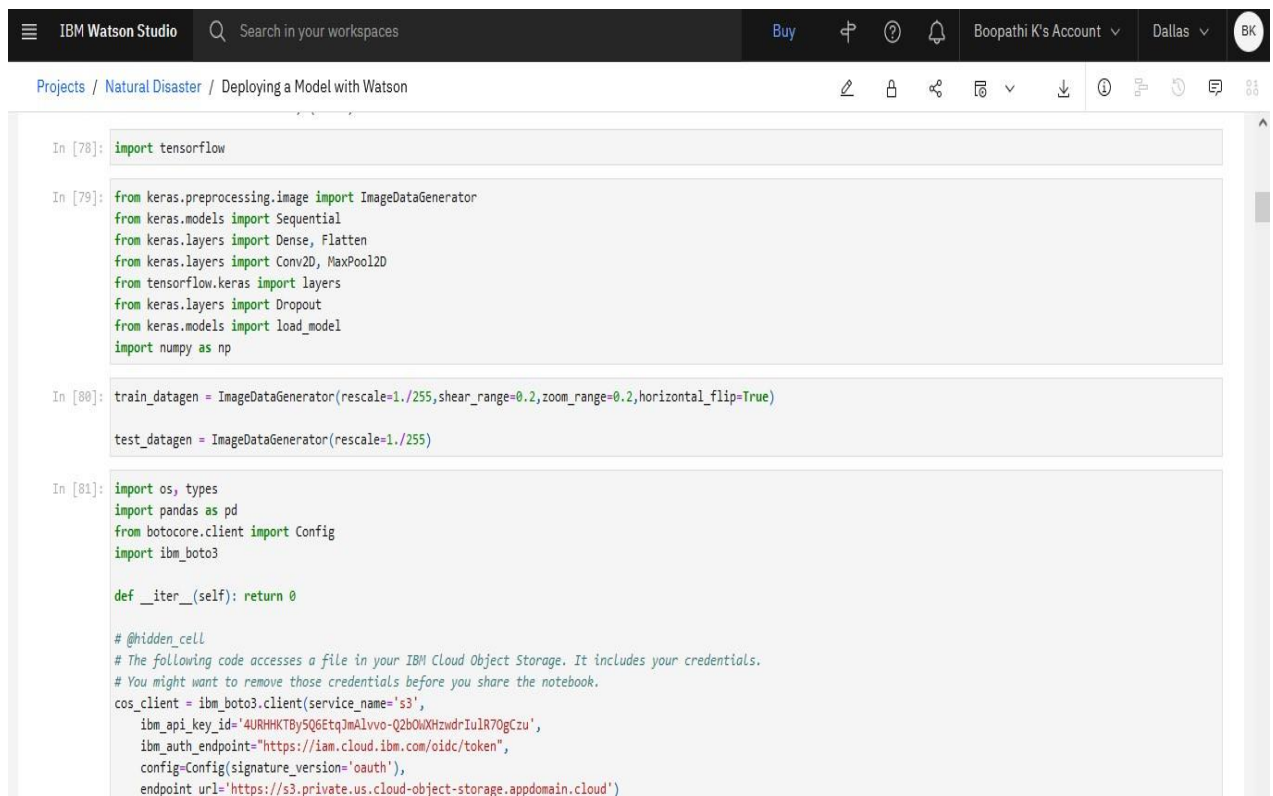


TRAIN THE MODEL ON IBM

Date	15 NOVEMBER 2022
Team ID	PNT2022TMID45682
Project Name	Natural Disasters Intensity Analysis and Classification using Artificial Intelligence
Maximum Marks	8 Marks



The screenshot displays the IBM Watson Studio interface. At the top, there's a navigation bar with the IBM Watson Studio logo, a search bar, and user account information (Boopathi K's Account, Dallas, BK). Below the navigation bar, the breadcrumb trail shows 'Projects / Natural Disaster / Deploying a Model with Watson'. The main area contains a Jupyter notebook with the following code:

```
In [78]: import tensorflow

In [79]: from keras.preprocessing.image import ImageDataGenerator
from keras.models import Sequential
from keras.layers import Dense, Flatten
from keras.layers import Conv2D, MaxPool2D
from tensorflow.keras import layers
from keras.layers import Dropout
from keras.models import load_model
import numpy as np

In [80]: train_datagen = ImageDataGenerator(rescale=1./255, shear_range=0.2, zoom_range=0.2, horizontal_flip=True)

test_datagen = ImageDataGenerator(rescale=1./255)

In [81]: 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='4URHHKTBYSQ6EtqJmAlvvo-Q2b0NKHZwdnIu1R70gCzu',
    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')
```

```
In [89]: model.compile(optimizer='adam', loss='categorical_crossentropy', metrics=['accuracy'])
```

```
In [90]: history = model.fit(train_ds,
    steps_per_epoch = len(train_ds),
    epochs = 20,
    validation_data = test_ds,
    validation_steps = len(test_ds))
```

```
Epoch 1/20
149/149 [=====] - 34s 224ms/step - loss: 1.2664 - accuracy: 0.4340 - val_loss: 1.2752 - val_accuracy: 0.4596
Epoch 2/20
149/149 [=====] - 33s 222ms/step - loss: 1.0715 - accuracy: 0.5283 - val_loss: 1.0095 - val_accuracy: 0.5253
Epoch 3/20
149/149 [=====] - 33s 224ms/step - loss: 0.9708 - accuracy: 0.6132 - val_loss: 0.9438 - val_accuracy: 0.6313
Epoch 4/20
149/149 [=====] - 33s 224ms/step - loss: 0.8042 - accuracy: 0.6739 - val_loss: 0.8127 - val_accuracy: 0.6364
Epoch 5/20
149/149 [=====] - 33s 224ms/step - loss: 0.7758 - accuracy: 0.6819 - val_loss: 0.8150 - val_accuracy: 0.6869
Epoch 6/20
149/149 [=====] - 33s 219ms/step - loss: 0.6576 - accuracy: 0.7332 - val_loss: 0.7444 - val_accuracy: 0.7121
Epoch 7/20
149/149 [=====] - 33s 221ms/step - loss: 0.6452 - accuracy: 0.7345 - val_loss: 0.6702 - val_accuracy: 0.7323
Epoch 8/20
149/149 [=====] - 33s 223ms/step - loss: 0.6711 - accuracy: 0.7318 - val_loss: 0.6503 - val_accuracy: 0.7525
Epoch 9/20
149/149 [=====] - 33s 222ms/step - loss: 0.6338 - accuracy: 0.7251 - val_loss: 0.6639 - val_accuracy: 0.7475
Epoch 10/20
149/149 [=====] - 33s 221ms/step - loss: 0.5860 - accuracy: 0.7749 - val_loss: 0.5851 - val_accuracy: 0.7576
Epoch 11/20
149/149 [=====] - 33s 217ms/step - loss: 0.5683 - accuracy: 0.7803 - val_loss: 0.5673 - val_accuracy: 0.7626
Epoch 12/20
```