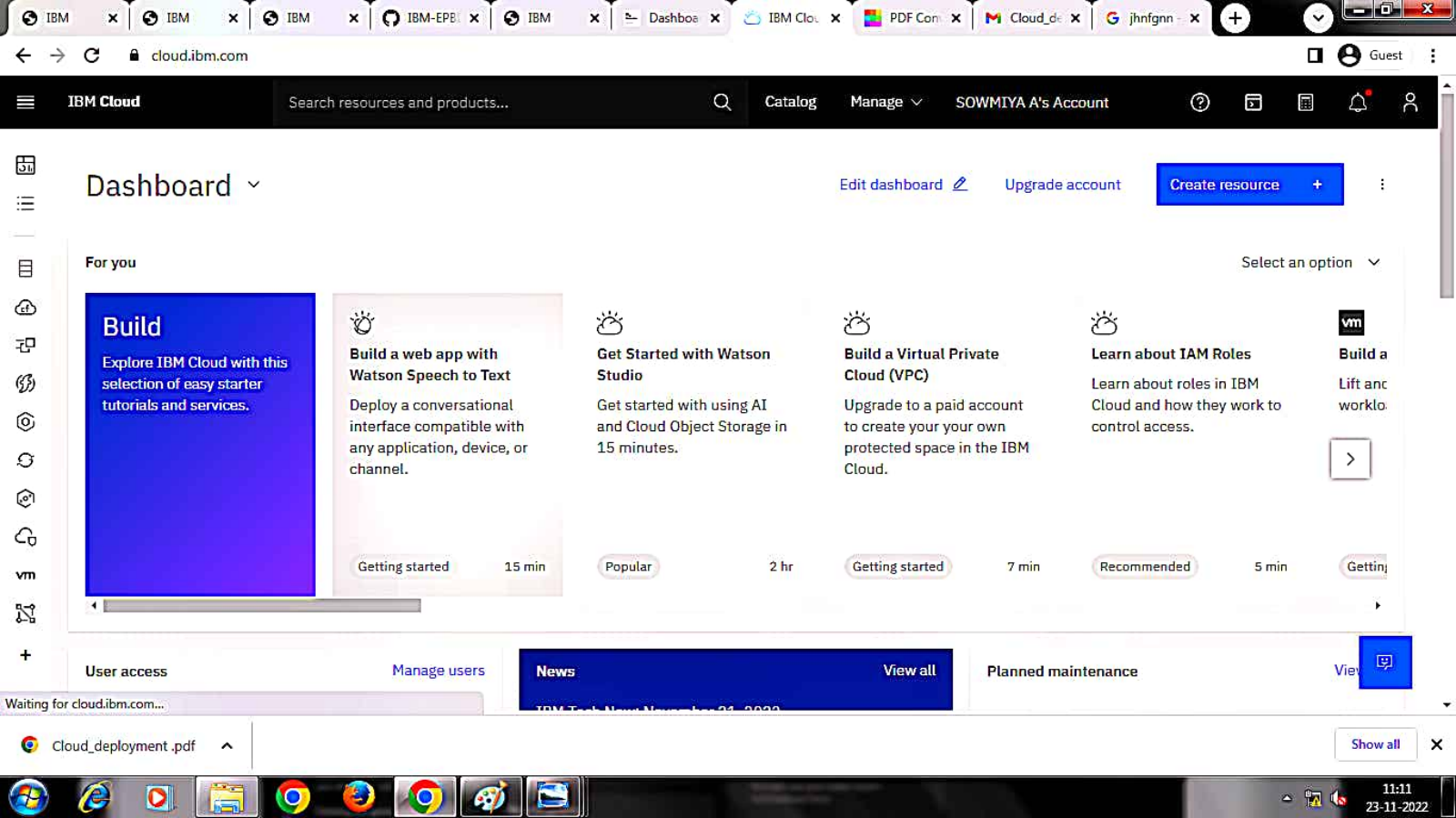


Date	14 October 2022
Team ID	PNT2022TMID54113
Project Name	AI FOR A NOVEL METHOD FOR HANDWRITTEN DIGIT RECOGNITION SYSTEM
Maximum Marks	4 Marks



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Get started with using AI and Cloud Object Storage in 15 minutes.

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Name	Group	Location	Product	Status	Tags
Filter by name or IP address...	Filter by group or org...	Filter...	Filter...	Filter...	Filter...
Compute (0)					
Containers (0)					
Networking (0)					
Storage (1)					
Cloud Object Storage-ui	Default	Global	Cloud Object Storage	Active	1
AI / Machine Learning (2)					
Watson Machine Learning-hg	Default	Dallas	Watson Machine Learning	Active	1
Watson Studio-90	Default	Dallas	Watson Studio	Active	-
Analytics (0)					
Blockchain (0)					
Databases (0)					
Developer tools (0)					

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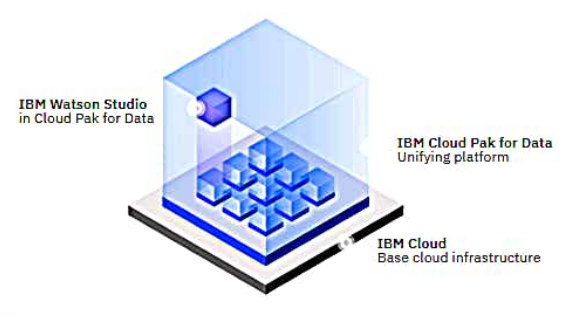
Plan



Watson Studio in Cloud Pak for Data

Watson Studio is one of the core services in Cloud Pak for Data as a Service. Build, deploy and manage AI models, and optimize decisions on IBM Cloud Pak for Data.

Launch in IBM Cloud Pak for Data



IBM Watson Studio in Cloud Pak for Data

IBM Cloud Pak for Data Unifying platform

IBM Cloud Base cloud infrastructure

IBM Watson Studio is part of IBM Cloud Pak for Data and serves as the data science capability of the data fabric architecture.

Helpful links

Documentation

Learn about tools, features, and how to

Learning path

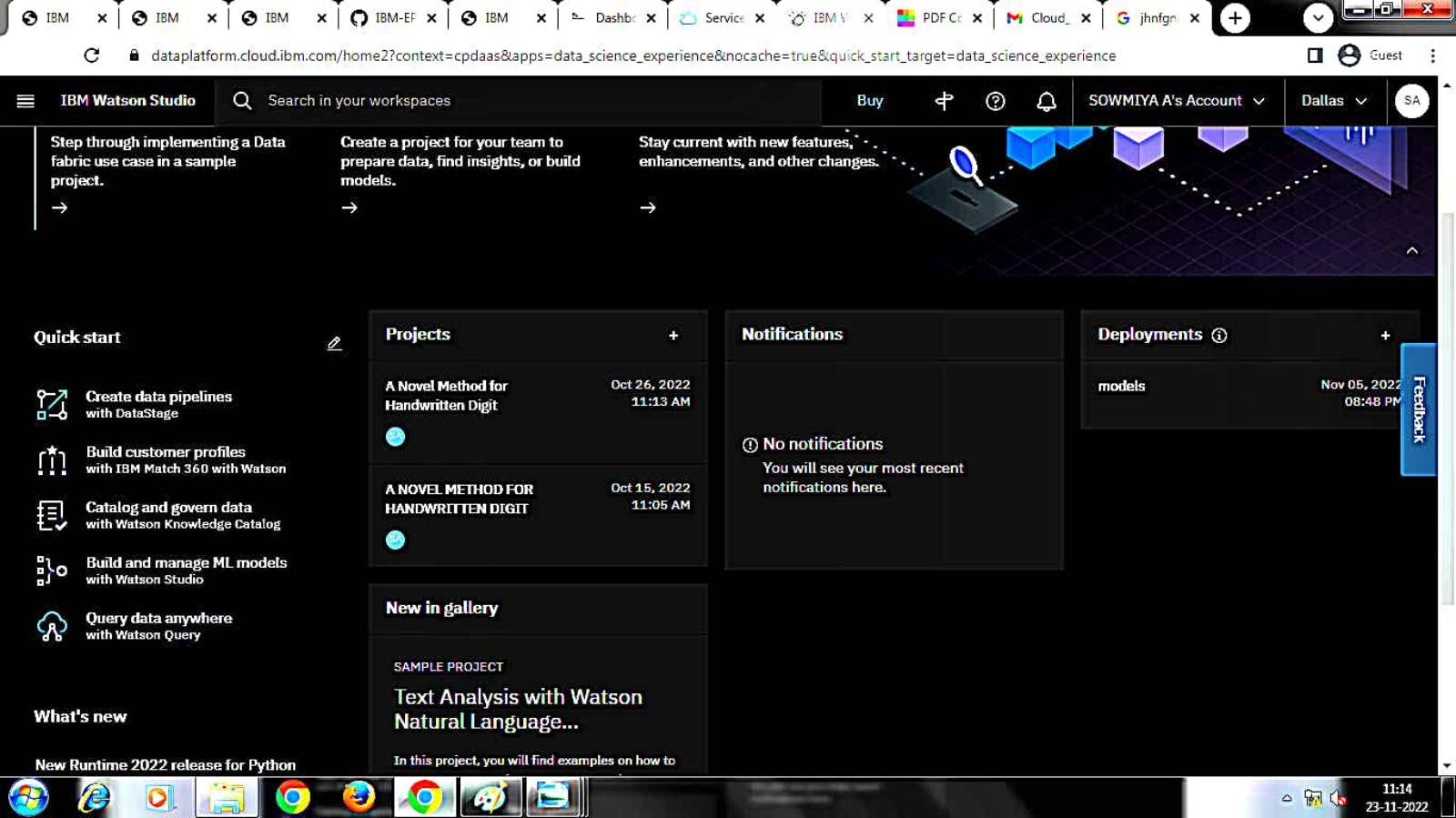
Start a step-by-step tutorial to get up and

Videos

Watch videos to learn about Watson Studio

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In [1]:

pwd

Out[1]:

'/home/wsuser/work'

In [2]:

```
import cv2
import numpy as np
from keras.datasets import mnist
from keras.layers import Dense, Flatten, MaxPooling2D, Dropout
from keras.layers.convolutional import Conv2D
from keras.models import Sequential
from tensorflow.keras.utils import to_categorical
import matplotlib.pyplot as plt
```

In [3]:

```
(X_train, y_train), (X_test, y_test) = mnist.load_data()
```

Downloading data from https://storage.googleapis.com/tensorflow/tf-keras-datasets/mnist.npz
11493376/11490434 [=====] - 0s 0us/step
11501568/11490434 [=====] - 0s 0us/step


In [4]:


```
## Looking at a sample
plt.imshow(X_train[0], cmap="gray")
plt.show()
print (y_train[0])
```

0

5

10





11:15

23-11-2022

In [2]: !pip install tensorflow --upgrade

```
Requirement already satisfied: tensorflow in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (2.7.2)
Collecting tensorflow
  Downloading tensorflow-2.11.0-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (588.3 MB)
    | 588.3 MB 25 kB/s /s eta 0:00:0104 | 334.6 MB 131.2 MB/s eta 0:00:02 | 412.9 MB 131.2 MB/s eta 0:00:02 | 419.1 MB 131.2 MB/s eta 0:00:02 | 494.5 MB 124.4 MB/s eta 0:00:01579.6 MB 140.6 MB/s eta 0:00:01 | 586.6 MB 140.6 MB/s eta 0:00:01
Requirement already satisfied: gast<0.4.0,>=0.2.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.4.0)
Collecting keras<2.12,>=2.11.0
  Downloading keras-2.11.0-py2.py3-none-any.whl (1.7 MB)
    | 1.7 MB 109.2 MB/s eta 0:00:01
Requirement already satisfied: numpy>=1.20 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.20.3)
Collecting libclang>=13.0.0
  Downloading libclang-14.0.6-py2.py3-none-manylinux2010_x86_64.whl (14.1 MB)
    | 14.1 MB 105.2 MB/s eta 0:00:01 | 1.5 MB 105.2 MB/s eta 0:00:01
Collecting tensorflow-estimator<2.12,>=2.11.0
  Downloading tensorflow_estimator-2.11.0-py2.py3-none-any.whl (439 kB)
    | 439 kB 110.9 MB/s eta 0:00:01
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)
Collecting tensorboard<2.12,>=2.11
  Downloading tensorboard-2.11.0-py3-none-any.whl (6.0 MB)
    | 6.0 MB 98.7 MB/s eta 0:00:01 0:00:01
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: 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: six>=1.12.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.15.0)
Requirement already satisfied: setuptools in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (58.0.4)
Requirement already satisfied: protobuf<3.20,>=3.9.2 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (3.19.1)
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: grpcio<2.0,>=1.24.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.42.0)
Collecting absl-py>=1.0.0
  Downloading absl_py-1.3.0-py3-none-any.whl (124 kB)
```