

Train The Model On IBM

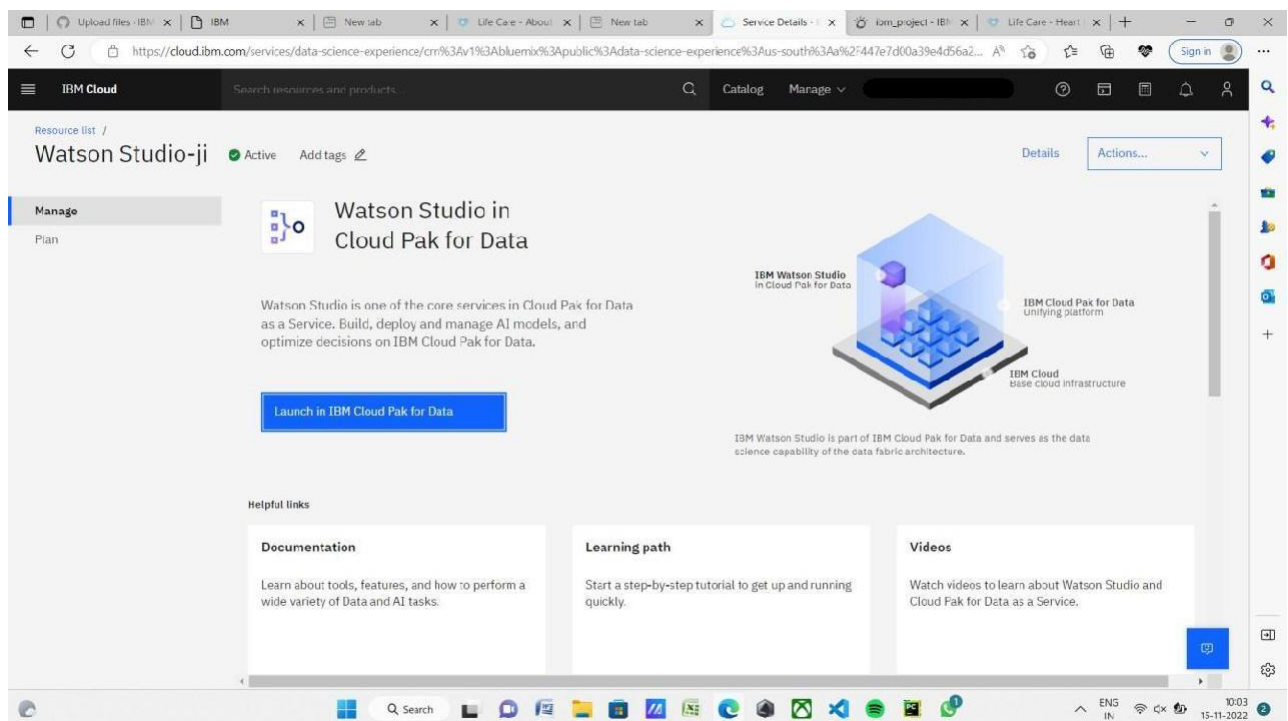
Train The Model on IBM Watson

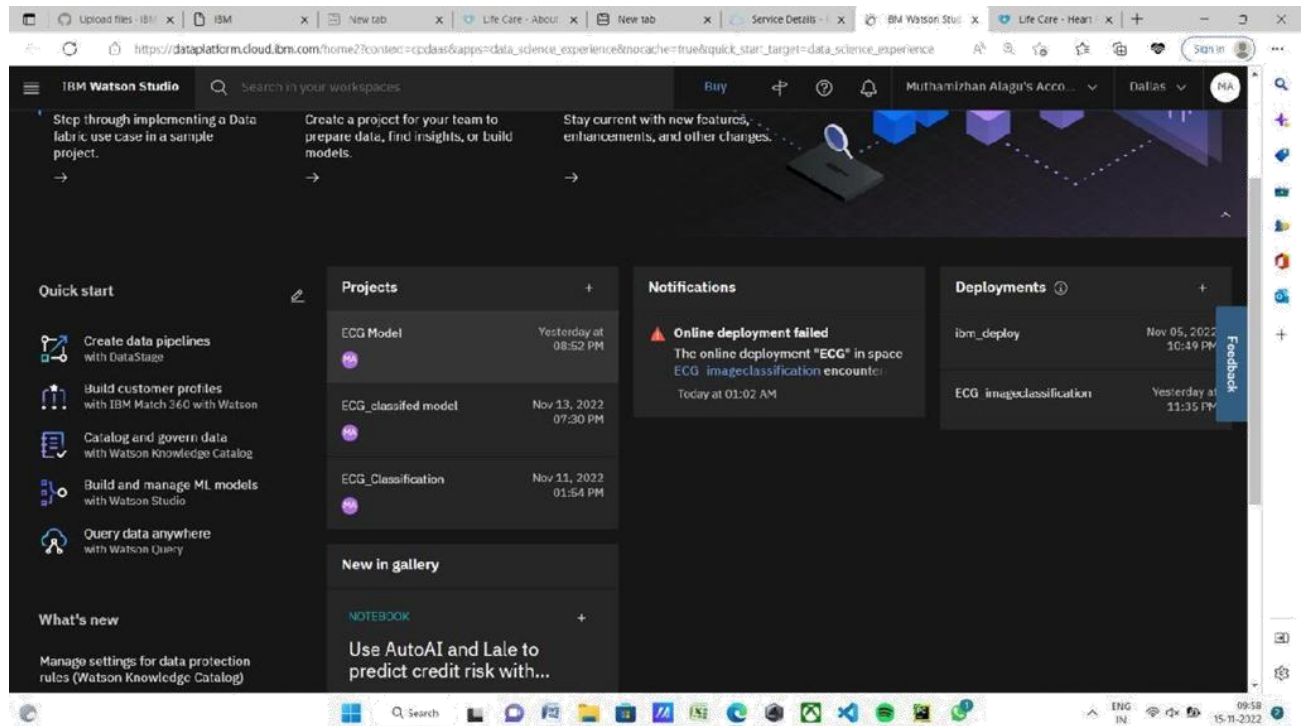
Date	17 Nov 2022
TeamID	PNT2022TMID45689
ProjectName	Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image Representation

TASK:

Train The Model on IBM Watson:

GO ON WATSON SERVICES(SCREEN SHOT):





GO ON NEW PROJECT (SCREEN SHOT):

GO ON ASSEST(SCREEN SHOT):

The screenshot shows the IBM Watson Studio interface. The top navigation bar includes the IBM logo, a search bar, and a 'Buy' button. The main header shows 'Projects / ECG Model'. Below this, there are tabs for 'Overview', 'Assets', 'Jobs', and 'Manage'. The 'Assets' tab is active, displaying a list of 4 assets. On the left, there is a sidebar with 'Find assets' and 'Asset types' (Data: 3, Notebooks: 1). The main area shows a table of assets with columns 'Name' and 'Last modified'. A 'Data in this project' panel on the right shows a drop zone for uploading files.

Name	Last modified
ibm_project Notebook	9 hours ago Modified by you
fig_5901.png PNG	9 hours ago Modified by you
fig_5897.png PNG	11 hours ago Modified by you
data.zip application/x-zip-compressed	12 hours ago Modified by you

This screenshot is identical to the one above, showing the IBM Watson Studio 'Assets' page for the 'ECG Model' project. It displays the same list of 4 assets: 'ibm_project Notebook', 'fig_5901.png PNG', 'fig_5897.png PNG', and 'data.zip application/x-zip-compressed'. The interface elements, including the sidebar, top navigation, and right-hand panel, are consistent with the first image.

Name	Last modified
ibm_project Notebook	9 hours ago Modified by you
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data.zip application/x-zip-compressed	12 hours ago Modified by you

GO ON IBM_PROJECT(SCREEN SHOT):

JUPYTER NOTEBOOK(SCREEN SHOT):

IBM Watson Studio interface showing a Jupyter Notebook session. The browser address bar shows the URL: <https://dataplatform.cloud.ibm.com/analytics/notebooks/v2/71699bd1-22eb-46b7-8128-7d9d307acc0c/view?projectId=6a38bf3b-efdd-4488-8c2b-db98267f77...>

The notebook interface includes a toolbar with icons for file operations, a search bar, and a navigation pane on the right. The main area displays the following code and output:

```
In [2]: pwd
```

```
Out[2]: '/home/wuser/work'
```

```
In [3]: !pip install keras
!pip install tensorflow
```

The output shows a list of requirements already satisfied, including:

- Requirement already satisfied: keras in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (2.7.0)
- Requirement already satisfied: tensorflow in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (2.7.2)
- Requirement already satisfied: keras-preprocessing>1.1.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.1.2)
- Requirement already satisfied: tensorflow-io-gcs-filesystem>0.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.23.1)
- Requirement already satisfied: gast>0.5.0,<0.2.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.4.0)
- Requirement already satisfied: wheel<1.0,>0.32.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.37.0)
- Requirement already satisfied: h5py>2.9.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (3.2.1)
- Requirement already satisfied: protobuf>3.9.2 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (3.19.1)
- Requirement already satisfied: tensorboard<2.7 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.7.0)
- Requirement already satisfied: google-pasta>0.1.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.2.0)
- Requirement already satisfied: numpy>=1.14.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.20.3)
- Requirement already satisfied: flatbuffers<3.0,>=1.12 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.0)
- Requirement already satisfied: six>=1.12.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.15.0)
- Requirement already satisfied: wrapt>=1.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.12.1)
- Requirement already satisfied: termcolor>=1.1.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.1.0)
- Requirement already satisfied: keras<2.8,>=2.7.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.7.0)
- Requirement already satisfied: opt-einsum>=2.3.2 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (3.3.0)
- Requirement already satisfied: absl-py>=0.4.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.12.0)
- Requirement already satisfied: typing-extensions>=3.6.6 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (4.1.1)
- Requirement already satisfied: grpcio<2.0,>=1.24.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.42.0)
- Requirement already satisfied: tensorflow-estimator<2.8,>=2.7.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.7.0)
- Requirement already satisfied: astunparse>=1.6.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.6.3)
- Requirement already satisfied: requests<3,>=2.21.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.26.0)
- Requirement already satisfied: tensorboard-data-server<0.7.0,>=0.6.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.6.1)

```
Upload files - IBM | IBM | New tab | Life Care - About | New lab | Service Details | ibm_project - IBM | Life Care - Heart | +
https://dataplatform.cloud.ibm.com/analytics/notebooks/v2/71899bd1-22eb-46b7-6128-7d9d307acc0c/view?projectId=6a88bf3b-efid-4488-8c2b-d598267f7...
IBM Watson Studio Search in your workspaces Buy Dallas MA
Projects / ECG Model / ibm_project

In [8]: train_datagen = ImageDataGenerator(rescale = 1./255, shear_range = 0.2, zoom_range = 0.2, horizontal_flip = True)
test_datagen = ImageDataGenerator(rescale = 1./255)

In [25]: import os, types
import pandas as pd
from botocore.client import Config
import ibm_botocore

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_botocore.client(service_name='s3',
    ibm_api_key_id='6VASENF50MNF-ngENTRQW2IDILQd1oufjo=S4D5pCCZA',
    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')

bucket = 'ecgmodel-dorotdelete-pr-nplmualb08ord'
object_key = 'data.zip'

streaming_body_1 = cos_client.get_object(Bucket=bucket, Key=object_key)['Body']

# Your data file was loaded into a botocore.response.StreamingBody object.
# Please read the documentation of ibm_botocore and pandas to learn more about the possibilities to load the data.
# ibm_botocore documentation: https://ibm.github.io/ibm-cos-sdk-python/
# pandas documentation: http://pandas.pydata.org/

In [26]: from io import BytesIO
import zipfile
unzip=zipfile.ZipFile(BytesIO(streaming_body_1.read()), 'r')
file_names=list(unzip.namelist())
```

```
Upload files - IBM | IBM | New tab | Life Care - About | New lab | Service Details | ibm_project - IBM | Life Care - Heart | +
https://dataplatform.cloud.ibm.com/analytics/notebooks/v2/71899bd1-22eb-46b7-6128-7d9d307acc0c/view?projectId=6a88bf3b-efid-4488-8c2b-d598267f7...
IBM Watson Studio Search in your workspaces Buy Dallas MA
Projects / ECG Model / ibm_project

Requirement already satisfied: numpy>=1.17.3 in /opt/conda/envs/python3-9/110/python3.9/site-packages (from pandas->ibm-watson-machine-learning-client) (1.20.3)
Note: you may need to restart the kernel to use updated packages.

In [104]: # Replace the credentials that you got from watson machine learning service
from ibm_watson_machine_learning import APIClient
wml_credentials = {
    "url": "https://us-south.ml.cloud.ibm.com",
    "apikey": "T2vta0H65tyBqLPq-gE11hR0Kw307D0qN1M55fSHd09M"
}
client = APIClient(wml_credentials)

In [105]: client = APIClient(wml_credentials)

In [106]: client.spaces.list()

Note: 'limit' is not provided. Only first 50 records will be displayed if the number of records exceed 50



| ID                                   | NAME                    | CREATED                  |
|--------------------------------------|-------------------------|--------------------------|
| a5359809-7795-48ec-aa62-5bdd98bc7c2b | ECG_imageclassification | 2022-11-14T17:43:44.414Z |
| aadd0631-6c96-4753-b6d4-51238d30797  | ibm_deploy              | 2022-11-05T17:19:15.321Z |



In [107]: def guid_from_space_name(client, space_name):
space = client.spaces.get_details(space_name)
#print(space)
return(next(item for item in space['resources'] if item['entity']['name'] == space_name)['metadata']['id'])

In [108]: space_uid = guid_from_space_name(client, 'ECG_imageclassification')
print("space UID = " + space_uid)

space UID = a5359809-7795-48ec-aa62-5bdd98bc7c2b

In [109]: client.set_default_space(space_uid)

Out[109]: 'SUCCESS'
```