Project Development Phase
Model Performance Test

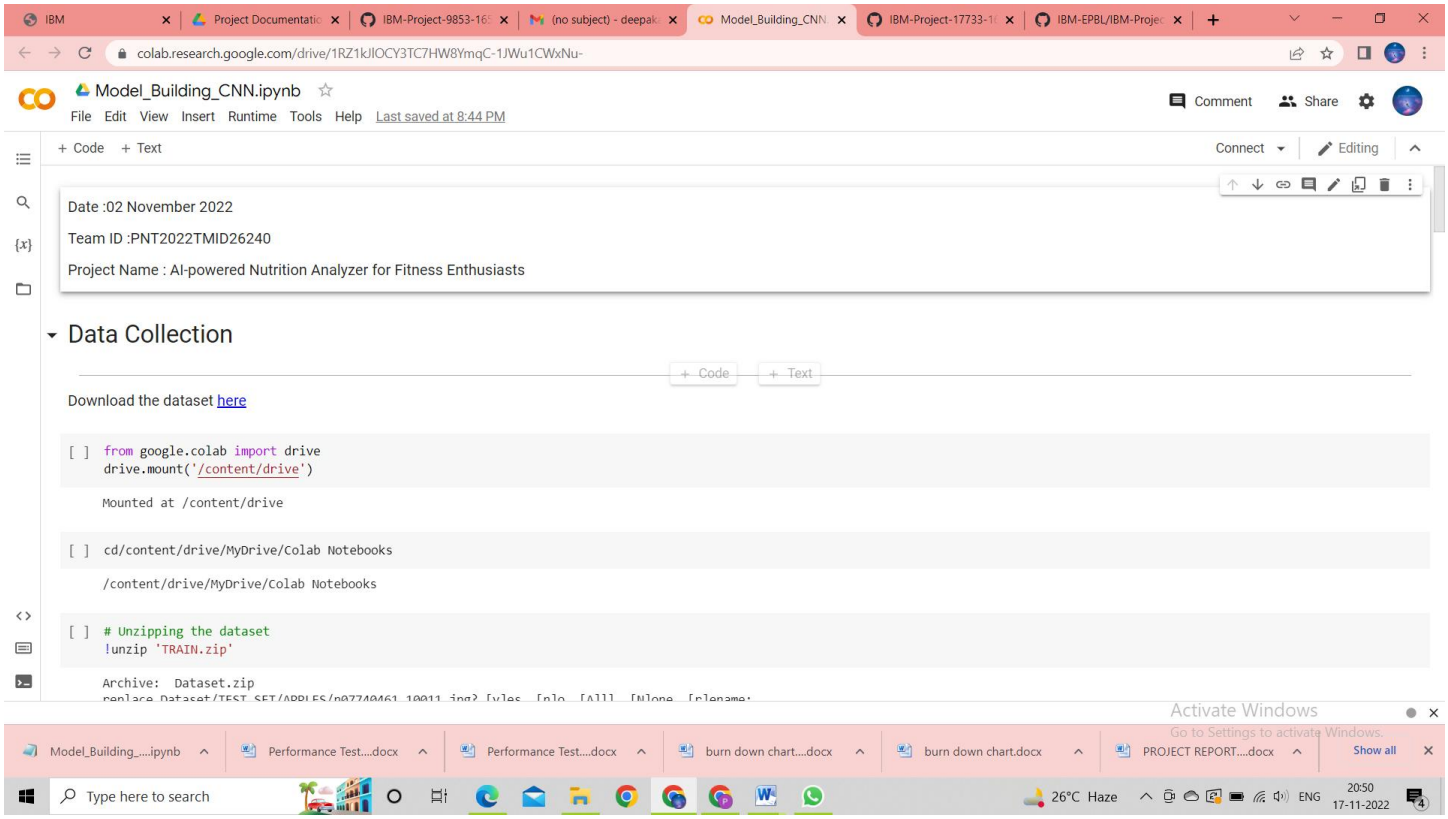
Date	17 November 2022
Team ID	PNT2022TMID26240
Project Name	AI-powered Nutrition Analyzer for Fitness Enthusiasts
Maximum Marks	10 Marks

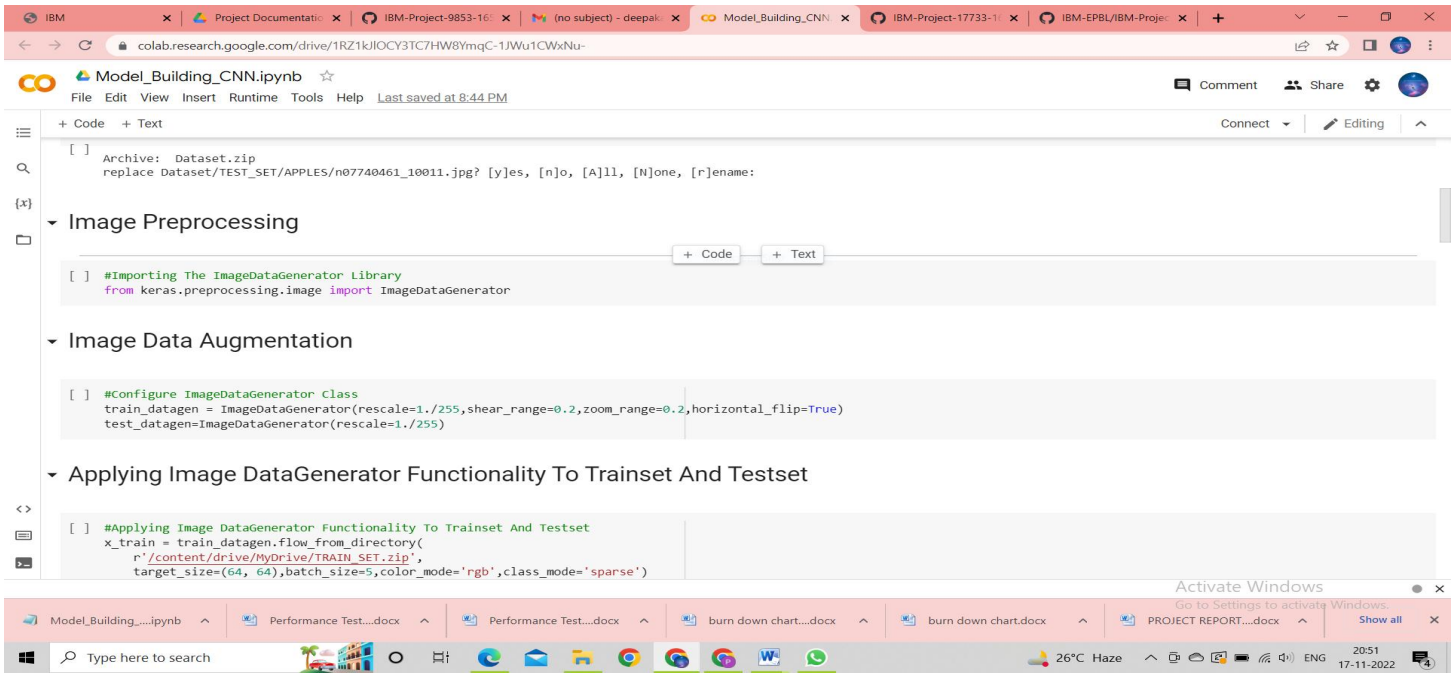
Model Performance Testing:

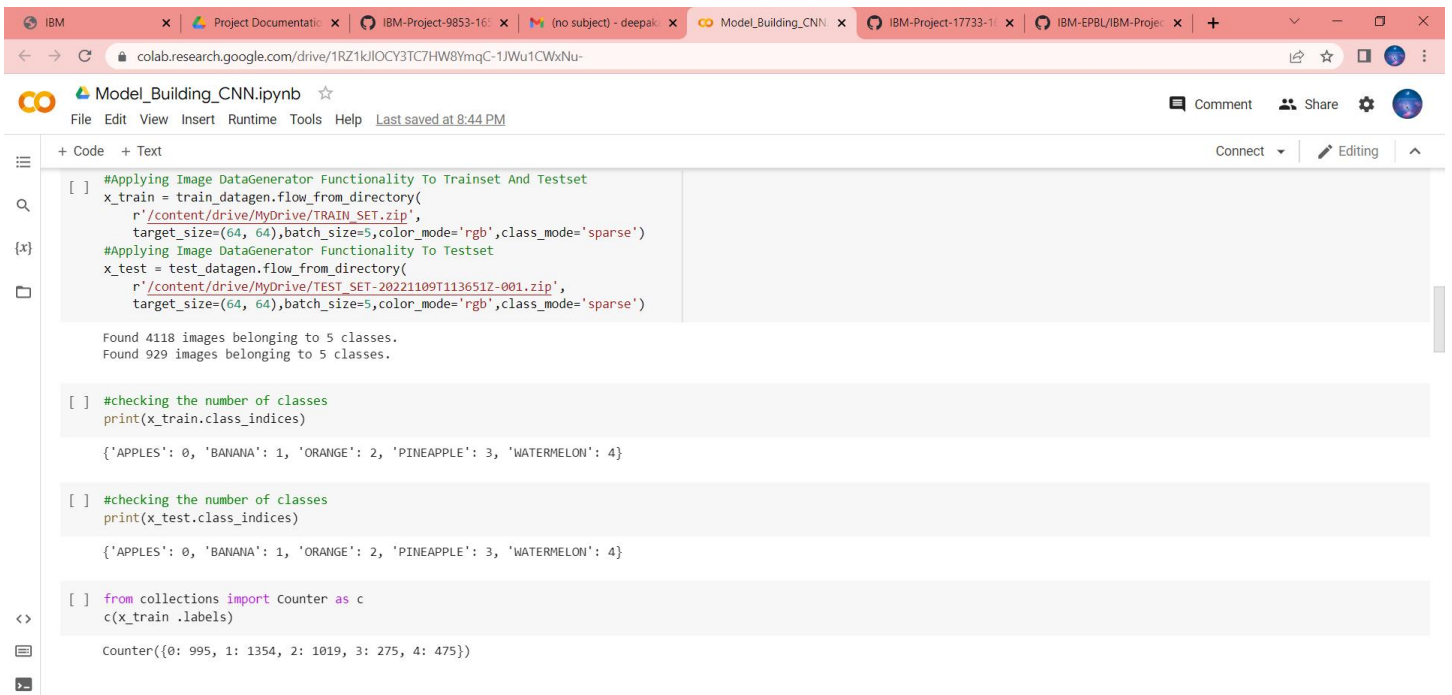
Project team shall fill the following information in model performance testing template.

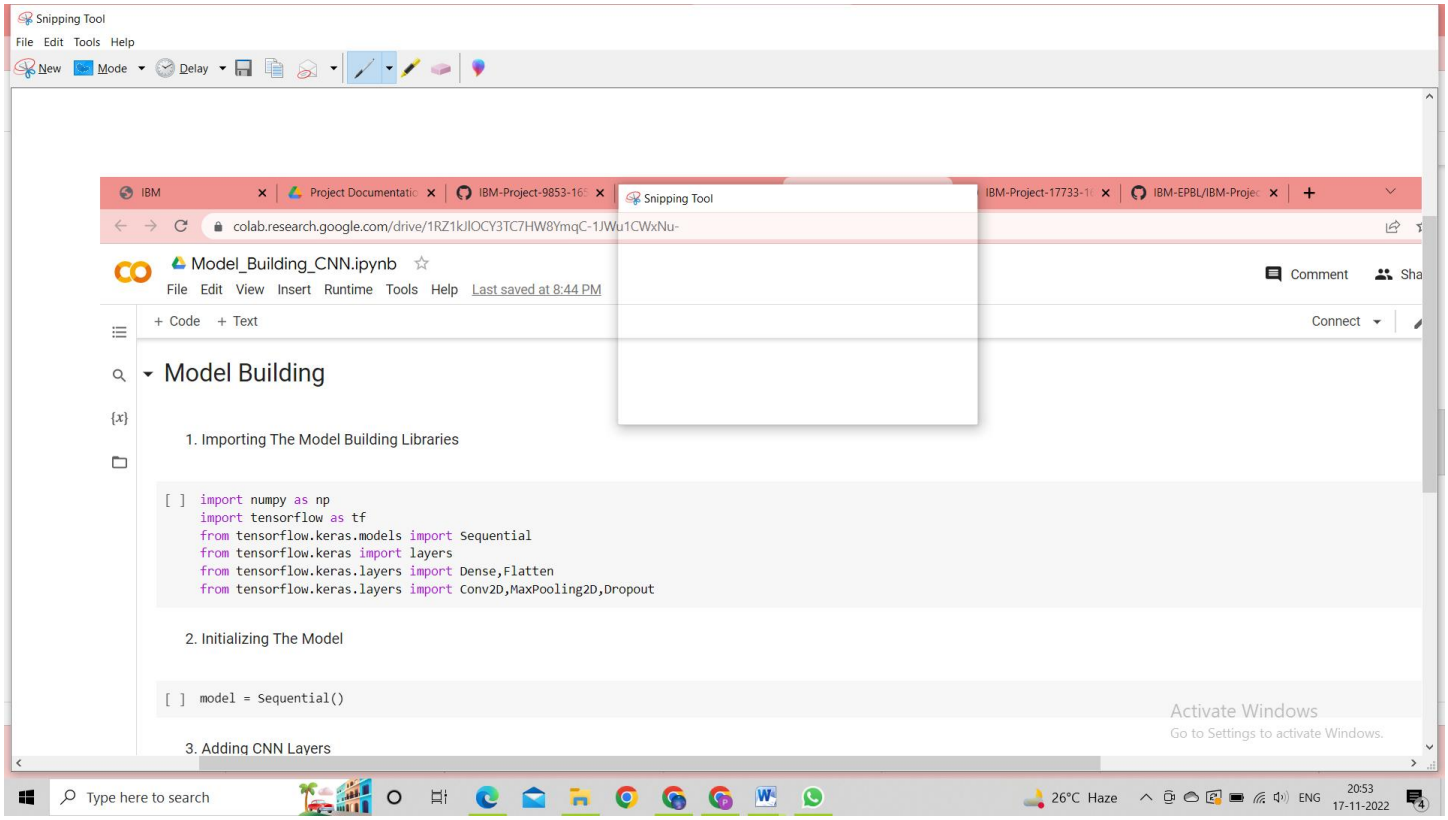
S.No.	Parameter	Values	Screenshot
1.	Model Summary	Total params: 21,885,485 Trainable params: 1,024,005 Non-trainable params: 20,861,480	Attached below
2.	Accuracy	Training Accuracy - 72% Validation Accuracy - 59%	Attached below
3.	Confidence Score (Only Yolo Projects)	Class Detected - NILL Confidence Score - NILL	NILL

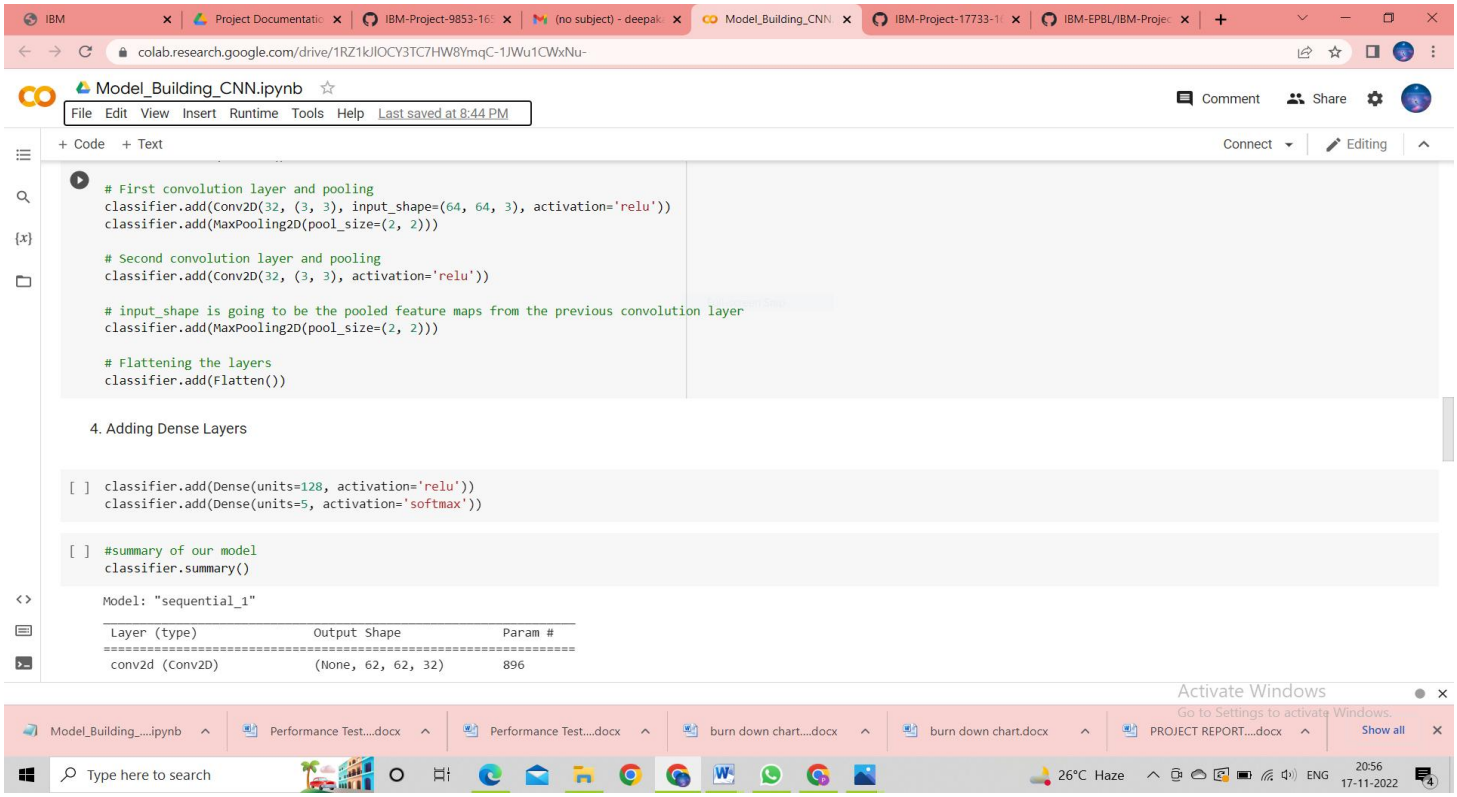
SCREENSHOTS :

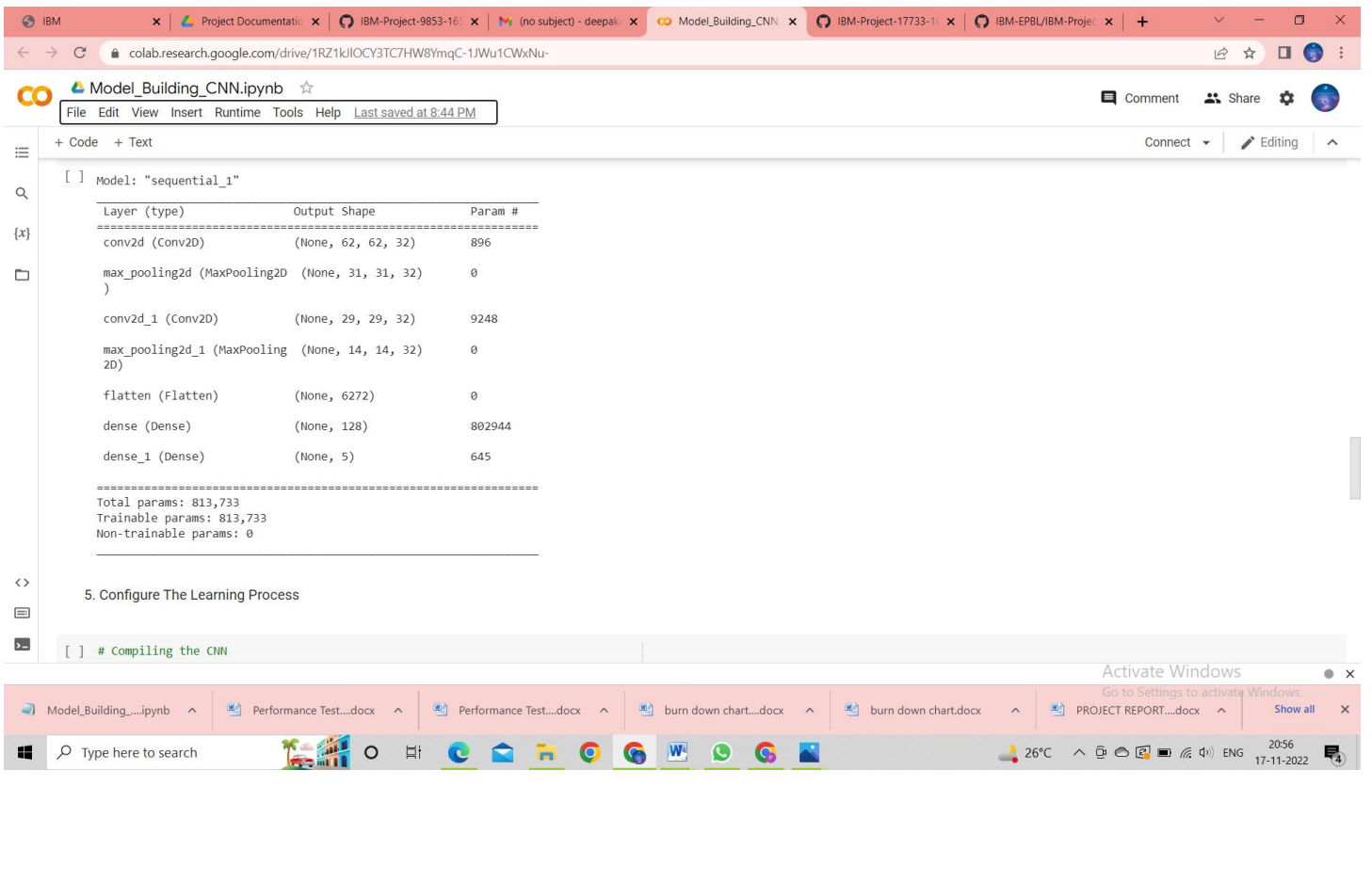

IBM
Project Documentatio
IBM-Project-9853-16
(no subject) - deepak
Model_Building_CNN
IBM-Project-17733-1
IBM-EPBL/IBM-Projec
colab.research.google.com/drive/1RZ1kJlOCY3TC7HW8YmqC-1JWu1CWxNu-
Model_Building_CNN.ipynb
File Edit View Insert Runtime Tools Help Last saved at 8:44 PM
Comment
Share
+ Code + Text
Connect
Editing
Date :02 November 2022
Team ID :PNT2022TMID26240
Project Name : AI-powered Nutrition Analyzer for Fitness Enthusiasts
Data Collection
+ Code + Text
Download the dataset here
[ ] from google.colab import drive
drive.mount('/content/drive')
Mounted at /content/drive
[ ] cd/content/drive/MyDrive/Colab Notebooks
/content/drive/MyDrive/Colab Notebooks
[ ] # Unzipping the dataset
!unzip 'TRAIN.zip'
Archive: Dataset.zip
Activate Windows
Go to Settings to activate Windows.
Model_Building_....ipynb
Performance Test....docx
Performance Test....docx
burn down chart....docx
burn down chart.docx
PROJECT REPORT....docx
Show all
Type here to search
26°C Haze
ENG
20:50
17-11-2022

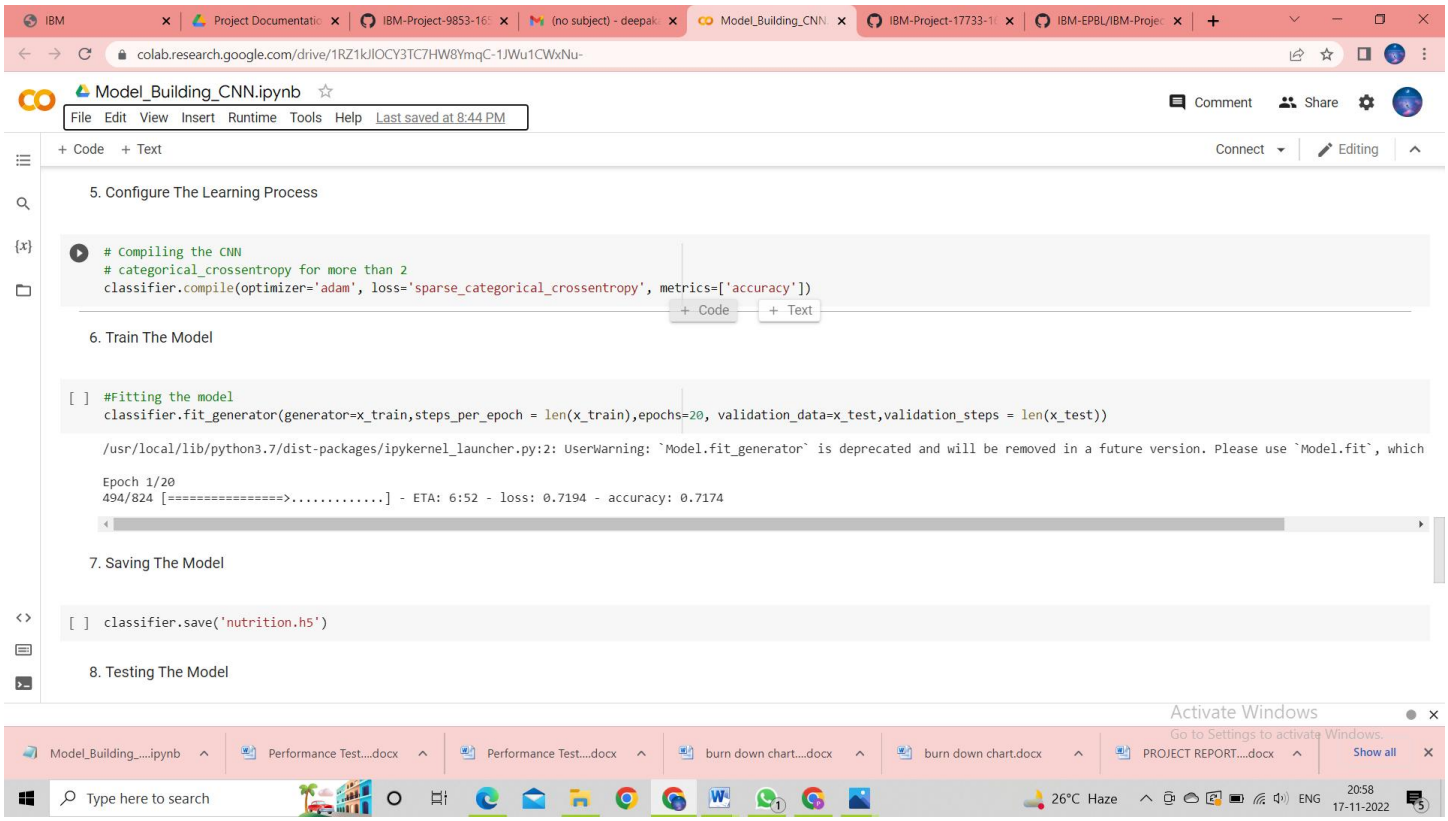

Model_Building_CNN.ipynb
File Edit View Insert Runtime Tools Help Last saved at 8:44 PM
Comment Share
+ Code + Text
Connect Editing
Archive: Dataset.zip
replace Dataset/TEST_SET/APPLES/n07740461_10011.jpg? [y]es, [n]o, [A]ll, [N]one, [r]ename:
Image Preprocessing
#Importing The ImageDataGenerator Library
from keras.preprocessing.image import ImageDataGenerator
Image Data Augmentation
#Configure ImageDataGenerator Class
train_datagen = ImageDataGenerator(rescale=1./255,shear_range=0.2,zoom_range=0.2,horizontal_flip=True)
test_datagen=ImageDataGenerator(rescale=1./255)
Applying Image DataGenerator Functionality To Trainset And Testset
#Applying Image DataGenerator Functionality To Trainset And Testset
x_train = train_datagen.flow_from_directory(
r'/content/drive/MyDrive/TRAIN_SET.zip',
target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')

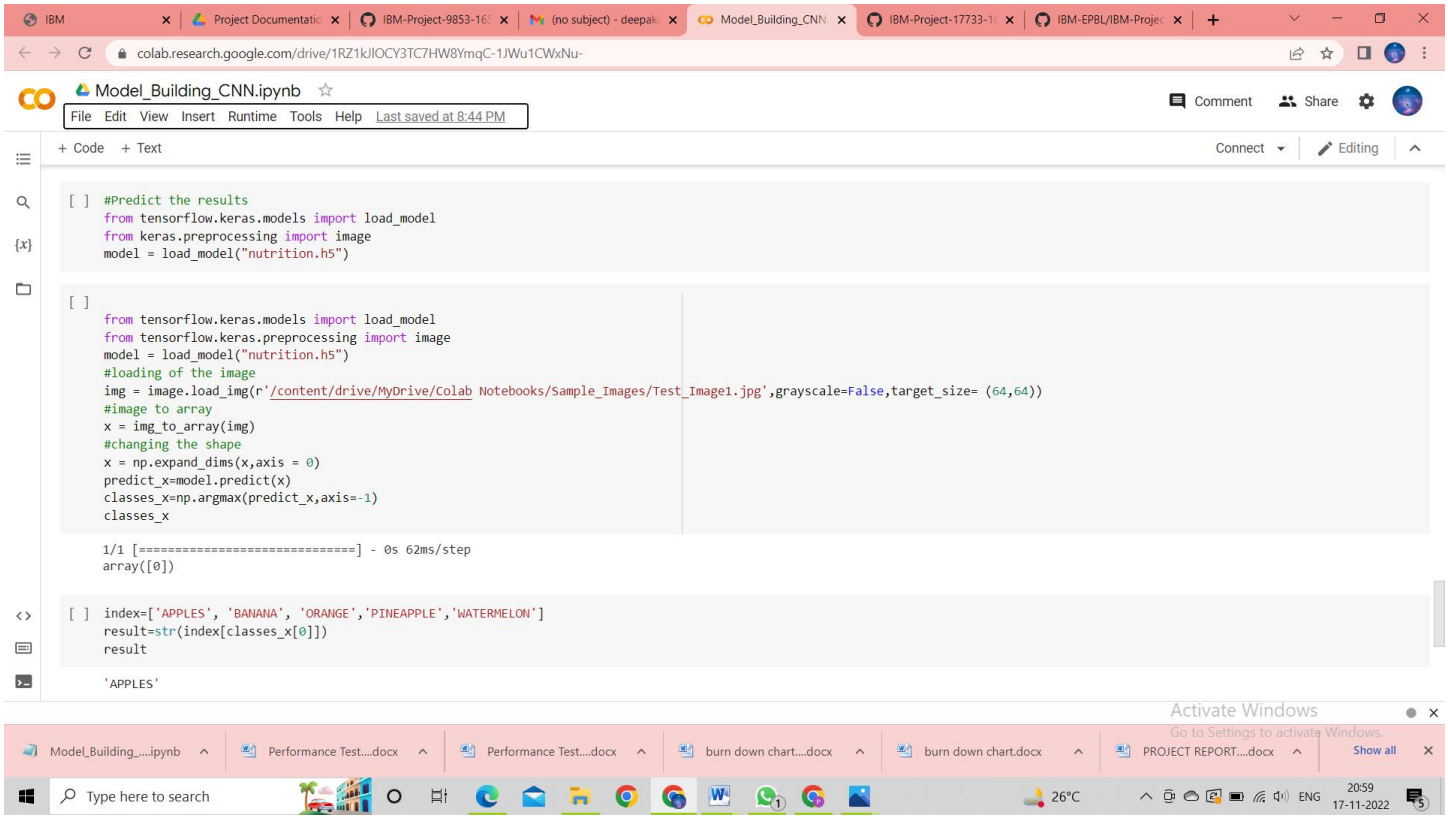

Model_Building_CNN.ipynb
File Edit View Insert Runtime Tools Help Last saved at 8:44 PM
Comment Share
+ Code + Text
Connect Editing
#Applying Image DataGenerator Functionality To Trainset And Testset
x_train = train_datagen.flow_from_directory(
r'/content/drive/MyDrive/TRAIN_SET.zip',
target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')
#Applying Image DataGenerator Functionality To Testset
x_test = test_datagen.flow_from_directory(
r'/content/drive/MyDrive/TEST_SET-20221109T113651Z-001.zip',
target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')
Found 4118 images belonging to 5 classes.
Found 929 images belonging to 5 classes.
#checking the number of classes
print(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, 'PINEAPPLE': 3, 'WATERMELON': 4}
from collections import Counter as c
c(x_train .labels)
Counter({0: 995, 1: 1354, 2: 1019, 3: 275, 4: 475})


Snipping Tool
File Edit Tools Help
New Mode Delay
IBM
Project Documentatic
IBM-Project-9853-16
IBM-Project-17733-1
IBM-EPBL/IBM-Projec
colab.research.google.com/drive/1RZ1kJlOCY3TC7HW8YmqC-1JWu1CWxNu-
Model_Building_CNN.ipynb
File Edit View Insert Runtime Tools Help Last saved at 8:44 PM
Comment
Sha
+ Code + Text
Connect
Model Building
1. Importing The Model Building Libraries
[ ] import numpy as np
import tensorflow as tf
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
2. Initializing The Model
[ ] model = Sequential()
3. Adding CNN Layers
Activate Windows
Go to Settings to activate Windows.
Type here to search
26°C Haze
ENG
20:53
17-11-2022


Model_Building_CNN.ipynb
File Edit View Insert Runtime Tools Help Last saved at 8:44 PM
Comment
Share
+ Code + Text
Connect
Editing
# First convolution layer and pooling
classifier.add(Conv2D(32, (3, 3), input_shape=(64, 64, 3), activation='relu'))
classifier.add(MaxPooling2D(pool_size=(2, 2)))
# Second convolution layer and pooling
classifier.add(Conv2D(32, (3, 3), activation='relu'))
# input_shape is going to be the pooled feature maps from the previous convolution layer
classifier.add(MaxPooling2D(pool_size=(2, 2)))
# Flattening the layers
classifier.add(Flatten())
4. Adding Dense Layers
classifier.add(Dense(units=128, activation='relu'))
classifier.add(Dense(units=5, activation='softmax'))
#summary of our model
classifier.summary()
Model: "sequential_1"
Layer (type) Output Shape Param #
conv2d (Conv2D) (None, 62, 62, 32) 896


Model_Building_CNN.ipynb
File Edit View Insert Runtime Tools Help Last saved at 8:44 PM
Comment
Share
+ Code + Text
Connect
Editing
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 (MaxPooling2D) (None, 14, 14, 32) 0
flatten (Flatten) (None, 6272) 0
dense (Dense) (None, 128) 802944
dense_1 (Dense) (None, 5) 645
Total params: 813,733
Trainable params: 813,733
Non-trainable params: 0
5. Configure The Learning Process
Compiling the CNN


IBM
Project Documentatio
IBM-Project-9853-16
(no subject) - deepak
Model_Building_CNN
IBM-Project-17733-1
IBM-EPBL/IBM-Projec
colab.research.google.com/drive/1RZ1kJlOCY3TC7HW8YmqC-1JWu1CWxNu-
Model_Building_CNN.ipynb
File Edit View Insert Runtime Tools Help Last saved at 8:44 PM
Comment
Share
+ Code + Text
Connect
Editing
5. Configure The Learning Process
# Compiling the CNN
# categorical_crossentropy for more than 2
classifier.compile(optimizer='adam', loss='sparse_categorical_crossentropy', metrics=['accuracy'])
+ Code + Text
6. Train The Model
[ ] #Fitting the model
classifier.fit_generator(generator=x_train,steps_per_epoch = len(x_train),epochs=20, validation_data=x_test,validation_steps = len(x_test))
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:2: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use `Model.fit`, which
Epoch 1/20
494/824 [==========>.....] - ETA: 6:52 - loss: 0.7194 - accuracy: 0.7174
7. Saving The Model
[ ] classifier.save('nutrition.h5')
8. Testing The Model
Activate Windows
Go to Settings to activate Windows.
Model_Building_....ipynb
Performance Test....docx
Performance Test....docx
burn down chart....docx
burn down chart.docx
PROJECT REPORT....docx
Show all
Type here to search
26°C Haze
ENG
20:58
17-11-2022


IBM
Project Documentatic
IBM-Project-9853-16
(no subject) - deepak
Model_Building_CNN
IBM-Project-17733-1
IBM-EPBL/IBM-Projec
colab.research.google.com/drive/1RZ1kJlOCY3TC7HW8YmqC-1JWu1CWxNu-
Model_Building_CNN.ipynb
File Edit View Insert Runtime Tools Help Last saved at 8:44 PM
Comment
Share
+ Code + Text
Connect
Editing
[ ] #Predict the results
from tensorflow.keras.models import load_model
from keras.preprocessing import image
model = load_model("nutrition.h5")
[ ]
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
model = load_model("nutrition.h5")
#loading of the image
img = image.load_img(r'/content/drive/MyDrive/Colab Notebooks/Sample_Images/Test_Image1.jpg',grayscale=False,target_size= (64,64))
#image to array
x = img_to_array(img)
#changing the shape
x = np.expand_dims(x,axis = 0)
predict_x=model.predict(x)
classes_x=np.argmax(predict_x,axis=-1)
classes_x
1/1 [==============================] - 0s 62ms/step
array([0])
[ ] index=['APPLES', 'BANANA', 'ORANGE','PINEAPPLE','WATERMELON']
result=str(index[classes_x[0]])
result
'APPLES'
Activate Windows
Go to Settings to activate Windows.
Model_Building_....ipynb
Performance Test....docx
Performance Test....docx
burn down chart....docx
burn down chart.docx
PROJECT REPORT....docx
Show all
Type here to search
26°C
ENG
20:59
17-11-2022