Project Development Phase

Sprint 4- Cloud Deployment

Date	18 November 2022
Team ID	PNT2022TMID18498
Project Name	Project – Natural Disasters Intensity Analysis and Classification Using Artificial Intelligence

CODE IN IBM WATSON STUDIO:

#Install Watson Machine Learning Client

!pip install watson-machine-learning-client –upgrade

```
In [20]: !pip install watson-machine-learning-client --upgrade
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: pandas in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (1.3.4)
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: tqdm in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (4.62.3)
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: urllib3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (1.26.7)
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: botocore<1.22.0,>=1.21.21 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from boto3->watson-machine-learn
ing-client) (1.21.41)
Requirement already satisfied: s3transfer<0.6.0,>=0.5.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from boto3->watson-machine-learni
ng-client) (0.5.0)
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)
Requirement already satisfied: python-dateutil<3.0.0,>=2.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from botocore<1.22.0,>=1.21.21
->boto3->watson-machine-learning-client) (2.8.2)
Requirement already satisfied: six>=1.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from python-dateutil<3.0.0,>=2.1->botocore<1.22.
0,>=1.21.21->boto3->watson-machine-learning-client) (1.15.0)
Requirement already satisfied: ibm-cos-sdk-s3transfer==2.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm-cos-sdk->watson-ma
chine-learning-client) (2.11.0)
Requirement already satisfied: ibm-cos-sdk-core==2.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm-cos-sdk->watson-machine-
```


from ibm_watson_machine_learning import APIClient

```
wml_credentials={
      "url":"https://us-south.ml.cloud.ibm.com",
      "apikey":"tLvqhgailCsiFTL8LX5pDMTvUdAvXCiEyMFCLaTT8_mv"
}
client=APIClient(wml_credentials)
```

In [22]:
```
from ibm_watson_machine_learning import APIClient
wml_credentials={
        "url":"https://us-south.ml.cloud.ibm.com",
        "apikey":"tLvqhgailCsiFTL8LX5pDMTvUdAvXCiEyMFCLaTT8_mv"
}
client=APIClient(wml_credentials)
```

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

In [23]:
```
def guid_from_space_name(client,space_name):
    space=client.spaces.get_details()
    return(next(item for item in space['resources'] if item['entity']["name"]==space_name)["metadata"]['id'])
```

```
space_uid=guid_from_space_name(client,'model')
print("Space UID = "+space_uid)
```

In [24]:
```
space_uid=guid_from_space_name(client,'model')
print("Space UID = "+space_uid)
```

```
Space UID = c87cddad-9c3a-47f6-9f1c-e7027e007fe3
```

client.set.default_space(space_uid)

```
In [25]: client.set.default_space(space_uid)

Out[25]: 'SUCCESS'
```

client.software_specifications.list()

```
In [26]: client.software_specifications.list()
pytorch-onnx_1.2-py3.6-edt      40589d0e-7019-4e28-8daa-fb03b6f4fe12  base
pytorch-onnx_rt22.2-py3.10      40e73f55-783a-5535-b3fa-0c8b94291431  base
default_r36py38                 41c247d3-45f8-5a71-b065-8580229facf0  base
autoai-ts_rt22.1-py3.9          4269d26e-07ba-5d40-8f66-2d495b0c71f7  base
autoai-obm_3.0                  42b92e18-d9ab-567f-988a-4240ba1ed5f7  base
pmml-3.0_4.3                    493bcb95-16f1-5bc5-bee8-81b8af80e9c7  base
spark-mllib_2.4-r_3.6           49403dff-92e9-4c87-a3d7-a42d0021c095  base
xgboost_0.90-py3.6              4ff8d6c2-1343-4c18-85e1-689c965304d3  base
pytorch-onnx_1.1-py3.6          50f95b2a-bc16-43bb-bc94-b0bed208c60b  base
autoai-ts_3.9-py3.8             52c57136-80fa-572e-8728-a5e7cbb42cde  base
spark-mllib_2.4-scala_2.11      55a70f99-7320-4be5-9fb9-9edb5a443af5  base
spark-mllib_3.0                 5c1b0ca2-4977-5c2e-9439-ffd44ea8ffe9  base
autoai-obm_2.0                  5c2e37fa-80b8-5e77-840f-d912469614ee  base
spss-modeler_18.1               5c3cad7e-507f-4b2a-a9a3-ab53a21dee8b  base
cuda-py3.8                      5d3232bf-c86b-5df4-a2cd-7bb870a1cd4e  base
runtime-22.2-py3.10-xc          5e8cddff-db4a-5a6a-b8aa-2d4af9864dab  base
autoai-kb_3.1-py3.7             632d4b22-10aa-5180-88f0-f52dfb6444d7  base
------------------------------  ------------------------------------  ----
Note: Only first 50 records were displayed. To display more use 'limit' parameter.
```

software_spec_uid = client.software_specifications.get_uid_by_name("tensorflow_rt22.1-py3.9")
software_spec_uid

```
In [27]: software_spec_uid = client.software_specifications.get_uid_by_name("tensorflow_rt22.1-py3.9")
         software_spec_uid

Out[27]: 'acd9c798-6974-5d2f-a657-ce06e986df4d'
```

```
model_details = client.repository.store_model(model='natural-disaster-new.tgz', meta_props= {
    client.repository.ModelMetaNames.NAME:"CNN",
    client.repository.ModelMetaNames.TYPE:"tensorflow_2.7",
    client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid
})
model_id = client.repository.get_model_id(model_details)
model_id
```

```
In [28]: model_details = client.repository.store_model(model='natural-disaster-new.tgz', meta_props= {
             client.repository.ModelMetaNames.NAME:"CNN",
             client.repository.ModelMetaNames.TYPE:"tensorflow_2.7",
             client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid
         })

         model_id = client.repository.get_model_id(model_details)
```

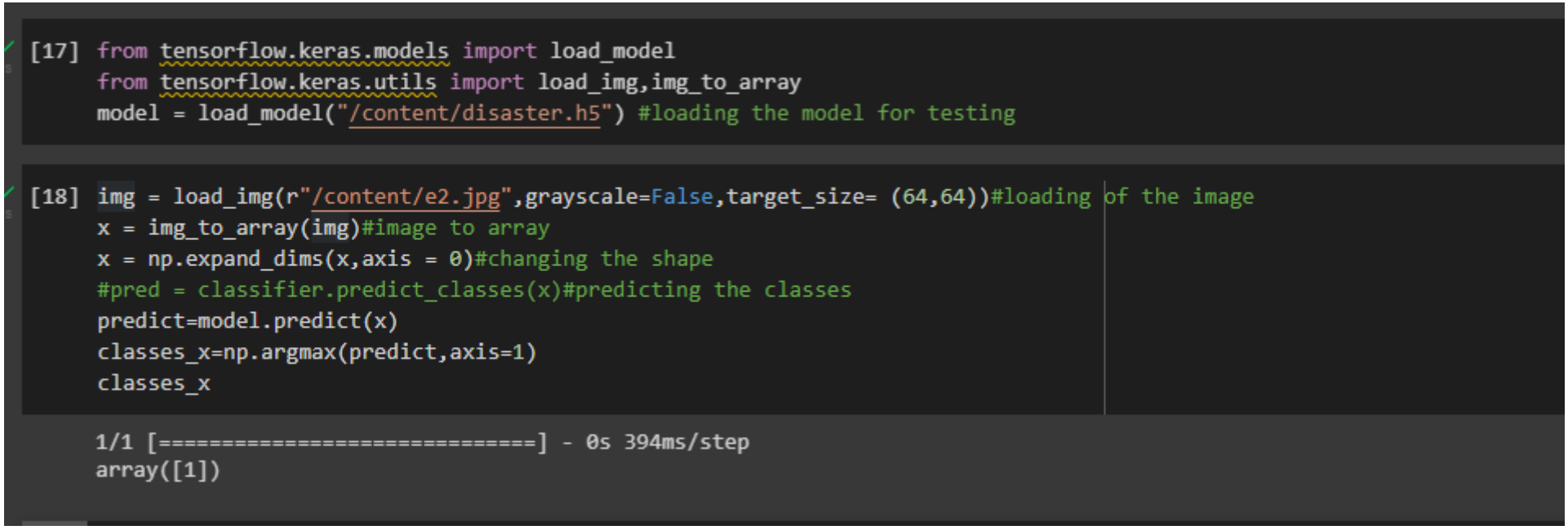
```
In [29]: model_id

Out[29]: '23d62951-0ab6-4879-a62e-4cfff38ebed9'
```

```
client.repository.download(model_id,'my-model.tar.gz')
```

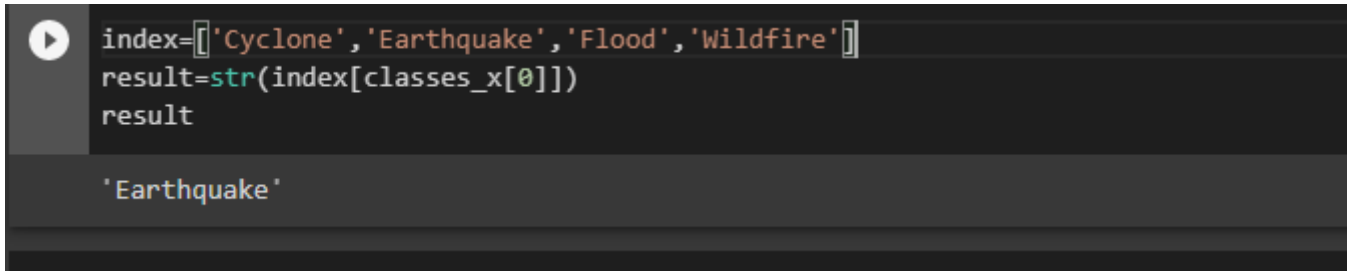
```
In [30]: client.repository.download(model_id,'my-model.tar.gz')
         Successfully saved model content to file: 'my-model.tar.gz'

Out[30]: '/home/wsuser/work/my-model.tar.gz'
```

LOAD THE MODEL IN JUPYTER NOTEBOOK:

```
from tensorflow.keras.models import load_model
from tensorflow.keras.utils import load_img,img_to_array
model = load_model("/content/disaster.h5") #loading the model for testing
img = load_img(r"/content/e2.jpg",grayscale=False,target_size= (64,64))#loading of the image
x = img_to_array(img)#image to array
x = np.expand_dims(x,axis = 0)#changing the shape
predict=model.predict(x)
classes_x=np.argmax(predict,axis=1)
classes_x
```



index=['Cyclone','Earthquake','Flood','Wildfire']
result=str(index[classes_x[0]])
result



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