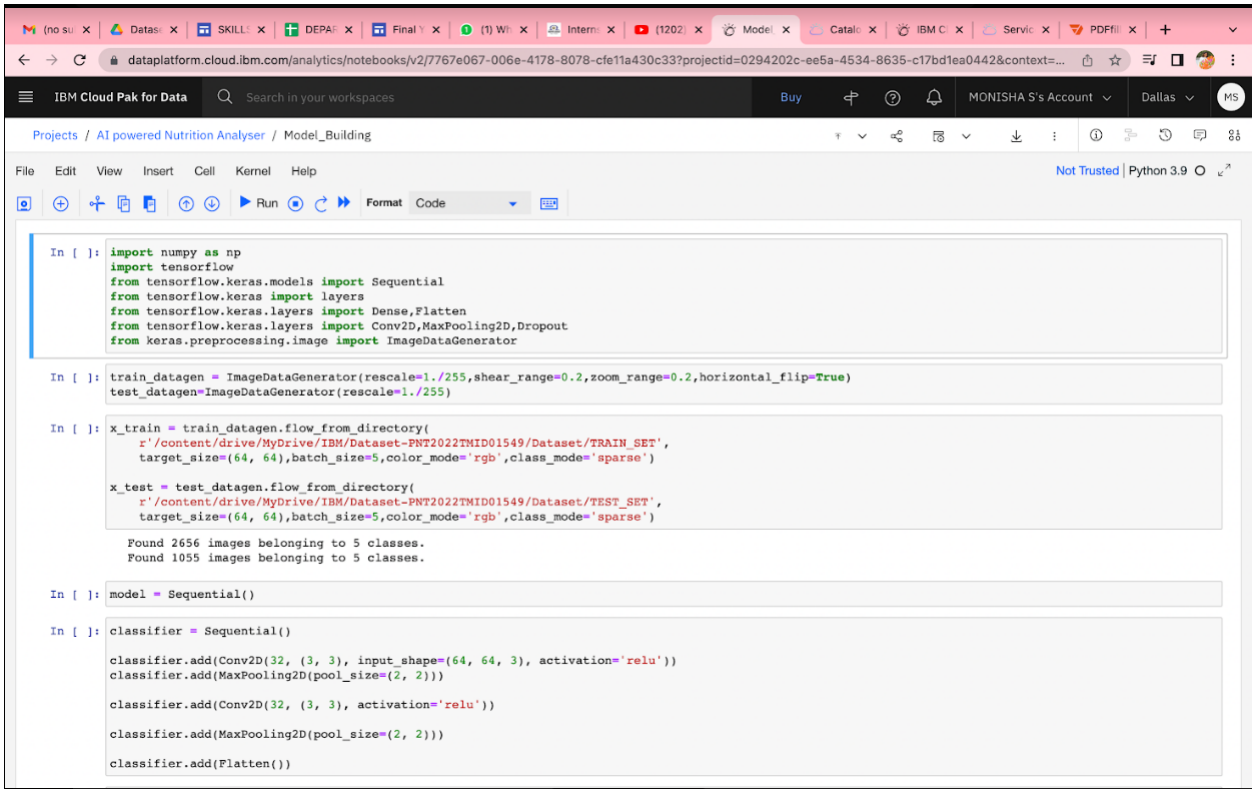
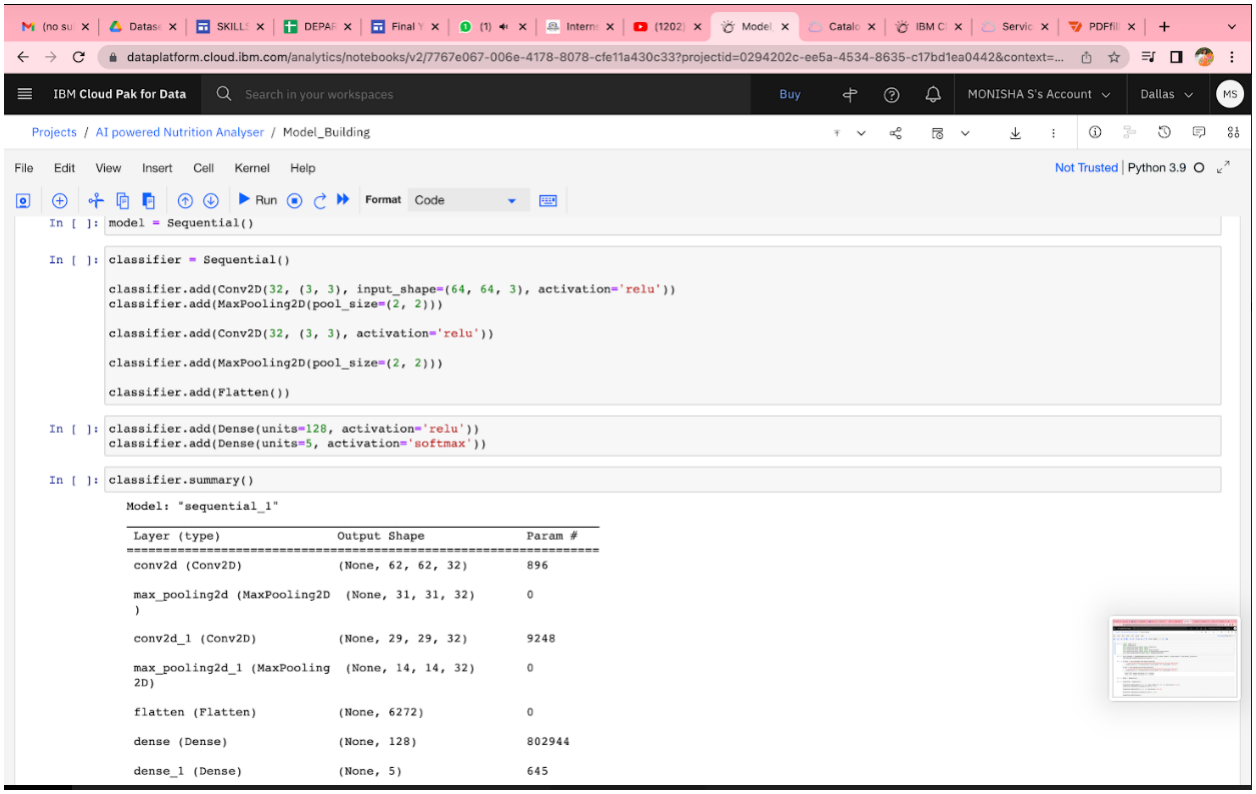
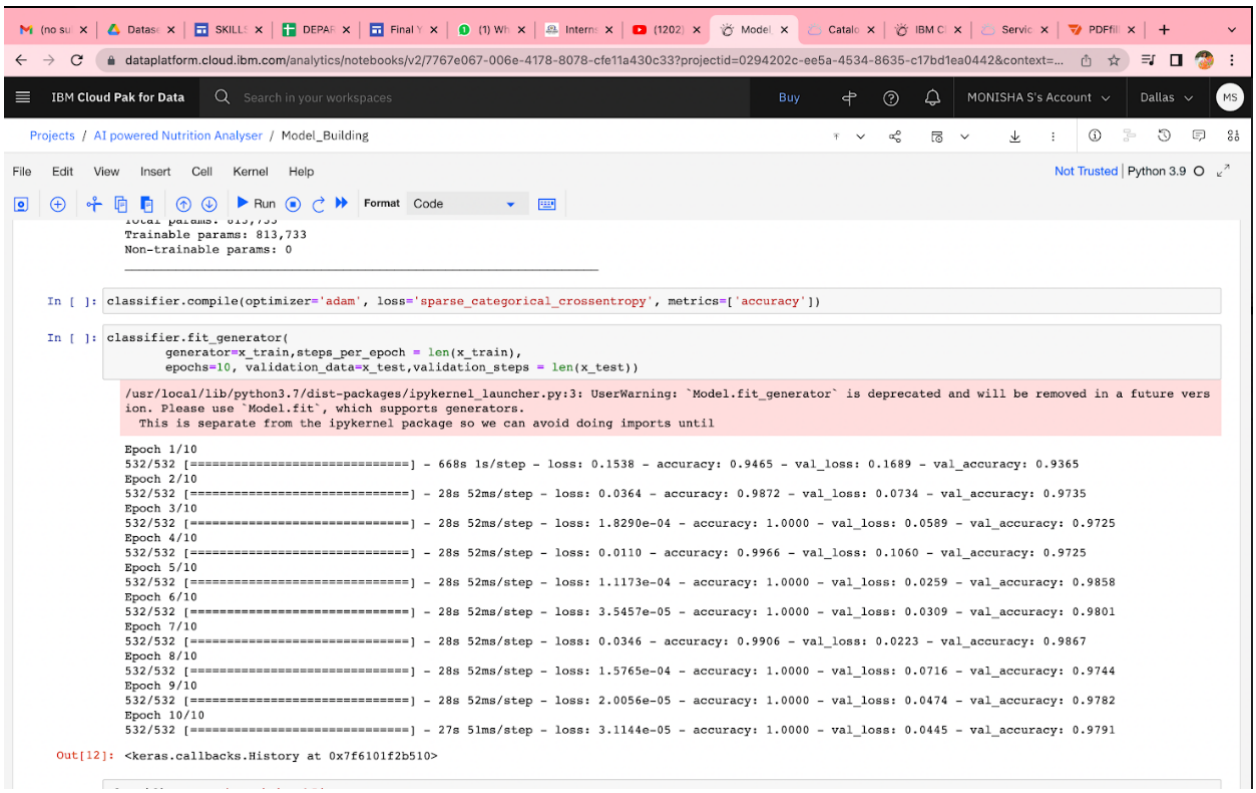
TRAIN MODEL ON IBM

Date	**07 November 2022**
Team ID	**PNT2022TMID01549**
Project Name	**AI-PoweredNutrition Analyzer for Fitness Enthusiasts**




IBM Cloud Pak for Data
Search in your workspaces
Buy
MONISHA S's Account
Dallas
Projects / AI powered Nutrition Analyser / Model_Building
File Edit View Insert Cell Kernel Help
Not Trusted | Python 3.9
Run
Format Code
In [ ]: model = Sequential()
In [ ]: 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 [ ]: classifier.add(Dense(units=128, activation='relu'))
classifier.add(Dense(units=5, activation='softmax'))
In [ ]: classifier.summary()
Model: "sequential_1"
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 (MaxPooling (None, 14, 14, 32) 0
2D)
flatten (Flatten) (None, 6272) 0
dense (Dense) (None, 128) 802944
dense_1 (Dense) (None, 5) 645


IBM Cloud Pak for Data
Search in your workspaces
Buy
MONISHA S's Account
Dallas
Projects / AI powered Nutrition Analyser / Model_Building
File Edit View Insert Cell Kernel Help
Not Trusted | Python 3.9
Run
Format Code
Trainable params: 813,733
Non-trainable params: 0
In [ ]: classifier.compile(optimizer='adam', loss='sparse_categorical_crossentropy', metrics=['accuracy'])
In [ ]: classifier.fit_generator(
generator=x_train,steps_per_epoch = len(x_train),
epochs=10, validation_data=x_test,validation_steps = len(x_test))
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:3: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use `Model.fit`, which supports generators.
This is separate from the ipykernel package so we can avoid doing imports until
Epoch 1/10
532/532 [==========] - 668s 1s/step - loss: 0.1538 - accuracy: 0.9465 - val_loss: 0.1689 - val_accuracy: 0.9365
Epoch 2/10
532/532 [==========] - 28s 52ms/step - loss: 0.0364 - accuracy: 0.9872 - val_loss: 0.0734 - val_accuracy: 0.9735
Epoch 3/10
532/532 [==========] - 28s 52ms/step - loss: 1.8290e-04 - accuracy: 1.0000 - val_loss: 0.0589 - val_accuracy: 0.9725
Epoch 4/10
532/532 [==========] - 28s 52ms/step - loss: 0.0110 - accuracy: 0.9966 - val_loss: 0.1060 - val_accuracy: 0.9725
Epoch 5/10
532/532 [==========] - 28s 52ms/step - loss: 1.1173e-04 - accuracy: 1.0000 - val_loss: 0.0259 - val_accuracy: 0.9858
Epoch 6/10
532/532 [==========] - 28s 52ms/step - loss: 3.5457e-05 - accuracy: 1.0000 - val_loss: 0.0309 - val_accuracy: 0.9801
Epoch 7/10
532/532 [==========] - 28s 52ms/step - loss: 0.0346 - accuracy: 0.9906 - val_loss: 0.0223 - val_accuracy: 0.9867
Epoch 8/10
532/532 [==========] - 28s 52ms/step - loss: 1.5765e-04 - accuracy: 1.0000 - val_loss: 0.0716 - val_accuracy: 0.9744
Epoch 9/10
532/532 [==========] - 28s 52ms/step - loss: 2.0056e-05 - accuracy: 1.0000 - val_loss: 0.0474 - val_accuracy: 0.9782
Epoch 10/10
532/532 [==========] - 27s 51ms/step - loss: 3.1144e-05 - accuracy: 1.0000 - val_loss: 0.0445 - val_accuracy: 0.9791
Out[12]: <keras.callbacks.History at 0x7f6101f2b510>

dataplatform.cloud.ibm.com/analytics/notebooks/v2/7767e067-006e-4178-8078-cfe11a430c33?projectid=0294202c-ee5a-4534-8635-c17bd1ea0442&context=...

IBM Cloud Pak for Data | Search in your workspaces | Buy | MONISHA S's Account | Dallas

Projects / AI powered Nutrition Analyser / Model_Building

File Edit View Insert Cell Kernel Help | Not Trusted | Python 3.9

Run | Format Code

```
532/532 [==============================] - 27s 51ms/step - loss: 3.1144e-05 - accuracy: 1.0000 - val_loss: 0.0445 - val_accuracy: 0.9791
```

Out[12]: <keras.callbacks.History at 0x7f6101f2b510>

In [ ]:
```
classifier.save('nutrition.h5')
```

In [ ]:
```
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
import numpy as np
```

In [ ]:
```
img = image.load_img("/content/drive/MyDrive/IBM/Dataset-PNT2022TMID01549/Dataset/TEST_SET/ORANGE/30_100.jpg",target_size= (64,64))
img
```

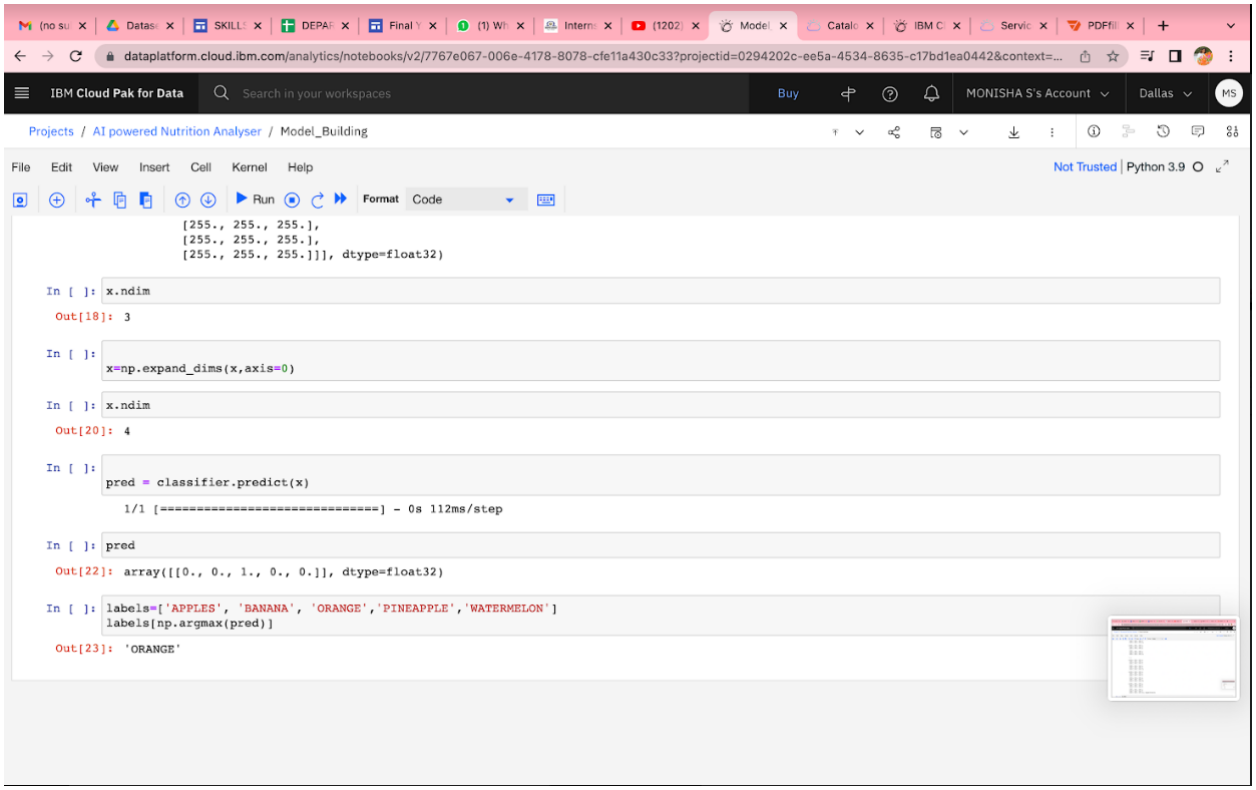
Out[15]:

In [ ]:
```
x=image.img_to_array(img)
```

In [ ]:
```
x
```

Out[17]:
```
array([[[255., 255., 242.],
        [255., 255., 251.],
        [255., 255., 255.],
        ...,
        [255., 255., 255.],
        [255., 255., 255.],
        [255., 255., 255.]],

       [[255., 255., 251.],
        [254., 253., 251.],
        [255., 253., 254.],
        ...,
        [255., 255., 255.],
        [255., 255., 255.],
        [255., 255., 255.]],

       [[255., 254., 255.],
        [255., 253., 254.],
        [255., 253., 254.],
        ...,
        [255., 255., 255.],
        [255., 255., 255.],
        [255., 255., 255.]],

       ...,

       [[255., 255., 255.],
        [255., 255., 255.],
        [255., 255., 255.],
        ...,
        [255., 255., 255.],
        [255., 255., 255.],
        [255., 255., 255.]],

       [[255., 255., 255.],
        [255., 255., 255.],
        [255., 255., 255.],
        ...,
        [255., 255., 255.],
        [255., 255., 255.],
        [255., 255., 255.]],

       [[255., 255., 255.],
        [255., 255., 255.],
        [255., 255., 255.],
        ...,
        [255., 255., 255.],
        [255., 255., 255.],
        [255., 255., 255.]]], dtype=float32)
```

In [ ]:
```
x.ndim
```


IBM Cloud Pak for Data
Search in your workspaces
Buy
MONISHA S's Account
Dallas
Projects / AI powered Nutrition Analyser / Model_Building
File Edit View Insert Cell Kernel Help
Not Trusted | Python 3.9
Run
Format Code
[255., 255., 255.],
[255., 255., 255.],
[255., 255., 255.]]], dtype=float32)
In [ ]: x.ndim
Out[18]: 3
In [ ]: x=np.expand_dims(x,axis=0)
In [ ]: x.ndim
Out[20]: 4
In [ ]: pred = classifier.predict(x)
1/1 [==============================] - 0s 112ms/step
In [ ]: pred
Out[22]: array([[0., 0., 1., 0., 0.]], dtype=float32)
In [ ]: labels=['APPLES', 'BANANA', 'ORANGE','PINEAPPLE','WATERMELON']
labels[np.argmax(pred)]
Out[23]: 'ORANGE'