

## SPRINT-2 PROJECT DOCUMENT

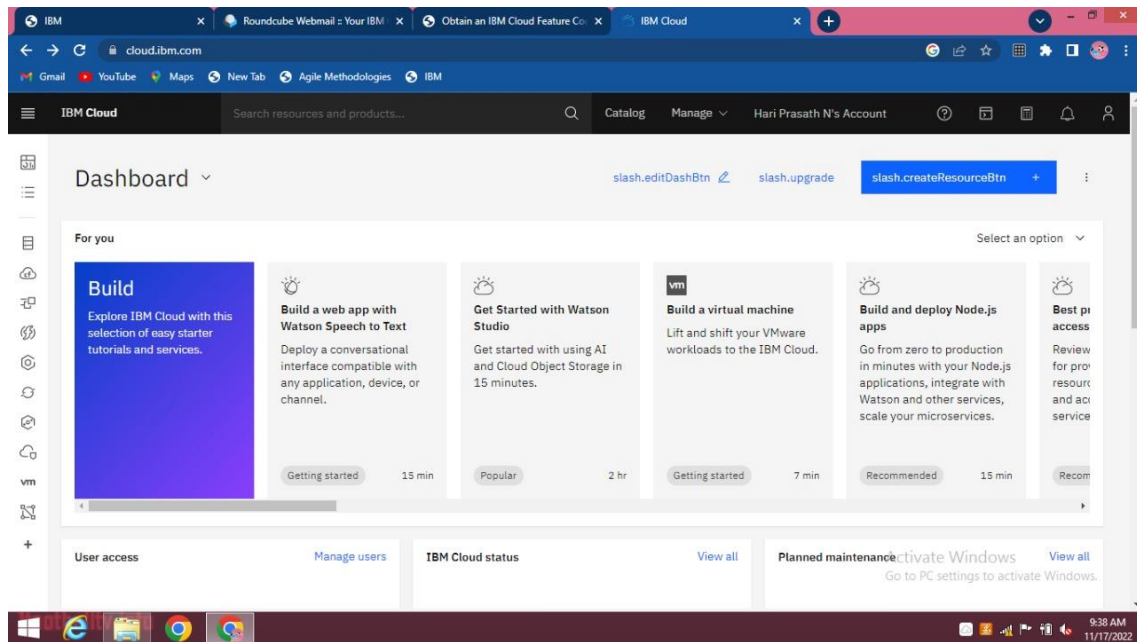
Team ID	PNT2022TMID44333
Project Name	Developing a Flight Delay Prediction Model Using Machine Learning

### Sprint-2 Development Phase:-

#### Outline:

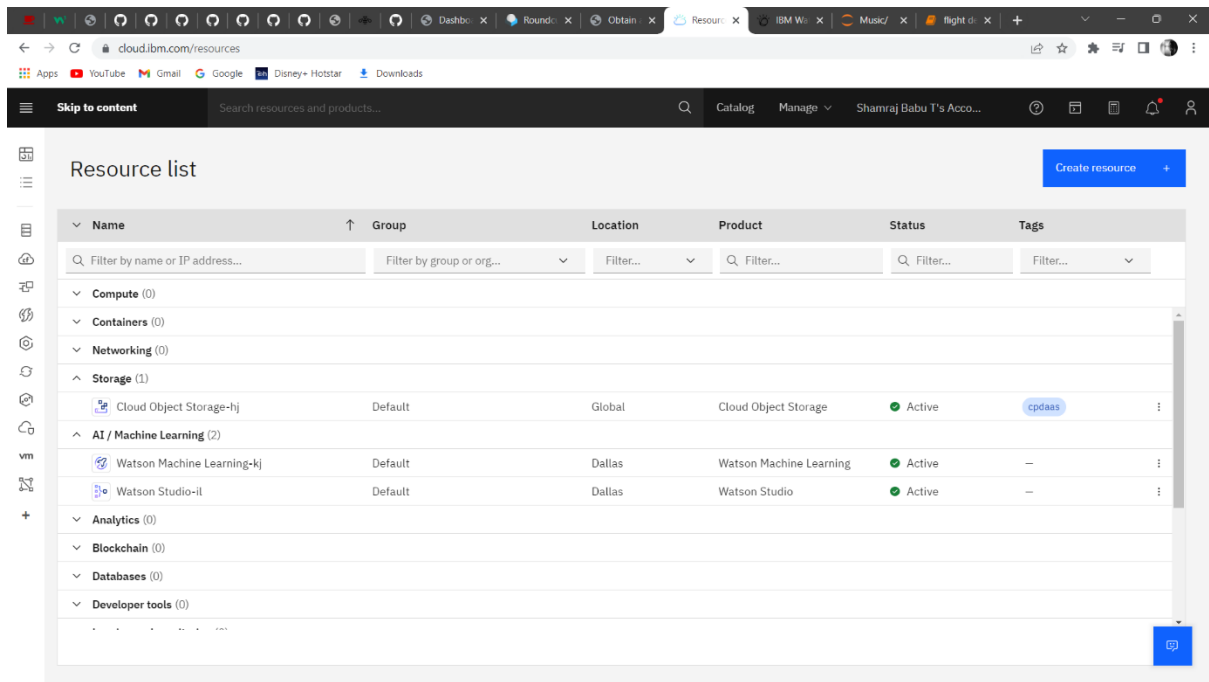
- Building the Model
- Evaluating the Model
- Creating IBM Cloud Account
- Model Deployment on IBM Cloud

#### Creating IBM Cloud Account:



#### IBM Cloud Required Resources:

- Watson Studio
- Watson Machine Learning
- Cloud Object Storage



## Deploy the Model on IBM Watson Studio:

```
pip install -U ibm-watson-machine-learning
```

```
from ibm_watson_machine_learning import APIClient
```

```
import json
```

In [63]:

```
wml_credentials = {
    "apikey": "4fJbepuok7oCO1UkeKU831Sq5rz5-JP0R_hljeB2oaEL",
    "url": "https://us-south.ml.cloud.ibm.com"
}
```

In [64]:

```
wml_client = APIClient(wml_credentials)
wml_client.spaces.list()
```

In [65]:

```
SPACE_ID="deaaa6e0-4843-467d-94d8-71d0272de83b"
```

In [67]:

```
wml_client.set.default_space(SPACE_ID)
```

In [68]:

```
wml_client.software_specifications.list(500)
```

```
import sys
```

In [70]:

```
sys.version
```

In [71]:

```
pip install ibm-watson-machine-learning
```

```
import sklearn  
sklearn.__version__
```

In [93]:

```
MODEL_NAME = "RandomForestClassifier()  
DEPLOYMENT_NAME = 'flight delay'  
DEMO_MODEL = model
```

In [94]:

```
software_spec_uid = wml_client.software_specifications.get_id_by_name('runtime-22.1-py3.9')
```

In [95]:

```
model_props = {  
    wml_client.repository.ModelMetaNames.NAME: MODEL_NAME,  
    wml_client.repository.ModelMetaNames.TYPE: 'scikit-learn_1.0',  
    wml_client.repository.ModelMetaNames.SOFTWARE_SPEC_UID: software_spec_uid  
}
```

In [96]:

```
model_details = wml_client.repository.store_model(  
    model=DEMO_MODEL,  
    meta_props=model_props,  
    training_data=x_train,  
    training_target=y_train  
)
```

In [97]:

```
model_details
```

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

In [99]:

```
deployment_props = {  
    wml_client.deployments.ConfigurationMetaNames.NAME: DEPLOYMENT_NAME,
```

```
wml_client.deployments.ConfigurationMetaNames.ONLINE: {}  
}
```

In [101]:

```
deployment_props = {  
    wml_client.deployments.ConfigurationMetaNames.NAME: DEPLOYMENT_NAME,  
    wml_client.deployments.ConfigurationMetaNames.ONLINE: {}  
}
```

## Deployment The Model:

The screenshot shows the IBM Watson Studio interface. The browser address bar displays the URL: `dataplatfrom.cloud.ibm.com/ml-runtime/spaces/c18f32cf-9b94-4125-b077-545490aa89ce/deployments/context=cpdaas`. The page title is "Deployments /". The main content area is titled "model" and has tabs for "Overview", "Assets", "Deployments" (which is selected), "Jobs", and "Manage". Below the tabs is a search bar and a table of deployments.

Name	Type	Status	Asset	Last modified	
flight_delay_deployment	Online	Deployed	RandomForestClassifier()	5 seconds ago Shamraj Babu T (You)	

At the bottom of the table, it says "Items per page: 20" and "1-1 of 1 items". On the right side of the page, there is a message box that says "Drop files here or browse for files to upload." and a note: "Stay on the page until upload completes. Incomplete uploads are cancelled."