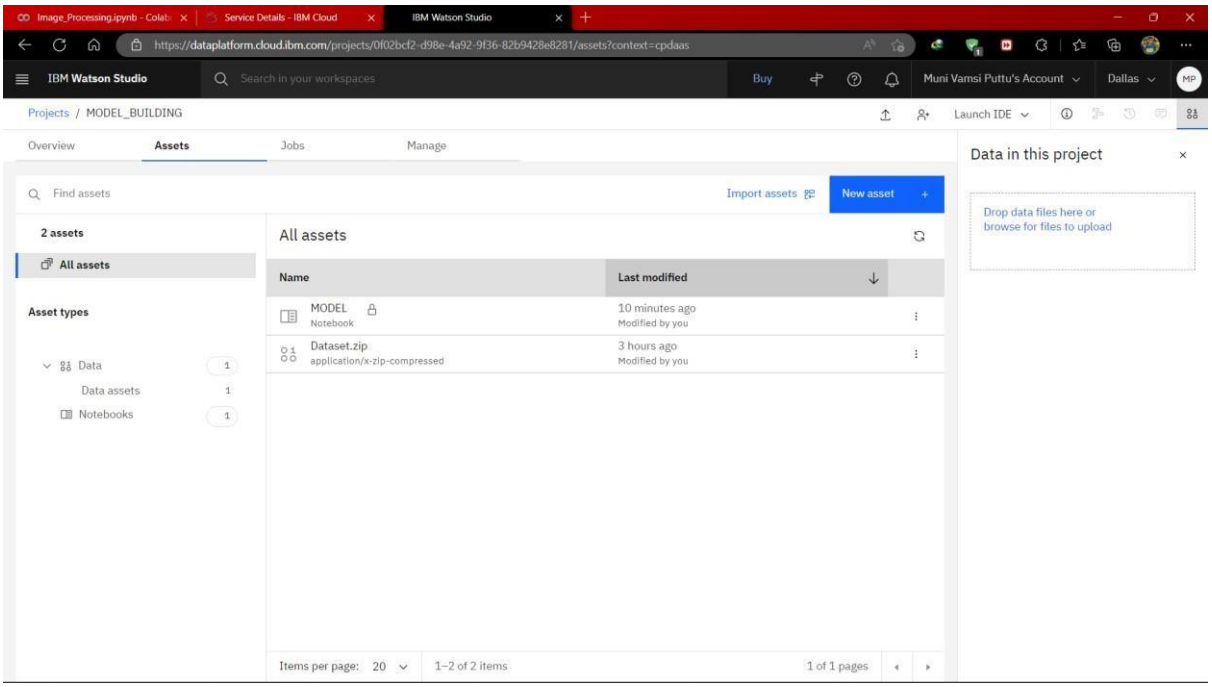
Train Model On IBM

TEAM ID: LTVIP2025TMIDS67751

PROJECT NAME: AI-powered Nutrition Analyzer for Fitness Enthusiasts



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Dataset.zip
application/x-zip-compressed
3 hours ago
Modified by you
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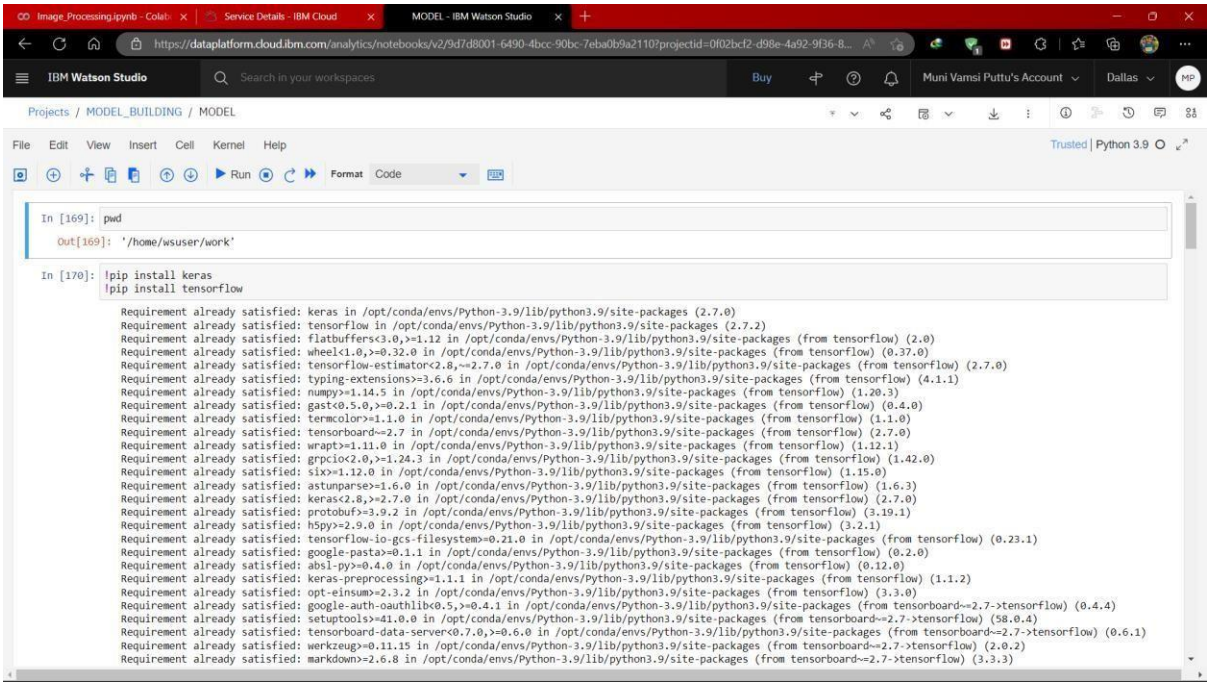
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In [169]: pwd
Out[169]: '/home/wsuser/work'
In [170]: !pip install keras
!pip install tensorflow
Requirement already satisfied: keras in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (2.7.0)
Requirement already satisfied: tensorflow in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (2.7.2)
Requirement already satisfied: flatbuffers<3.0,>=1.12 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.0)
Requirement already satisfied: wheel<1.0,>=0.32.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.37.0)
Requirement already satisfied: tensorflow-estimator<2.8,~=2.7.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.7.0)
Requirement already satisfied: typing-extensions>=3.6.6 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (4.1.1)
Requirement already satisfied: numpy>=1.14.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.20.3)
Requirement already satisfied: gast<0.5.0,>=0.2.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.4.0)
Requirement already satisfied: termcolor>=1.1.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.1.0)
Requirement already satisfied: tensorboard~=2.7 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.7.0)
Requirement already satisfied: wrapt>=1.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.12.1)
Requirement already satisfied: grpcio<2.0,>=1.24.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.42.0)
Requirement already satisfied: six>=1.12.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.15.0)
Requirement already satisfied: astunparse>=1.6.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.6.3)
Requirement already satisfied: keras<2.8,>=2.7.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.7.0)
Requirement already satisfied: protobuf>=3.9.2 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (3.19.1)
Requirement already satisfied: h5py>=2.9.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (3.2.1)
Requirement already satisfied: tensorflow-io-gcs-filesystem>=0.21.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.23.1)
Requirement already satisfied: google-pasta>=0.1.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.2.0)
Requirement already satisfied: absl-py>=0.4.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.12.0)
Requirement already satisfied: keras-preprocessing>=1.1.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.1.2)
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Requirement already satisfied: google-auth-oauthlib<0.5,>=0.4.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorboard~=2.7->tensorflow) (0.4.4)
Requirement already satisfied: setuptools>=41.0.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorboard~=2.7->tensorflow) (58.0.4)
Requirement already satisfied: tensorboard-data-server<0.7.0,>=0.6.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorboard~=2.7->tensorflow) (0.6.1)
Requirement already satisfied: werkzeug>=0.11.15 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorboard~=2.7->tensorflow) (2.0.2)
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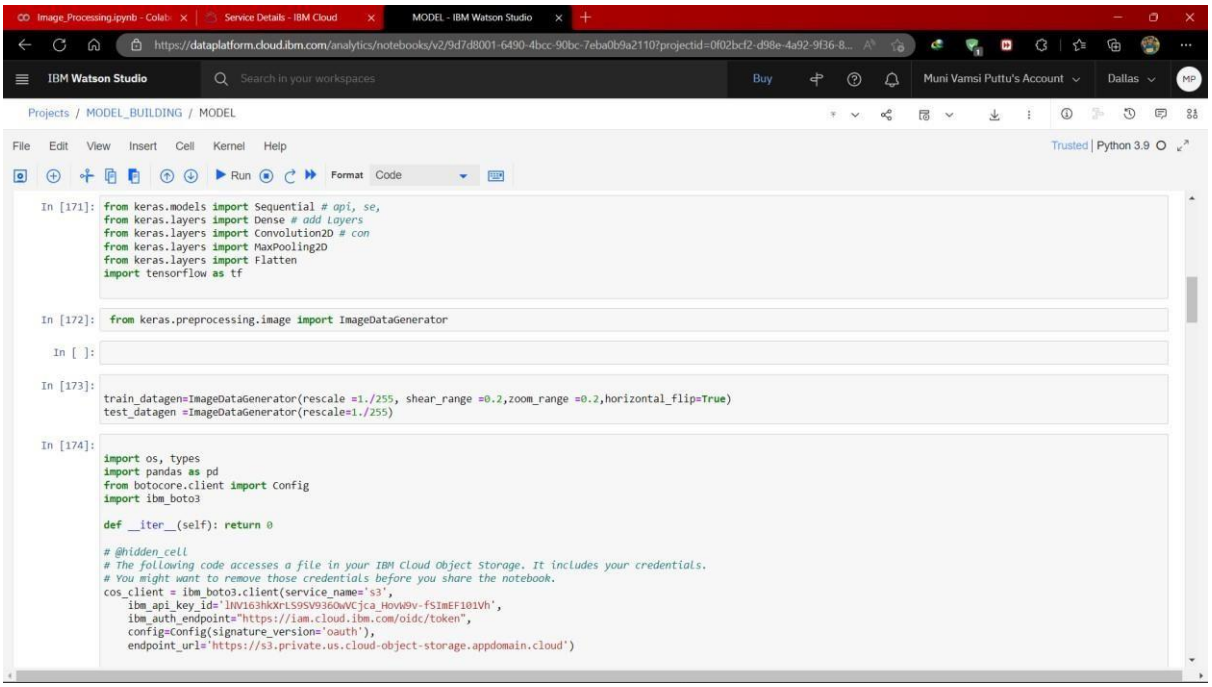
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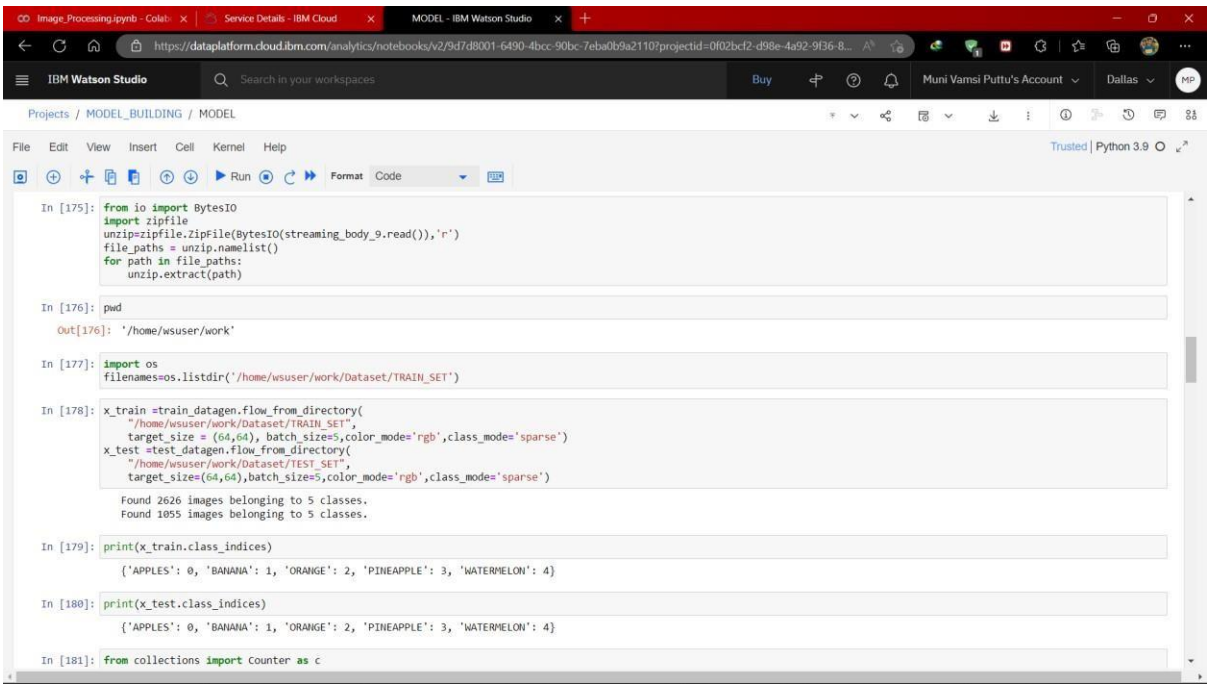
Format Code
In [171]:
from keras.models import Sequential # api, se,
from keras.layers import Dense # add Layers
from keras.layers import Convolution2D # con
from keras.layers import MaxPooling2D
from keras.layers import Flatten
import tensorflow as tf
In [172]:
from keras.preprocessing.image import ImageDataGenerator
In [ ]:
In [173]:
train_datagen=ImageDataGenerator(rescale =1./255, shear_range =0.2,zoom_range =0.2,horizontal_flip=True)
test_datagen =ImageDataGenerator(rescale=1./255)
In [174]:
import os, types
import pandas as pd
from botocore.client import Config
import ibm_boto3
def __iter__(self): return 0
# @hidden_cell
# The following code accesses a file in your IBM Cloud Object Storage. It includes your credentials.
# You might want to remove those credentials before you share the notebook.
cos_client = ibm_boto3.client(service_name='s3',
ibm_api_key_id='lNV163hKXrL59SV936OwVCjca_HcvW9v-fSImEF101Vh',
ibm_auth_endpoint="https://iam.cloud.ibm.com/oidc/token",
config=Config(signature_version='oauth'),
endpoint_url='https://s3.private.us.cloud-object-storage.appdomain.cloud')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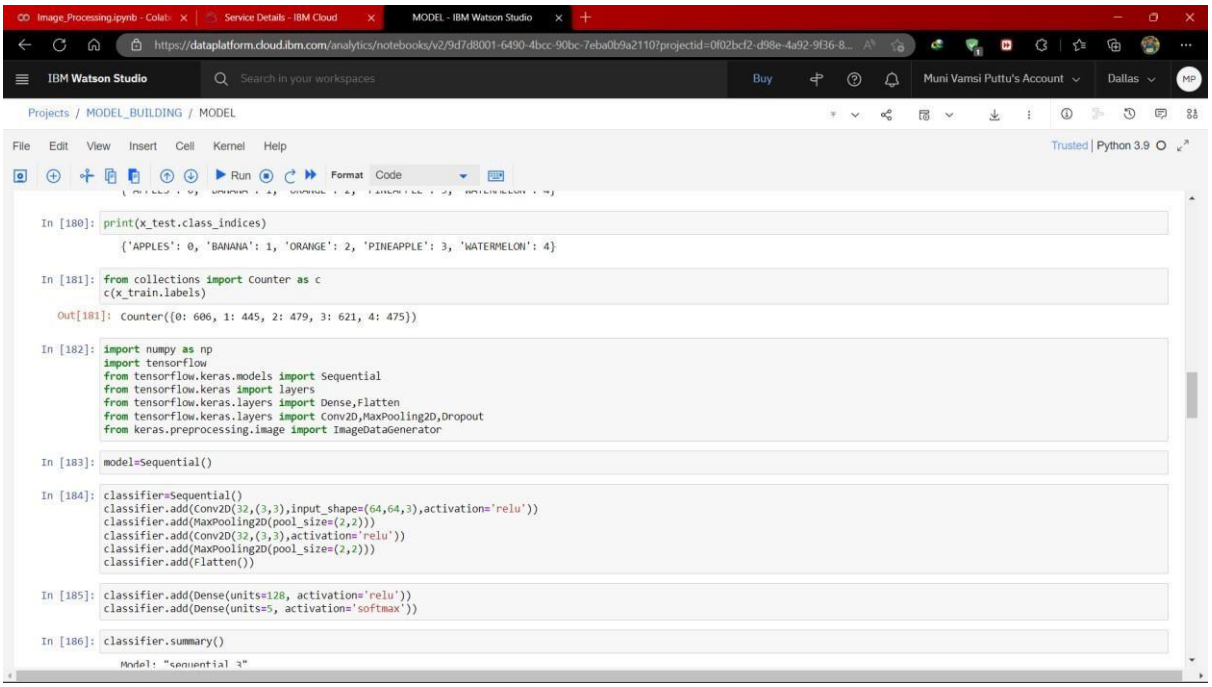
In [175]:
from io import BytesIO
import zipfile
unzip=zipfile.ZipFile(BytesIO(streaming_body_9.read()),'r')
file_paths = unzip.namelist()
for path in file_paths:
unzip.extract(path)
In [176]:
pwd
Out[176]: '/home/wsuser/work'
In [177]:
import os
filenames=os.listdir('/home/wsuser/work/Dataset/TRAIN_SET')
In [178]:
x_train =train_datagen.flow_from_directory(
"/home/wsuser/work/Dataset/TRAIN_SET",
target_size = (64,64), batch_size=5,color_mode='rgb',class_mode='sparse')
x_test =test_datagen.flow_from_directory(
"/home/wsuser/work/Dataset/TEST_SET",
target_size=(64,64),batch_size=5,color_mode='rgb',class_mode='sparse')
Found 2626 images belonging to 5 classes.
Found 1055 images belonging to 5 classes.
In [179]:
print(x_train.class_indices)
{'APPLES': 0, 'BANANA': 1, 'ORANGE': 2, 'PINEAPPLE': 3, 'WATERMELON': 4}
In [180]:
print(x_test.class_indices)
{'APPLES': 0, 'BANANA': 1, 'ORANGE': 2, 'PINEAPPLE': 3, 'WATERMELON': 4}
In [181]:
from collections import Counter as c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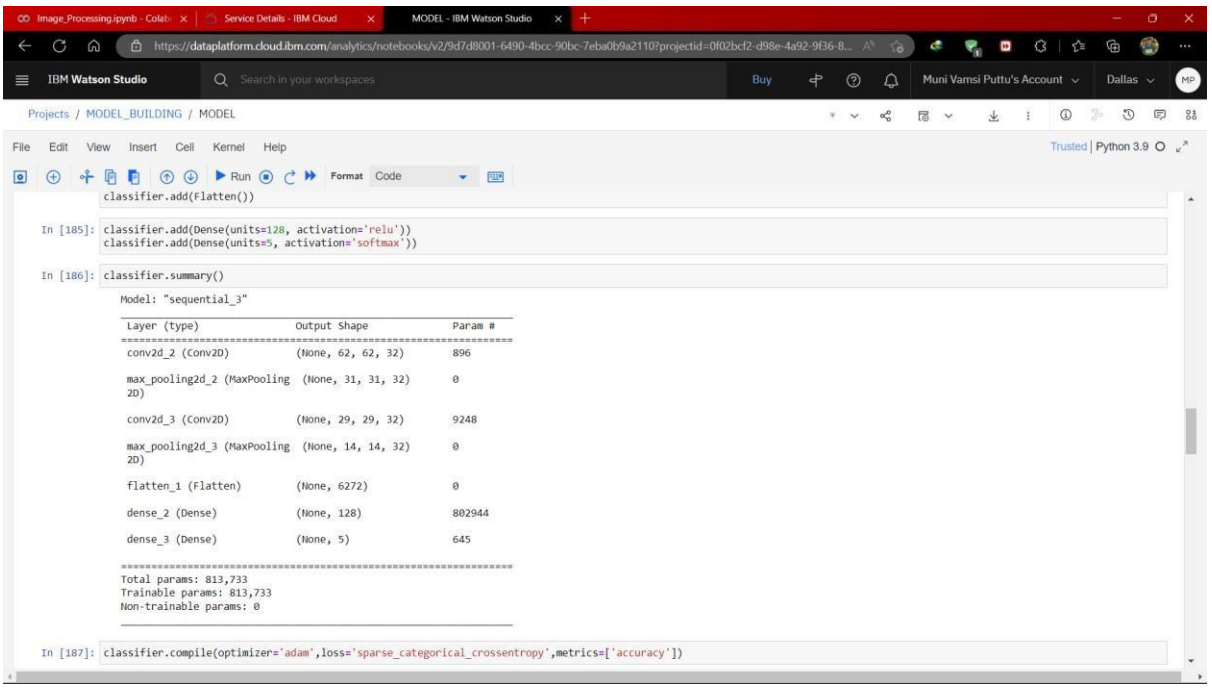
In [180]: print(x_test.class_indices)
{'APPLES': 0, 'BANANA': 1, 'ORANGE': 2, 'PINEAPPLE': 3, 'WATERMELON': 4}
In [181]: from collections import Counter as c
c(x_train.labels)
Out[181]: Counter({0: 606, 1: 445, 2: 479, 3: 621, 4: 475})
In [182]: import numpy as np
import tensorflow
from tensorflow.keras.models import Sequential
from tensorflow.keras import layers
from tensorflow.keras.layers import Dense,Flatten
from tensorflow.keras.layers import Conv2D,MaxPooling2D,Dropout
from keras.preprocessing.image import ImageDataGenerator
In [183]: model=Sequential()
In [184]: 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())
In [185]: classifier.add(Dense(units=128, activation='relu'))
classifier.add(Dense(units=5, activation='softmax'))
In [186]: classifier.summary()
Model: "sequential_3"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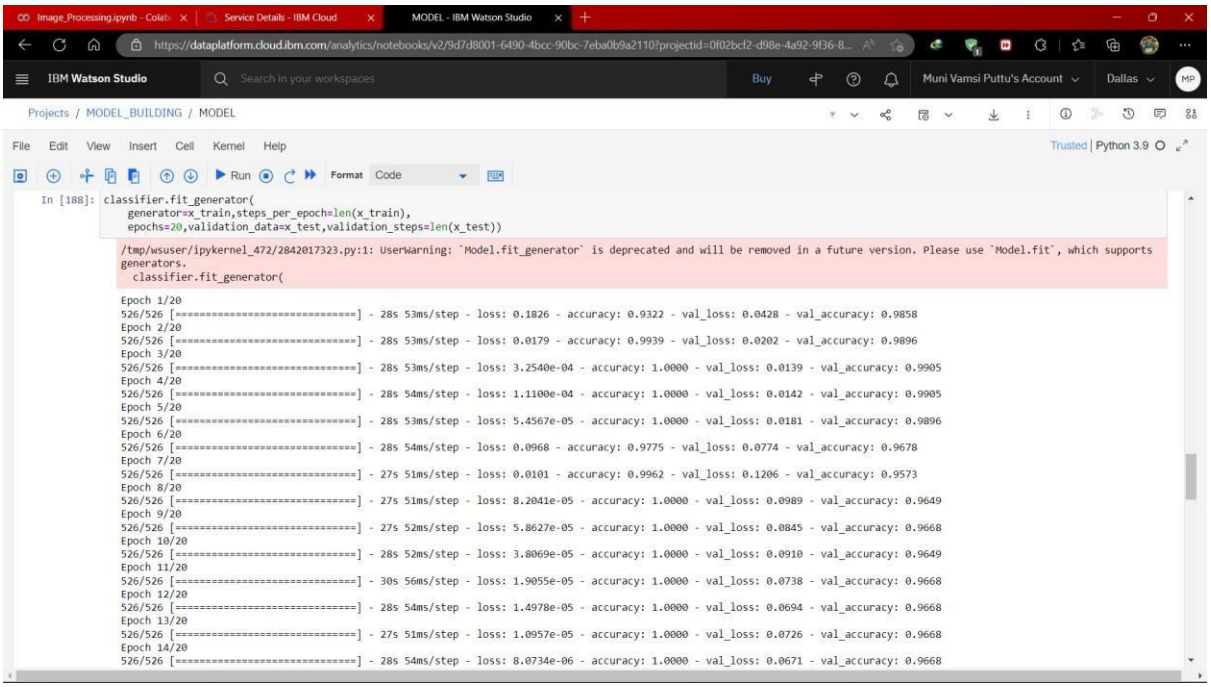
classifier.add(Flatten())
In [185]: classifier.add(Dense(units=128, activation='relu'))
classifier.add(Dense(units=5, activation='softmax'))
In [186]: classifier.summary()
Model: "sequential_3"
Layer (type) Output Shape Param #
conv2d_2 (Conv2D) (None, 62, 62, 32) 896
max_pooling2d_2 (MaxPooling 2D) (None, 31, 31, 32) 0
conv2d_3 (Conv2D) (None, 29, 29, 32) 9248
max_pooling2d_3 (MaxPooling 2D) (None, 14, 14, 32) 0
flatten_1 (Flatten) (None, 6272) 0
dense_2 (Dense) (None, 128) 802944
dense_3 (Dense) (None, 5) 645
Total params: 813,733
Trainable params: 813,733
Non-trainable params: 0
In [187]: classifier.compile(optimizer='adam',loss='sparse_categorical_crossentropy',metrics=['accuracy'])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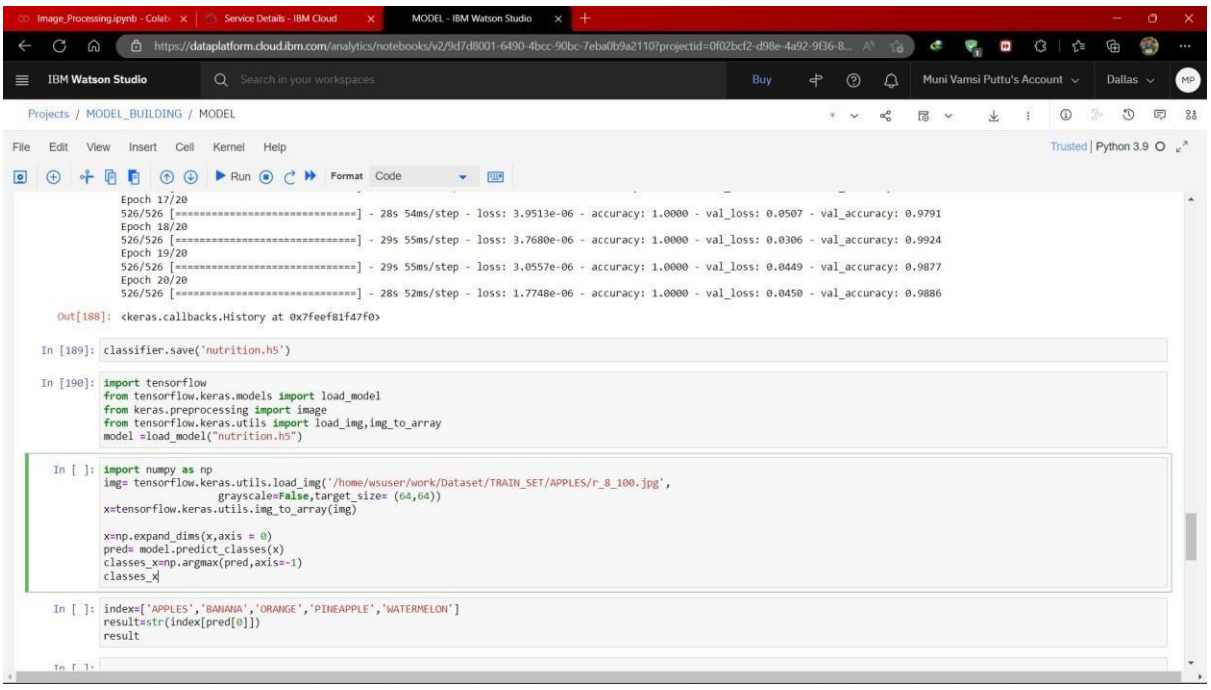
In [188]:
classifier.fit_generator(
generator=x_train,steps_per_epoch=len(x_train),
epochs=20,validation_data=x_test,validation_steps=len(x_test))
/tmp/wsuser/ipykernel_472/2842017323.py:1: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use `Model.fit`, which supports generators.
classifier.fit_generator(
Epoch 1/20
526/526 [==========] - 28s 53ms/step - loss: 0.1826 - accuracy: 0.9322 - val_loss: 0.0428 - val_accuracy: 0.9858
Epoch 2/20
526/526 [==========] - 28s 53ms/step - loss: 0.0179 - accuracy: 0.9939 - val_loss: 0.0202 - val_accuracy: 0.9896
Epoch 3/20
526/526 [==========] - 28s 53ms/step - loss: 3.2540e-04 - accuracy: 1.0000 - val_loss: 0.0139 - val_accuracy: 0.9905
Epoch 4/20
526/526 [==========] - 28s 54ms/step - loss: 1.1100e-04 - accuracy: 1.0000 - val_loss: 0.0142 - val_accuracy: 0.9905
Epoch 5/20
526/526 [==========] - 28s 53ms/step - loss: 5.4567e-05 - accuracy: 1.0000 - val_loss: 0.0181 - val_accuracy: 0.9896
Epoch 6/20
526/526 [==========] - 28s 54ms/step - loss: 0.0968 - accuracy: 0.9775 - val_loss: 0.0774 - val_accuracy: 0.9678
Epoch 7/20
526/526 [==========] - 27s 51ms/step - loss: 0.0101 - accuracy: 0.9962 - val_loss: 0.1206 - val_accuracy: 0.9573
Epoch 8/20
526/526 [==========] - 27s 51ms/step - loss: 8.2041e-05 - accuracy: 1.0000 - val_loss: 0.0989 - val_accuracy: 0.9649
Epoch 9/20
526/526 [==========] - 27s 52ms/step - loss: 5.8627e-05 - accuracy: 1.0000 - val_loss: 0.0845 - val_accuracy: 0.9668
Epoch 10/20
526/526 [==========] - 28s 52ms/step - loss: 3.8069e-05 - accuracy: 1.0000 - val_loss: 0.0910 - val_accuracy: 0.9649
Epoch 11/20
526/526 [==========] - 30s 56ms/step - loss: 1.9055e-05 - accuracy: 1.0000 - val_loss: 0.0738 - val_accuracy: 0.9668
Epoch 12/20
526/526 [==========] - 28s 54ms/step - loss: 1.4978e-05 - accuracy: 1.0000 - val_loss: 0.0694 - val_accuracy: 0.9668
Epoch 13/20
526/526 [==========] - 27s 51ms/step - loss: 1.0957e-05 - accuracy: 1.0000 - val_loss: 0.0726 - val_accuracy: 0.9668
Epoch 14/20
526/526 [==========] - 28s 54ms/step - loss: 8.0734e-06 - accuracy: 1.0000 - val_loss: 0.0671 - val_accuracy: 0.9668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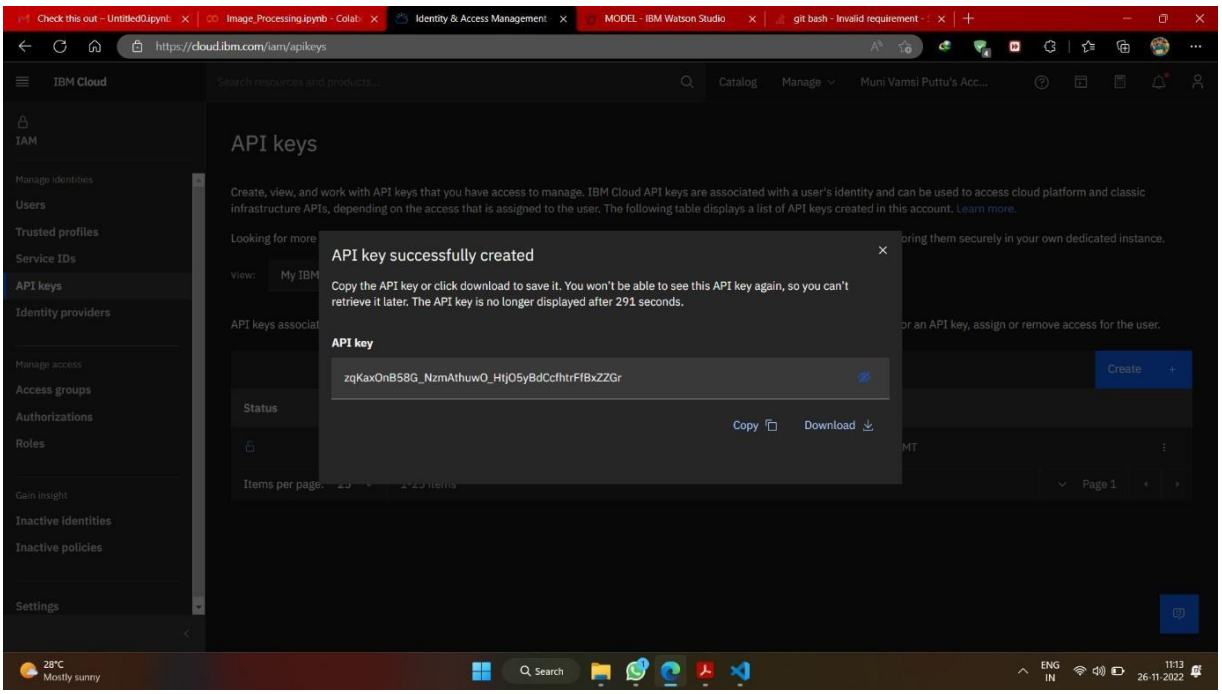
Epoch 17/20
526/526 [==========] - 28s 54ms/step - loss: 3.9513e-06 - accuracy: 1.0000 - val_loss: 0.0507 - val_accuracy: 0.9791
Epoch 18/20
526/526 [==========] - 29s 55ms/step - loss: 3.7680e-06 - accuracy: 1.0000 - val_loss: 0.0306 - val_accuracy: 0.9924
Epoch 19/20
526/526 [==========] - 29s 55ms/step - loss: 3.0557e-06 - accuracy: 1.0000 - val_loss: 0.0449 - val_accuracy: 0.9877
Epoch 20/20
526/526 [==========] - 28s 52ms/step - loss: 1.7748e-06 - accuracy: 1.0000 - val_loss: 0.0450 - val_accuracy: 0.9886
Out[188]: <keras.callbacks.History at 0x7feef81f47f0>
In [189]:
classifier.save('nutrition.h5')
In [190]:
import tensorflow
from tensorflow.keras.models import load_model
from keras.preprocessing import image
from tensorflow.keras.utils import load_img,img_to_array
model =load_model("nutrition.h5")
In [ ]:
import numpy as np
img= tensorflow.keras.utils.load_img('/home/wsuser/work/Dataset/TRAIN_SET/APPLES/r_8_100.jpg',
grayscale=False,target_size= (64,64))
x=tensorflow.keras.utils.img_to_array(img)
x=np.expand_dims(x,axis = 0)
pred= model.predict_classes(x)
classes_x=np.argmax(pred,axis=-1)
classes_x
In [ ]:
index=['APPLES','BANANA','ORANGE','PINEAPPLE','WATERMELON']
result=str(index[pred[0]])
result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API key successfully created
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API key
zqKaxOnB58G_NzmAthuwO_HtjO5yBdCcfhtrFfBxZZGr
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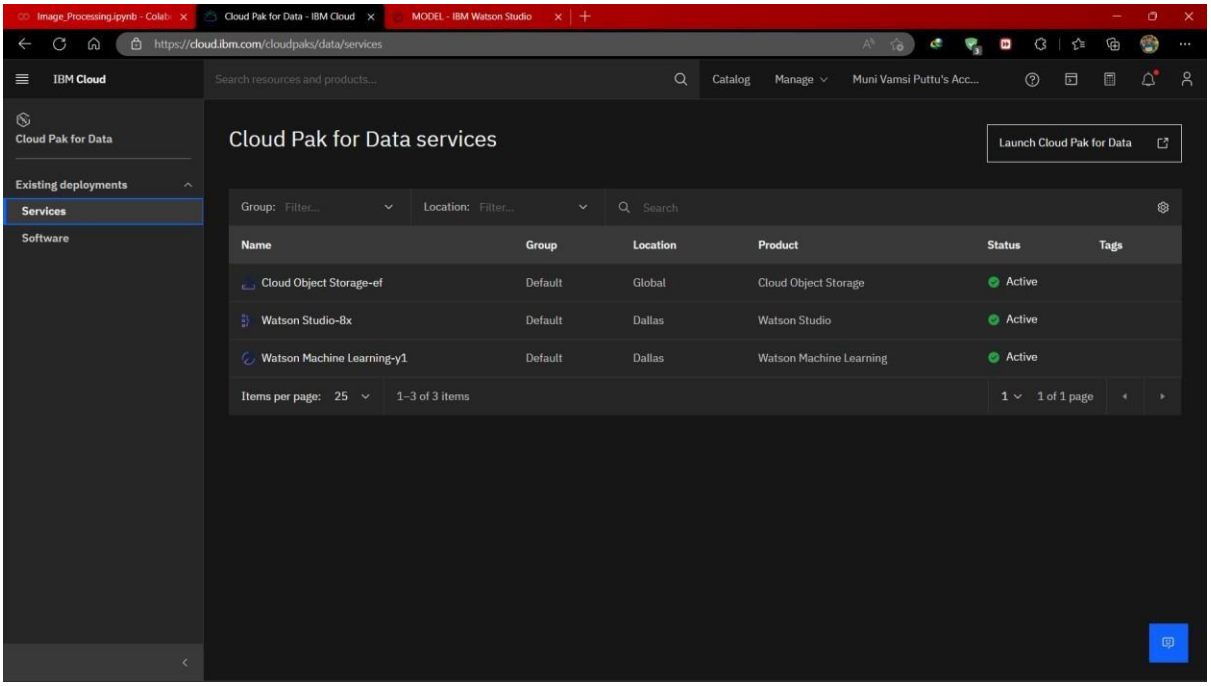
IN
11:13
26-11-2022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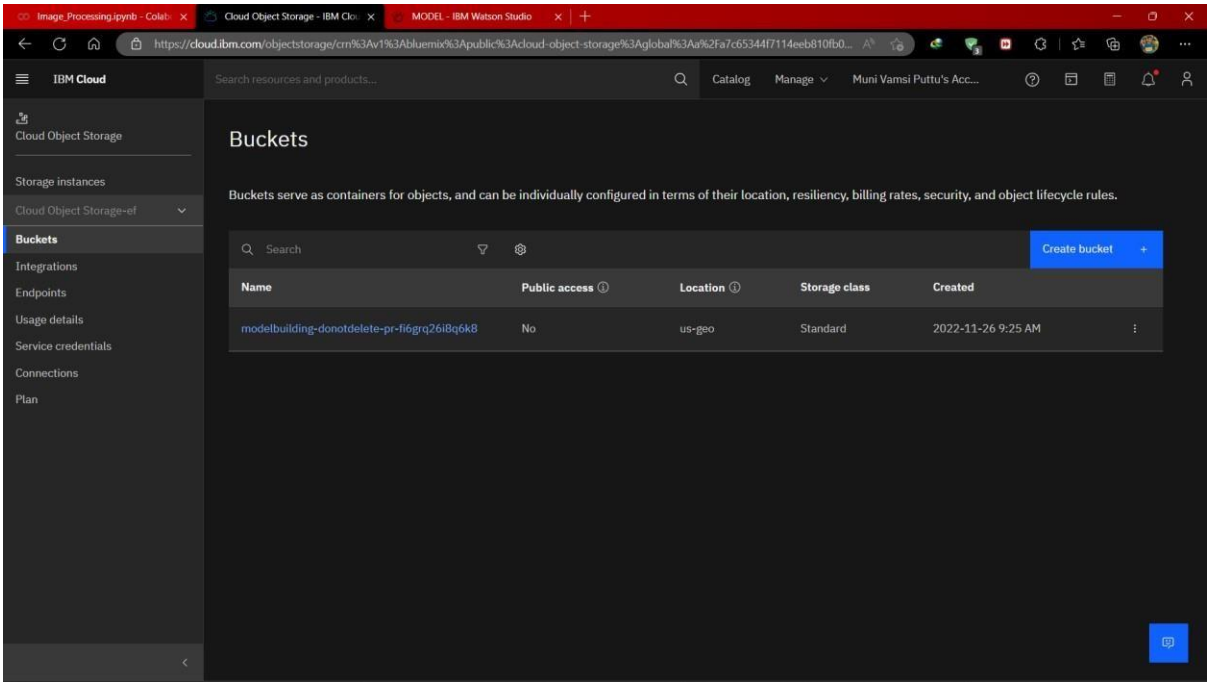
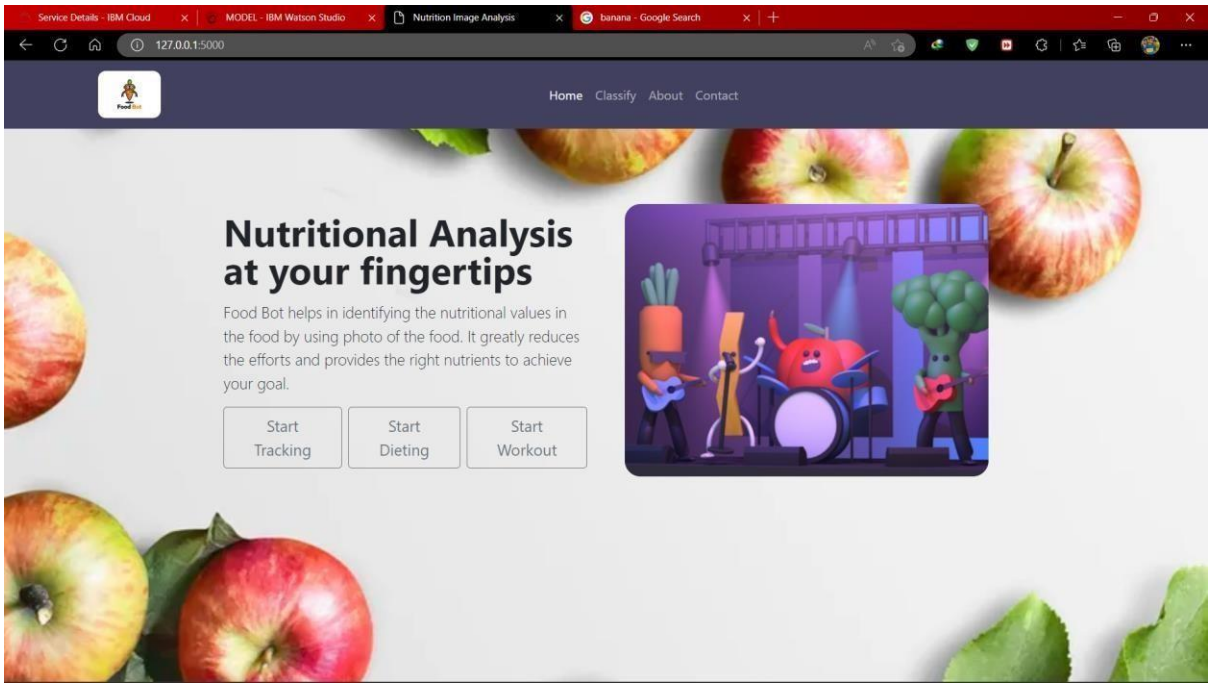
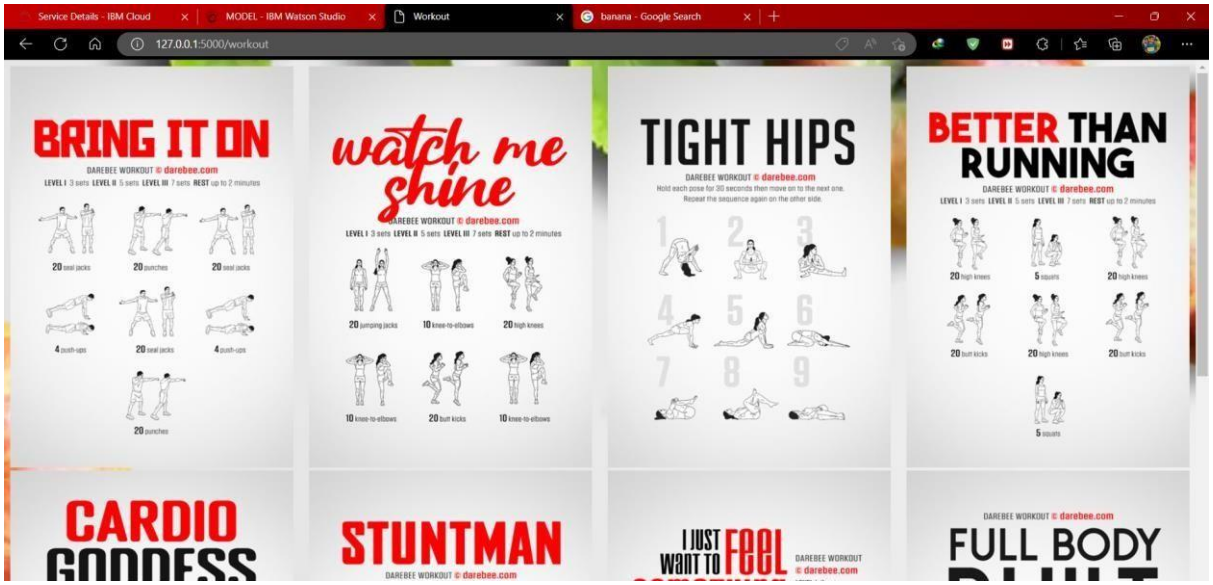
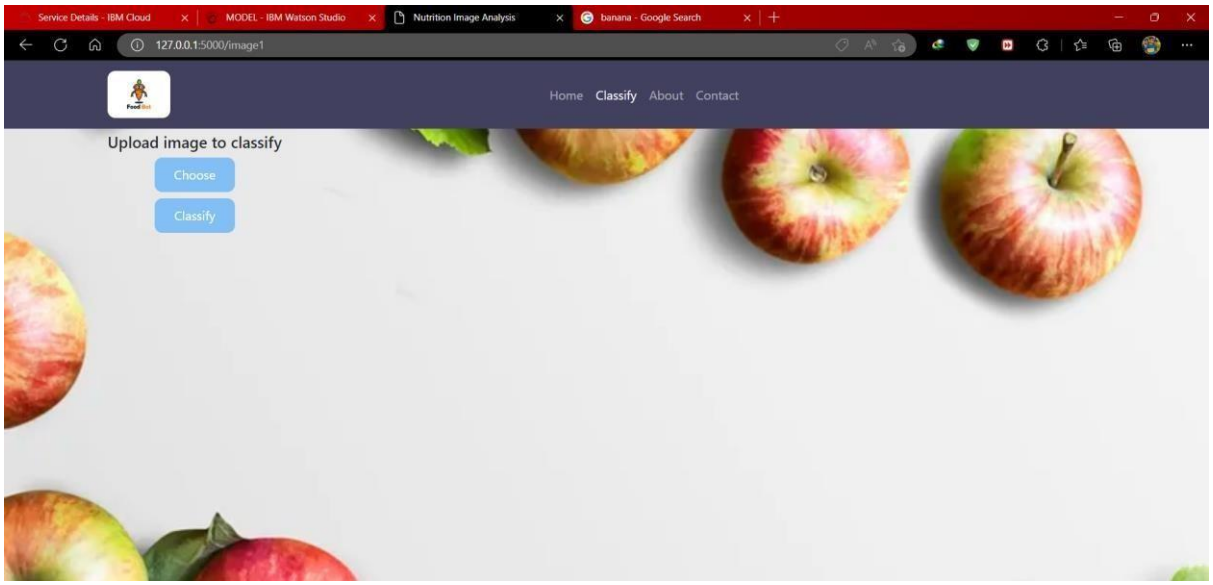
Group: Filter...
Location: Filter...
Search
Name
Group
Location
Product
Status
Tags
Cloud Object Storage-ef
Default
Global
Cloud Object Storage
Active
Watson Studio-8x
Default
Dallas
Watson Studio
Active
Watson Machine Learning-y1
Default
Dallas
Watson Machine Learning
Active
Items per page: 25
1–3 of 3 items
1 of 1 page

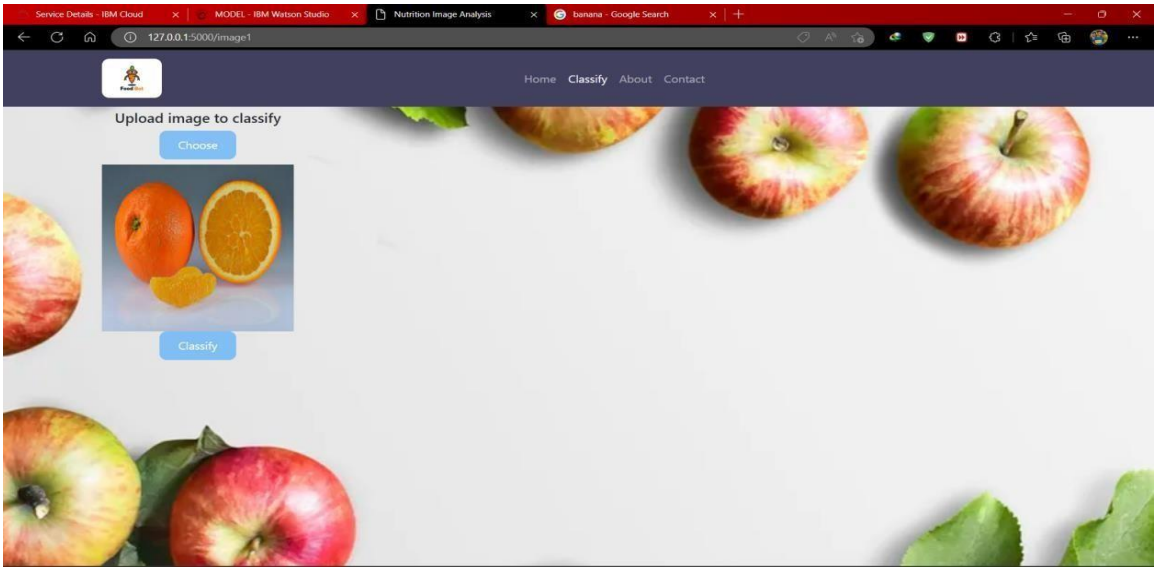

Image_Processing.ipynb - Colab
Cloud Object Storage - IBM Clo
MODEL - IBM Watson Studio
https://cloud.ibm.com/objectstorage/crn%3Av1%3Abluemix%3Apublic%3Acloud-object-storage%3Aglobal%3Aa%2Fa7c65344f7114eeb810fb0...
IBM Cloud
Search resources and products...
Catalog
Manage
Muni Vamsi Puttu's Acc...
Cloud Object Storage
Storage instances
Cloud Object Storage-ef
Buckets
Integrations
Endpoints
Usage details
Service credentials
Connections
Plan
Buckets
Buckets serve as containers for objects, and can be individually configured in terms of their location, resiliency, billing rates, security, and object lifecycle rules.
Search
Create bucket
Name
Public access
Location
Storage class
Created
modelbuilding-donotdelete-pr-fi6grq26i8q6k8
No
us-geo
Standard
2022-11-26 9:25 AM


Service Details - IBM Cloud
MODEL - IBM Watson Studio
Nutrition Image Analysis
banana - Google Search
127.0.0.1:5000
Home
Classify
About
Contact
Nutritional Analysis at your fingertips
Food Bot helps in identifying the nutritional values in the food by using photo of the food. It greatly reduces the efforts and provides the right nutrients to achieve your goal.
Start Tracking
Start Dieting
Start Workout

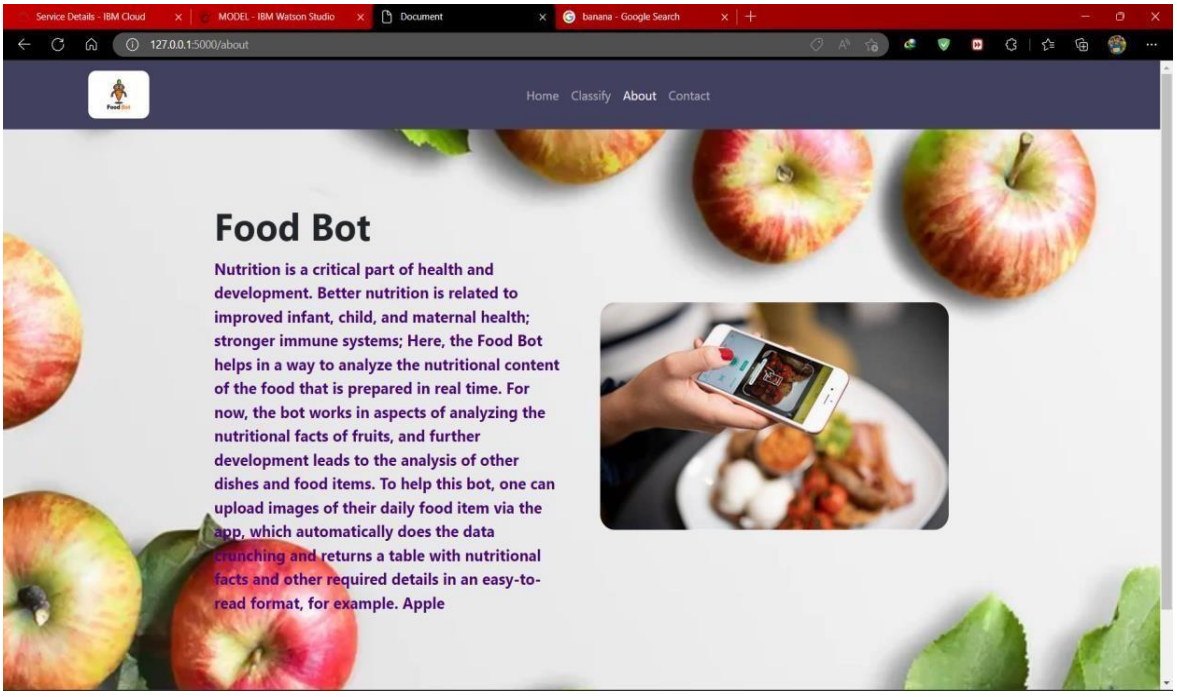

Service Details - IBM Cloud
MODEL - IBM Watson Studio
DietPlan
banana - Google Search
127.0.0.1:5000/diet
Follow this Diet plan to lose weight
Early Morning
One fruit of choice + 3-4 mixed seeds
10ml wheatgrass juice + 5 to 6 almonds and walnuts
10ml Spiruline or green leafy veggie juice +1 fruit of your choice
10ml Amla juice + 3-4 wainuts and almonds mix
Breakfast
Open panner sandwich with mint chutney
2 idlis with sambhar
1 bowl vegetable sprout poha with chutney
3-4 dal paddu with sambhar
2 medium dal paranthas + 1 bowl low-fat curd
Mid-Morning
4 walnuts and 2 dates
Fruit of your choice
1 glass Whey protein shake with milk/assorted fruit platter
1 fruit of your choice +1 fistful of Assorted nuts
2 tbsp of trail mix
Amaranth seeds chikki
3-4 dry fruits
Pre-Lunch
1 plate of preferred salad with vinegar dressing
1 bowl minestrone soup with more veggies and less of pasta
1 bowl sprout salad of choice
1 bowl mixed veggies chunky soup
1 bowl sprout salad
1 bowl grilled chicken or fish salad
Lunch
2 multigrain roti
1 Katori red or brown rice + I Dal + Veg
2 multigrain roti + 1 bowl vegetable subji
non-veg subji + 1 bowl boiled pulse chaat
2 multigrain roti + 1 bowl veg or non-veg (seafood, fish, chicken) subji of choice + 1 bowl of thick da
1 bowl millet and dal khichdi + 1 bowl mixed vegetable kadhai
Snack
1 glass whey protein drink + Hummus with veggies
2 multigrain flour khakras
1 fruit of your choice + 1 cup green tea
Til or peanut chikki with 1 cup spirulina and mixed veggie juice.
1 cup spiced boiled corn or 1 corn on the cob + 1 cup coffee, tea or green tea

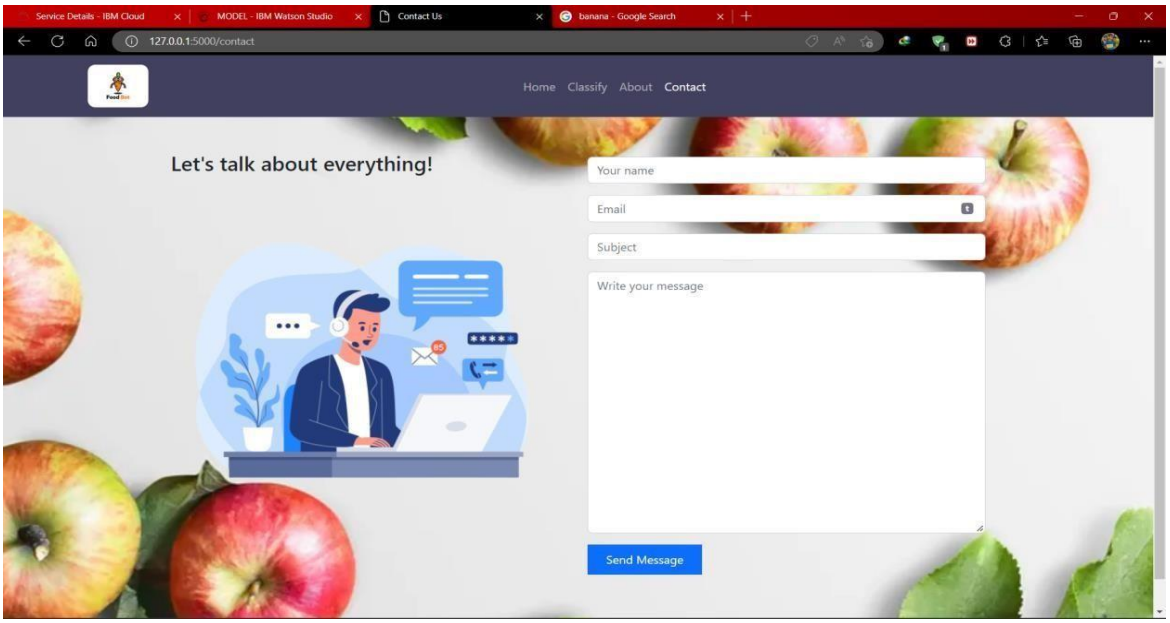

Service Details - IBM Cloud
MODEL - IBM Watson Studio
Workout
banana - Google Search
127.0.0.1:5000/workout
BRING IT ON
watch me shine
TIGHT HIPS
BETTER THAN RUNNING
CARDIO GODDESS
STUNTMAN
I JUST WANT TO feel
FULL BODY

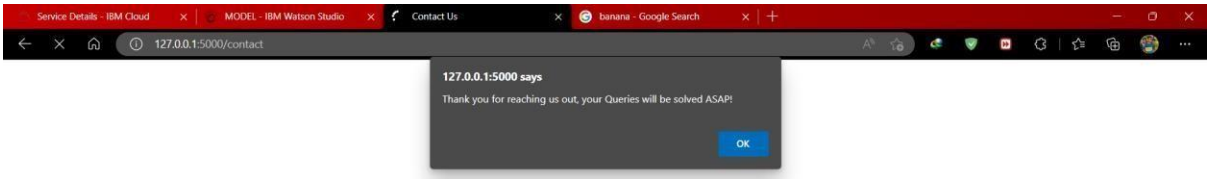

Service Details - IBM Cloud
MODEL - IBM Watson Studio
Nutrition Image Analysis
banana - Google Search
127.0.0.1:5000/image1
Home
Classify
About
Contact
Upload image to classify
Choose
Classify


Service Details - IBM Cloud
MODEL - IBM Watson Studio
Nutrition Image Analysis
banana - Google Search
127.0.0.1:5000/image1
Home Classify About Contact
Upload image to classify
Choose
Classify


Service Details - IBM Cloud
MODEL - IBM Watson Studio
Nutrition Image Analysis
banana - Google Search
127.0.0.1:5000/image1
Home Classify About Contact
Upload image to classify
Choose
Food Classified is:
ORANGE
[{'sugar_g': 8.4, 'fiber_g': 2.2, 'serving_size_g': 100.0, 'sodium_mg': 1, 'name': 'orange', 'potassium_mg': 23, 'fat_saturated_g': 0.0, 'fat_total_g': 0.1, 'calories': 50.4, 'cholesterol_mg': 0, 'protein_g': 0.9, 'carbohydrates_total_g': 12.4}]


Service Details - IBM Cloud
MODEL - IBM Watson Studio
Document
banana - Google Search
127.0.0.1:5000/about
Home Classify About Contact
Food Bot
Nutrition is a critical part of health and development. Better nutrition is related to improved infant, child, and maternal health; stronger immune systems; Here, the Food Bot helps in a way to analyze the nutritional content of the food that is prepared in real time. For now, the bot works in aspects of analyzing the nutritional facts of fruits, and further development leads to the analysis of other dishes and food items. To help this bot, one can upload images of their daily food item via the app, which automatically does the data crunching and returns a table with nutritional facts and other required details in an easy-to-read format, for example. Apple


Service Details - IBM Cloud
MODEL - IBM Watson Studio
Contact Us
banana - Google Search
127.0.0.1:5000/contact
Home
Classify
About
Contact
Let's talk about everything!
Your name
Email
Subject
Write your message
Send Message


Service Details - IBM Cloud
MODEL - IBM Watson Studio
Contact Us
banana - Google Search
127.0.0.1:5000/contact
127.0.0.1:5000 says
Thank you for reaching us out, your Queries will be solved ASAP!
OK