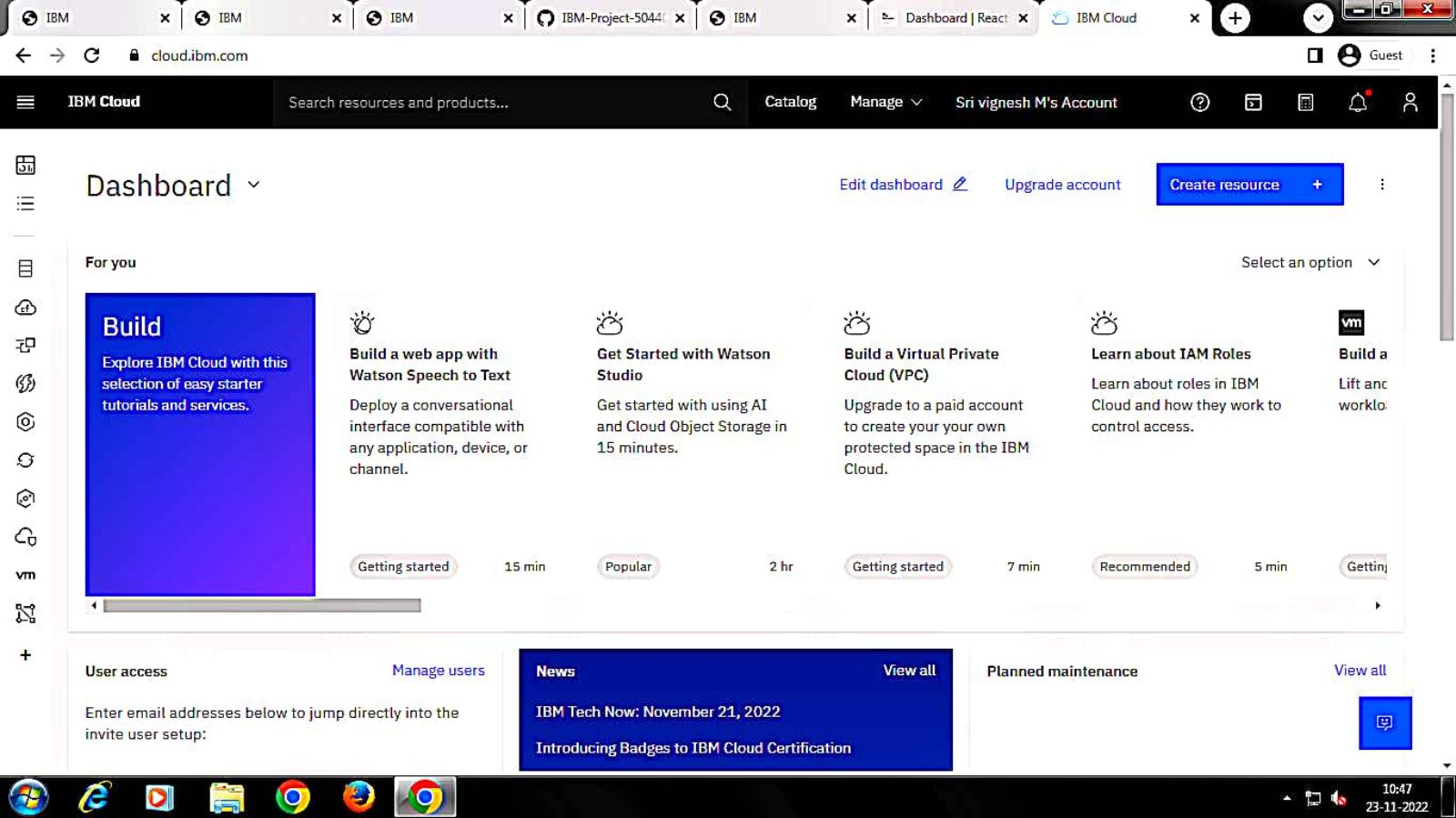


Date	14 OCT 2022
Team ID	PNT2022TMID54114
Project Name	A Novel Method for Handwritten Digit Recognition System
Maximum marks	4 Marks



IBM

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IBM

IBM-Project-5044

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Dashboard | React

Resource list - IBM

cloud.ibm.com/resources

Guest

IBM Cloud

Search resources and products...

Catalog

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Resource list

Create resource

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+)					
AI / Machine Learning (2)					
Watson Machine Learning-si	Default	Dallas	Watson Machine Learning	Active	1
Watson Studio-zz	Default	Dallas	Watson Studio	Active	—
Analytics (0)					
Blockchain (0)					
Databases (0)					
Developer tools (0)					

10:49
23-11-2022

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Service Details - I

cloud.ibm.com/services/data-science-experience/crn%3Av1%3Abluemix%3Apublic%3Adata-science-experience%3Aus-south%3Aa%2F454dde0f0b7d4ef79e8427597ec03...

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Resource list /

Watson Studio-zz

Active


Add tags

Details

Actions...

Manage

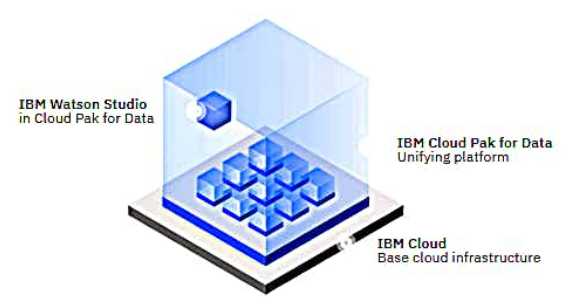
Plan



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

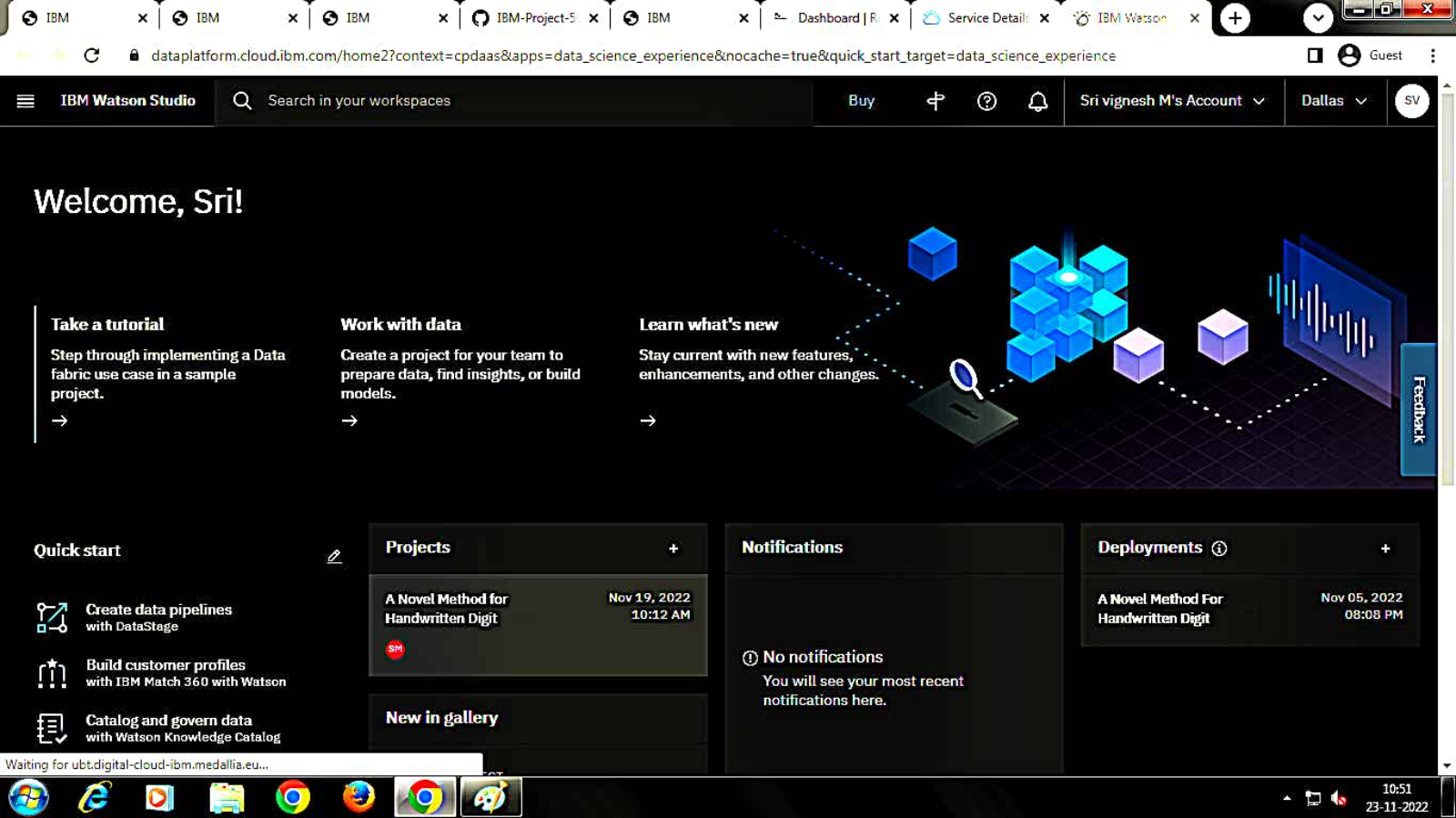
Start a step-by-step tutorial to get up and

Videos

Watch videos to learn about Watson Studio

10:50

23-11-2022



Welcome, Sri!

Take a tutorial

Step through implementing a Data fabric use case in a sample project.



Work with data

Create a project for your team to prepare data, find insights, or build models.



Learn what's new

Stay current with new features, enhancements, and other changes.



Quick start



Create data pipelines with DataStage



Build customer profiles with IBM Match 360 with Watson



Catalog and govern data with Watson Knowledge Catalog

Projects



A Novel Method for Handwritten Digit

Nov 19, 2022
10:12 AM



New in gallery

Notifications

No notifications

You will see your most recent notifications here.

Deployments



A Novel Method for Handwritten Digit

Nov 05, 2022
08:08 PM

Feedback

Data in this project

-  You created project [A Novel Method for Handwritten Digit Recognition System](#)
Oct 16, 2022 07:26 PM

Type project notes, reminders,
or instructions

Drop data files here or
browse for files to upload

IBM

IBM

IBM

IBM-Project-5

IBM

Dashboard

Service Details

A NOVEL MET

← → ↺

dataplatfom.cloud.ibm.com/analytics/notebooks/v2/d563314d-03c2-4573-a735-83994e7a6f67/view?projectId=bf105390-db83-414c-89d3-d124a99cd2b6&context=cpd...

Guest

IBM Watson Studio

Search in your workspaces

Buy

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Sri vignesh M's Account

Dallas

SV

Projects / A Novel Method for Handwritten ... / A NOVEL METHOD FOR HANDWR...

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)

Windows Taskbar

10:52
23-11-2022


```
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])
```

