

TRAIN THE MODEL:

AI - POWERED NUTRITION ANALYZER FOR FITNESS ENTHUSIASTS

Date	17 November 2022
Team ID	PNT2022TMID21338
Project Name	AI-Powered Nutrition Analyzer for Fitness Enthusiasts
Maximum Marks	4 Marks

TRAIN THE MODEL:

```
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In [1]: !pip install keras==2.2.4

Requirement already satisfied: keras==2.2.4 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (2.2.4)
Requirement already satisfied: six>=1.9.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from keras==2.2.4) (1.15.0)
Requirement already satisfied: h5py in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from keras==2.2.4) (3.1.0)
Requirement already satisfied: keras-applications>=1.0.6 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from keras==2.2.4) (1.0.8)
Requirement already satisfied: pyyaml in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from keras==2.2.4) (5.4.1)
Requirement already satisfied: keras-preprocessing>=1.0.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from keras==2.2.4) (1.1.2)
Requirement already satisfied: scipy>=0.14 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from keras==2.2.4) (1.7.3)
Requirement already satisfied: numpy>=1.9.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from keras==2.2.4) (1.19.5)

In [2]: pwd

Out[2]: '/home/wuser/work'

In [3]: !pip install tensorflow==2.5.0

Requirement already satisfied: tensorflow==2.5.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (2.5.0)
Requirement already satisfied: wheel==0.35 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow==2.5.0) (0.37.0)
Requirement already satisfied: protobuf>=3.9.2 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow==2.5.0) (3.19.1)
Requirement already satisfied: flatbuffers==1.12.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow==2.5.0) (1.12)
Requirement already satisfied: wrapt==1.12.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow==2.5.0) (1.12.1)
Requirement already satisfied: astunparse==1.6.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow==2.5.0) (1.6.3)
Requirement already satisfied: opt-einsum==3.3.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow==2.5.0) (3.3.0)
Requirement already satisfied: six==1.15.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow==2.5.0) (1.15.0)
Requirement already satisfied: termcolor==1.1.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow==2.5.0) (1.1.0)
```

```
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In [4]: from tensorflow.keras.preprocessing.image import ImageDataGenerator

2022-11-19 13:25:28.190823: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'libcudart.so.11.0'; dierro
r: libcudart.so.11.0: cannot open shared object file: No such file or directory; LD_LIBRARY_PATH: /opt/ibm/dsdriver/lib:/opt/oracle/lib:/opt/conda/env
s/Python-3.9/lib/python3.9/site-packages/tensorflow

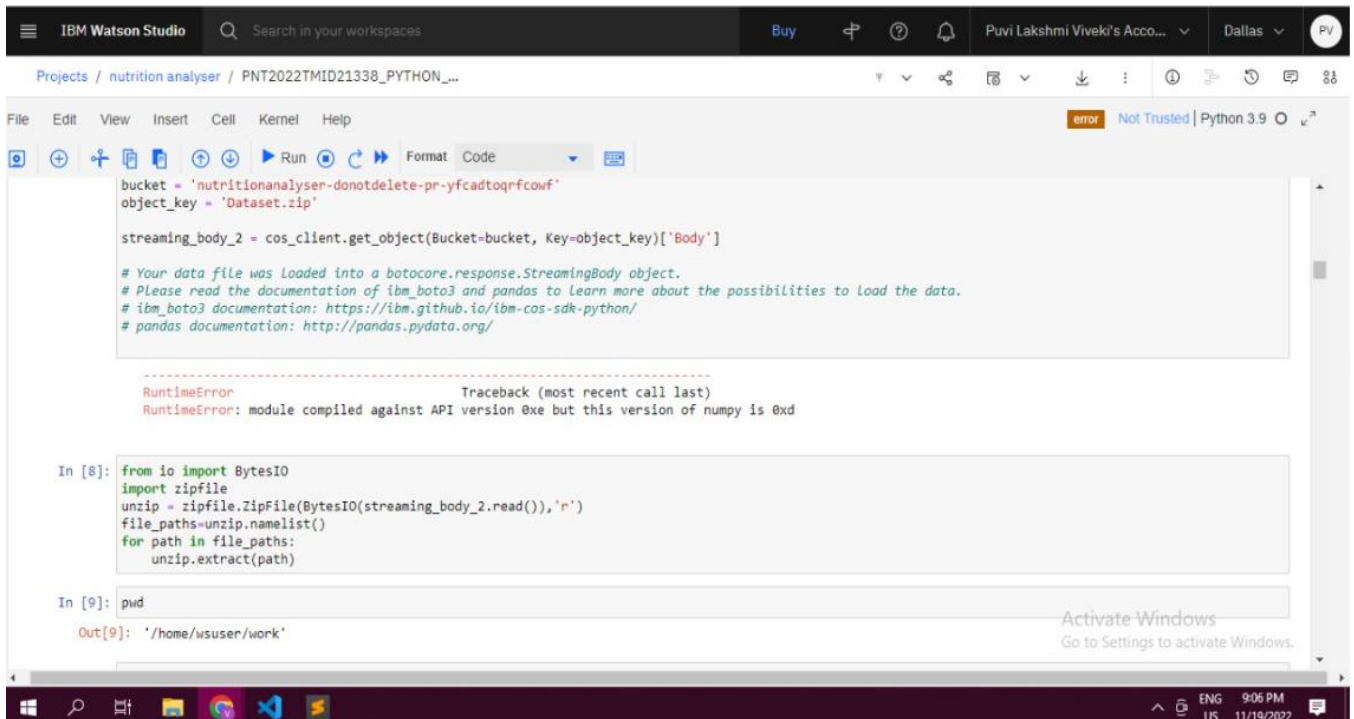
In [6]: train_datagen=ImageDataGenerator(rescale=1./255, shear_range=0.2, zoom_range=0.2, horizontal_flip=True)
test_datagen=ImageDataGenerator(rescale=1./255)

In [7]:
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='n5z0OeNGrFBwQif9ePeCFaherL9PHINTSjTfEo7IUSZE',
    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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IBM Watson Studio interface showing a code cell with a `RuntimeError` and a terminal output.

```
bucket = 'nutritionanalyser-donotdelete-pr-yfcadtoqrfcowf'
object_key = 'Dataset.zip'

streaming_body_2 = cos_client.get_object(Bucket=bucket, Key=object_key)['Body']

# Your data file was loaded into a botocore.response.StreamingBody object.
# Please read the documentation of ibm_boto3 and pandas to learn more about the possibilities to load the data.
# ibm_boto3 documentation: https://ibm.github.io/ibm-cos-sdk-python/
# pandas documentation: http://pandas.pydata.org/

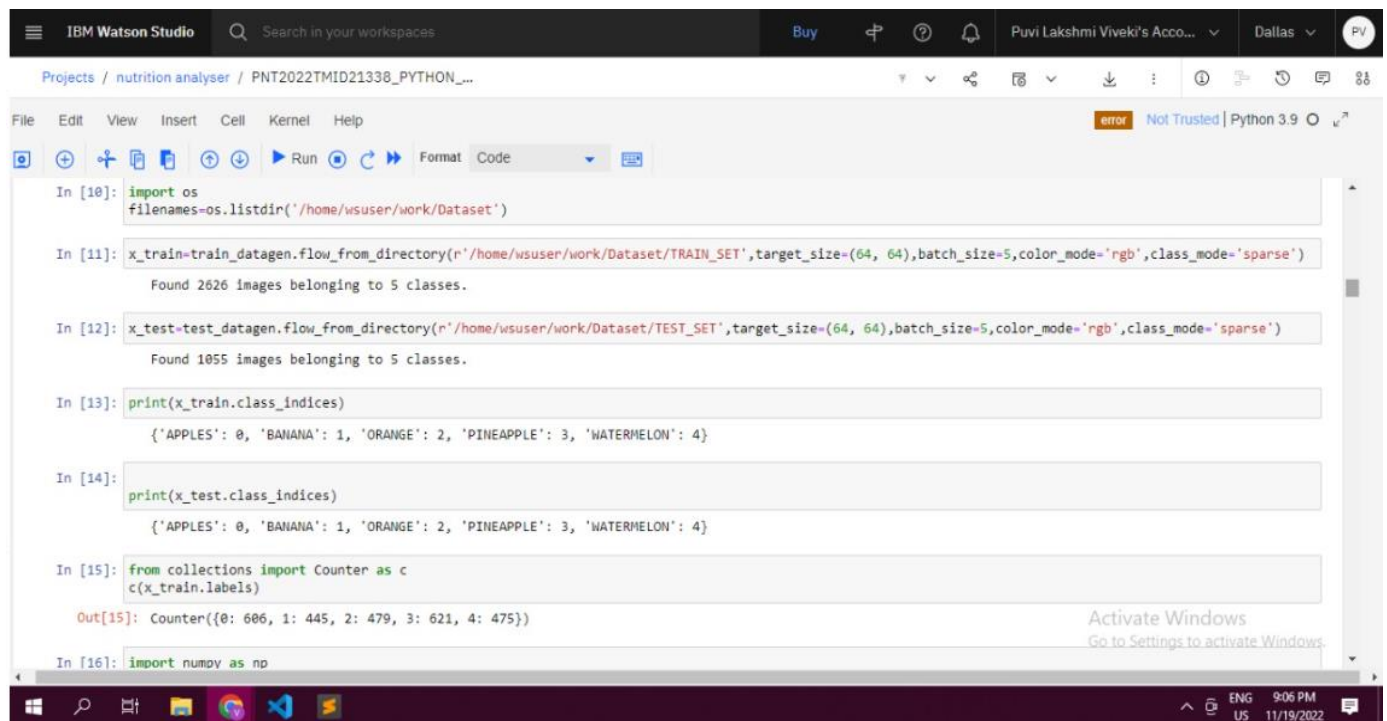
-----
RuntimeError                                Traceback (most recent call last)
RuntimeError: module compiled against API version 0xe but this version of numpy is 0xd

In [8]: from io import BytesIO
import zipfile
unzip = zipfile.ZipFile(BytesIO(streaming_body_2.read()), 'r')
file_paths=unzip.namelist()
for path in file_paths:
    unzip.extract(path)

In [9]: pwd

Out[9]: '/home/wuser/work'
```

Activate Windows
Go to Settings to activate Windows.



IBM Watson Studio interface showing a code cell with data loading and processing code.

```
In [10]: import os
filenames=os.listdir('/home/wuser/work/Dataset')

In [11]: x_train=train_datagen.flow_from_directory(r'/home/wuser/work/Dataset/TRAIN_SET',target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')
Found 2626 images belonging to 5 classes.

In [12]: x_test=test_datagen.flow_from_directory(r'/home/wuser/work/Dataset/TEST_SET',target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')
Found 1055 images belonging to 5 classes.

In [13]: print(x_train.class_indices)
{'APPLES': 0, 'BANANA': 1, 'ORANGE': 2, 'PINEAPPLE': 3, 'WATERMELON': 4}

In [14]: print(x_test.class_indices)
{'APPLES': 0, 'BANANA': 1, 'ORANGE': 2, 'PINEAPPLE': 3, 'WATERMELON': 4}

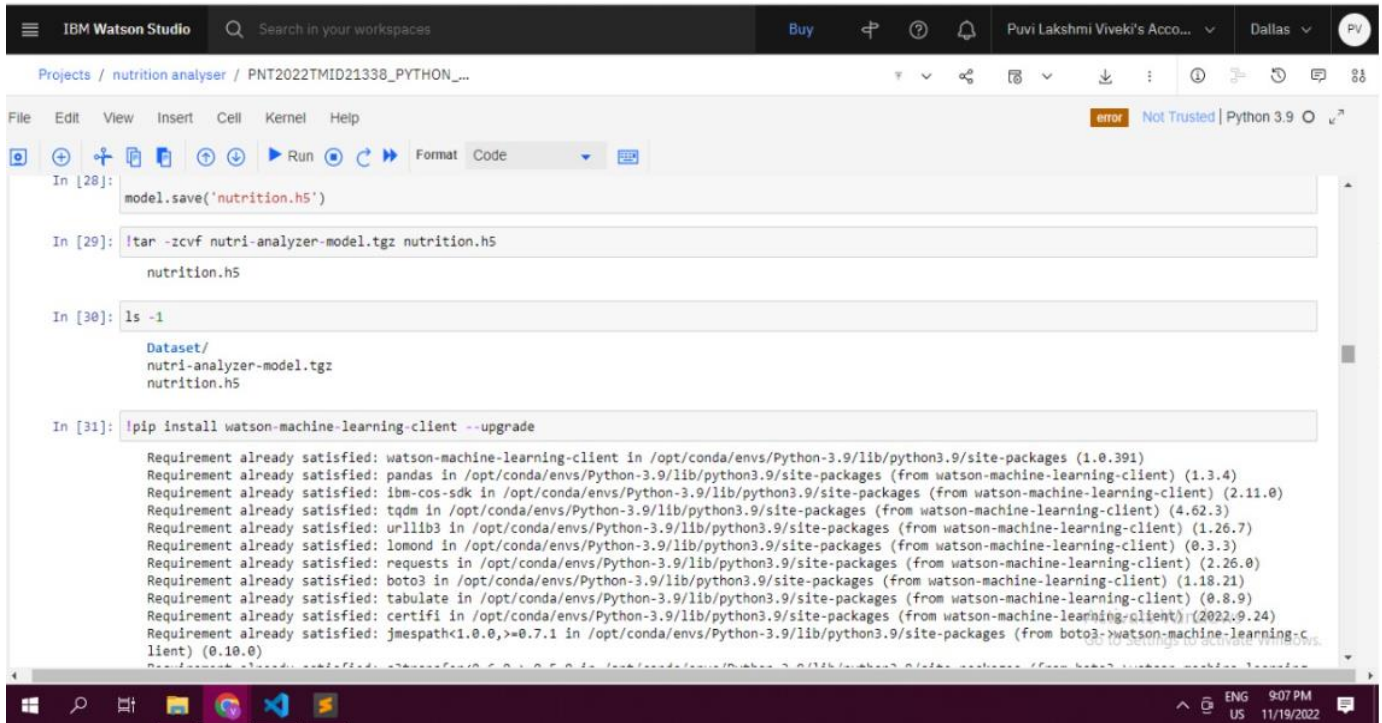
In [15]: from collections import Counter as c
c(x_train.labels)

Out[15]: Counter({0: 606, 1: 445, 2: 479, 3: 621, 4: 475})

In [16]: import numpy as np
```

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TRAIN THE MODEL:

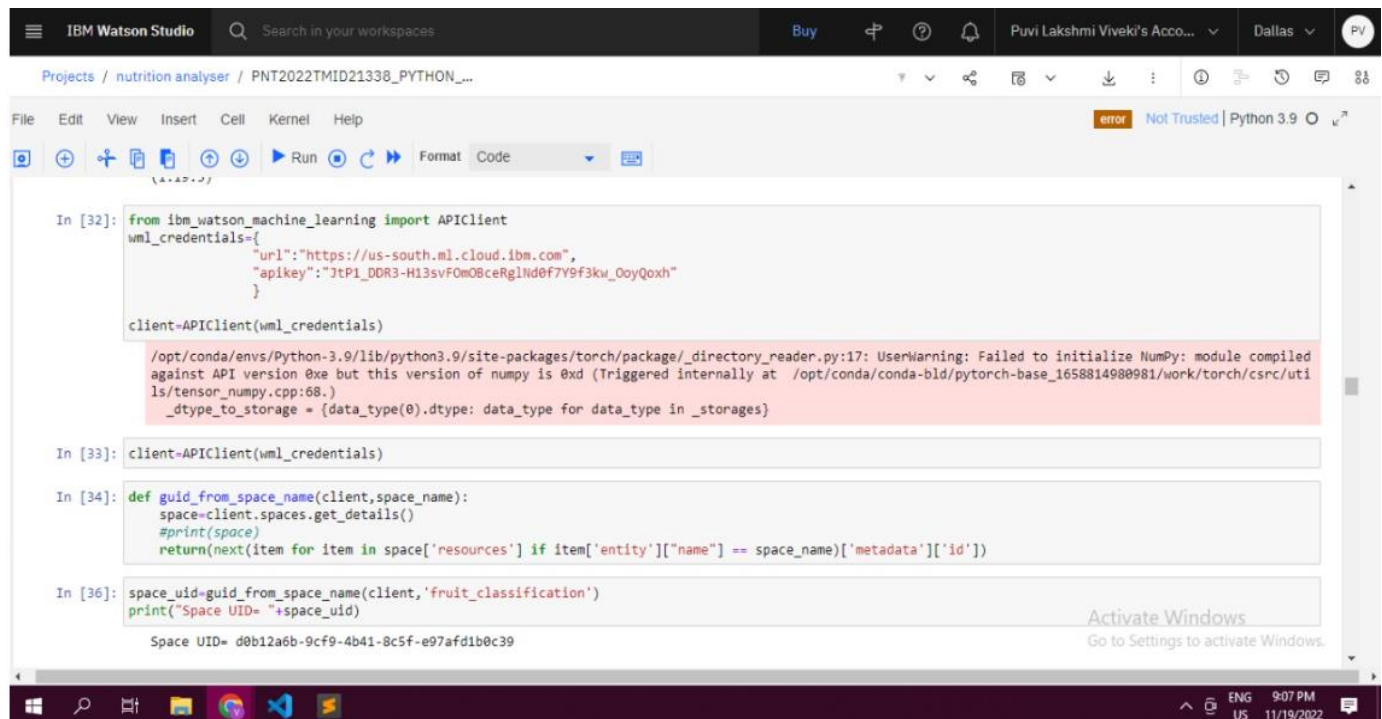


```
model.save('nutrition.h5')

In [29]: tar -zcvf nutri-analyzer-model.tgz nutrition.h5

In [30]: ls -l
Dataset/
nutri-analyzer-model.tgz
nutrition.h5

In [31]: pip install watson-machine-learning-client --upgrade
Requirement already satisfied: watson-machine-learning-client in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (1.0.391)
Requirement already satisfied: pandas in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (1.3.4)
Requirement already satisfied: ibm-cos-sdk in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (2.11.0)
Requirement already satisfied: tqdm in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (4.62.3)
Requirement already satisfied: urllib3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (1.26.7)
Requirement already satisfied: lomond in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (0.3.3)
Requirement already satisfied: requests in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (2.26.0)
Requirement already satisfied: boto3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (1.18.21)
Requirement already satisfied: tabulate in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (0.8.9)
Requirement already satisfied: certifi in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (2022.9.24)
Requirement already satisfied: jmespath<1.0.0,>=0.7.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from boto3->watson-machine-learning-client) (0.10.0)
```



```
from ibm_watson_machine_learning import APIClient
wml_credentials={
    "url":"https://us-south.ml.cloud.ibm.com",
    "apikey":"JtP1_DDR3-H13svF0m0BceRglld0f7Y9f3kw_OoyQoxh"
}

client=APIClient(wml_credentials)

/opt/conda/envs/Python-3.9/lib/python3.9/site-packages/torch/package/_directory_reader.py:17: UserWarning: Failed to initialize NumPy: module compiled against API version 0xe but this version of numpy is 0xd (Triggered internally at /opt/conda/conda-bld/pytorch-base_1658814980981/work/torch/csrc/utl
ls/tensor_numpy.cpp:68.)
_dtype_to_storage = {data_type(0).dtype: data_type for data_type in _storages}

In [33]: client=APIClient(wml_credentials)

In [34]: def guid_from_space_name(client,space_name):
space=client.spaces.get_details()
#print(space)
return(next(item for item in space['resources'] if item['entity']['name'] == space_name)['metadata']['id'])

In [36]: space_uid=guid_from_space_name(client,'fruit_classification')
print("Space UID= "+space_uid)

Space UID= d0b12a6b-9cf9-4b41-8c5f-e97afd1b0c39
```