TRAIN THE MODEL ON IBM

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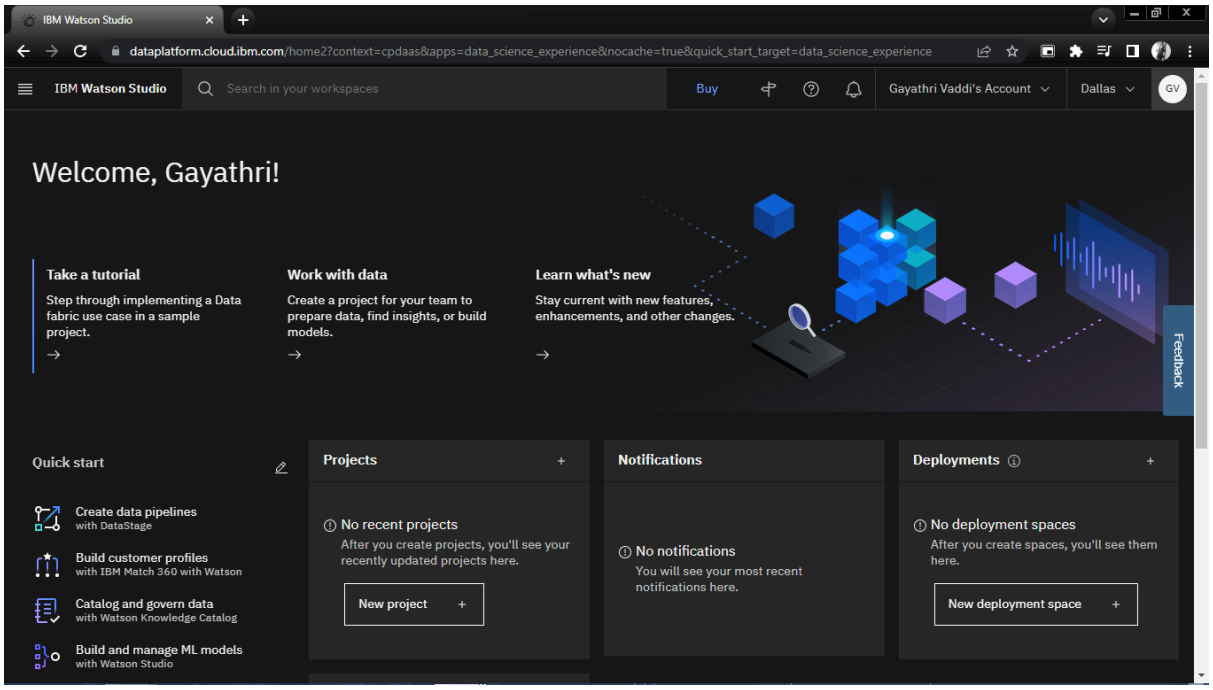
TEAM ID	PNT2022TMID27775
PROJECT NAME	Developing a flight delay prediction using machine learning

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import pandas as pd
import numpy as np
import os, types
import pandas as pd
from botocore.client import Config
import ibm_boto3
def __iter__(self): return 0
data = pd.read_csv(body)
data.head()
```

```
type(data)
data.head(10)
data['Gender'],fillna(data['Gender'],mode()[0],inplace = True)
data['Age'],fillna(data['Age'],mean(),inplace = True)
data['CreditScore'],fillna(data['CreditScore'],median(),inplace = True)
data.isnull().any()
data.head(10)
from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
data["Geography"] = le.fit_transform(data["Geography"])
data["Gender"] = le.fit_transform(data["Gender"])
x = data.iloc[:,3:13].values
y = data.iloc[:,13].values
data
x
from sklearn.preprocessing import OneHotEncoder
one = OneHotEncoder()
z = one.fit_transform(x[:,1:2]).toarray()
x = np.delete(x,1,axis = 1)
x = np.concatenate((z,x),axis = 1)
z
x
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test = train_test_split(x,y,test_size = 0.2,random_state = 42)
x.shape
x_train.shape
x_test.shape
from sklearn.model_selection import train_test_split
x1 = [1,2,3,4,5,6,7,8,9,10]
```

```
y1 = [1,0,1,0,1,0,1,0,1,0]
for l in range(5):
   x_train1,x_test1,y_train1,y_test1 = train_test_split(x1,y1,test_size = 0.2,random_state =
2)
   print(x_train1, "with random state")
for l in range(5):
   x_train1,x_test1,y_train1,y_test1 = train_test_split(x1,y1,test_size = 0.2)
   print(x_train1,"without random state")
from sklearn.ensemble import RandomForestClassifier
forest_reg = RandomForestClassifier(n_estimators=10,criterion='entropy',random_state=42)
forest_reg.fit(x_train,y_train)
x_train[0]
from ibm_watson_machine_learning import APIClient
wml_credentials = {
                  "url":"https://us-south.ml.cloud.ibm.com",
                  "apikey":"Wv3aXu7-agz7OrqIjR-btR10N_5Zncy7TqDdiM55xfyN"
                }
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'])
space_uid = guid_from_space_name(client, "models")
print("Space UID = " + space_uid)
client.set.default_space(space_uid)
client.software_specifications.list()
 software_spec_uid = client.software_specifications.get_uid_by_name("default_ py3.7")
software_spec_uid
df_data_1 = pd.read_csv(body)
df_data_1.head()
```

```
etaNames.NAME:"Churn_modelling",
client.repository.ModelMetaNames.TYPE:"scikit-learn_0.22",
client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid}
                                    )
   model_id = client.repository.get_model_uid(model_details)
model_id
x_train[0]
forest_reg.predict([[1.0000000e+00, 0.0000000e+00, 0.0000000e+00, 6.8600000e+02,
      1.0000000e+00, 3.2000000e+01, 6.0000000e+00, 0.0000000e+00,
      2.0000000e+00, 1.0000000e+00, 1.0000000e+00, 1.7909326e+05]])
```