

MACHINE LEARNING

based

APPLICATIONS

On

MICROSOFT AZURE

MACHINE LEARNING STUDIO

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# What is Azure Machine Learning?

Azure Machine Learning is a cloud service for accelerating and managing the machine learning project lifecycle. Machine learning professionals, data scientists, and engineers can use it in their day-to-day workflows: Train and deploy models, and manage MLOps.

You can create a model in Azure Machine Learning or use a model built from an open-source platform, such as Pytorch, TensorFlow, or scikit-learn. MLOps tools help you monitor, retrain, and redeploy models.

# Who is Azure Machine Learning for?

Azure Machine Learning is for individuals and teams implementing MLOps within their organisation to bring machine learning models into production in a secure and auditable production environment.

Data scientists and ML engineers will find tools to accelerate and automate their day-to-day workflows. Application developers will find tools for integrating models into applications or services. Platform developers will find a robust set of tools, backed by durable Azure Resource Manager APIs, for building advanced ML tooling.

Enterprises working in the Microsoft Azure cloud will find familiar security and role-based access control (RBAC) for infrastructure. You can set up a project to deny access to protected data and select operations.

## **Services provided:**

Machine learning projects often require a team with varied skill set to build and maintain. Azure Machine Learning has tools that help enable you to:

- Collaborate with your team via shared notebooks, compute resources, data, and environments
- Develop models for fairness and explainability, tracking and auditability to fulfill lineage and audit compliance requirements
- Deploy ML models quickly and easily at scale, and manage and govern them efficiently with MLOps
- Run machine learning workloads anywhere with built-in governance, security, and compliance

## **Studio:**

The Azure Machine Learning studio offers multiple authoring experiences depending on the type of project and the level of your past ML experience, without having to install anything.

- Notebooks: write and run your own code in managed Jupyter Notebook servers that are directly integrated in the studio.
- Visualize run metrics: analyze and optimize your experiments with visualization.

Search Download config.json Delete

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Events

Settings

Networking

Properties

Locks

Monitoring

Alerts

Metrics

Diagnostic settings

Resource group  
BOT

Location  
East US 2

Subscription  
Azure for Students

Subscription ID  
e8e56b6c-1703-4210-8860-fd0e4afa9beb

Storage  
karunesh7299736817

Studio web URL  
<https://ml.azure.com/?tid=d4963ce2-af94-4122-95a9-644e8b01624d&wsi...>

Container Registry

Key Vault  
karunesh1059243627

Application Insights  
karunesh9145170700

MLflow tracking URI  
azureml://eastus2.api.azureml.ms/mlflow/v1.0/subscriptions/e8e56b6c-1703-4210-8860-fd0e4afa9beb

Work with your models in Azure Machine Learning Studio

- Azure Machine Learning designer: use the designer to train and deploy machine learning models without writing any code. Drag and drop datasets and components to create ML pipelines. Try out the designer tutorial.
- Automated machine learning UI: Learn how to create automated ML experiments with an easy-to-use interface.
- Data labelling: Use Azure Machine Learning data labelling to efficiently coordinate image labelling or text labelling projects.

# INTRODUCTION

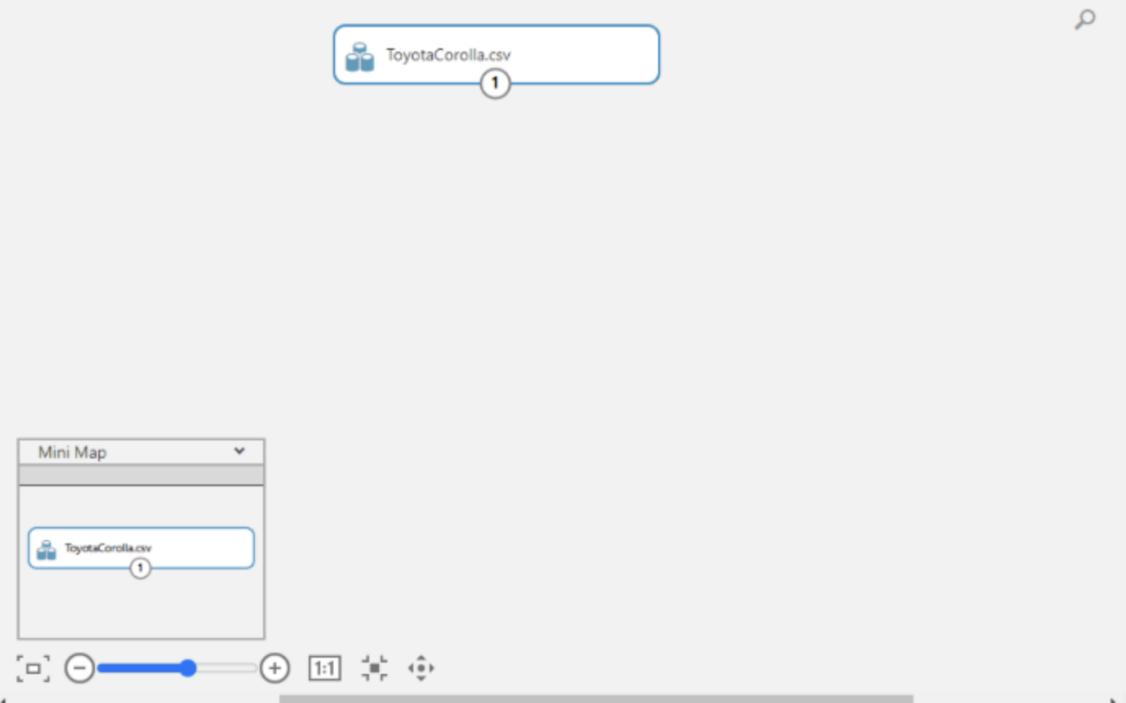
Azure Machine Learning empowers data scientists and developers to build, deploy, and manage high-quality models faster and with confidence. In this project we have applied the concepts of machine learning in Microsoft Azure Machine Learning Studio. We have used the ToyotaCorolla.csv dataset and applied the concepts of linear regression to the dataset to predict the price of the car.

## 1. Pick Dataset and Create Experiments

The screenshot shows the Microsoft Azure Machine Learning Studio interface. On the left, there is a sidebar with icons and labels: PROJECTS (file folder), EXPERIMENTS (flask), WEB SERVICES (globe), DATASETS (cans), TRAINED MODELS (cube), and SETTINGS (gear). The main area is titled "Microsoft Azure Machine Learning Studio (cloud)" and has a dark header bar with three horizontal lines on the left. Below the header, the word "datasets" is written in a large, light blue font. Underneath, there are two tabs: "MY DATASETS" and "SAMPLES". A search bar labeled "NAME" contains the text "ToyotaCorolla.csv".

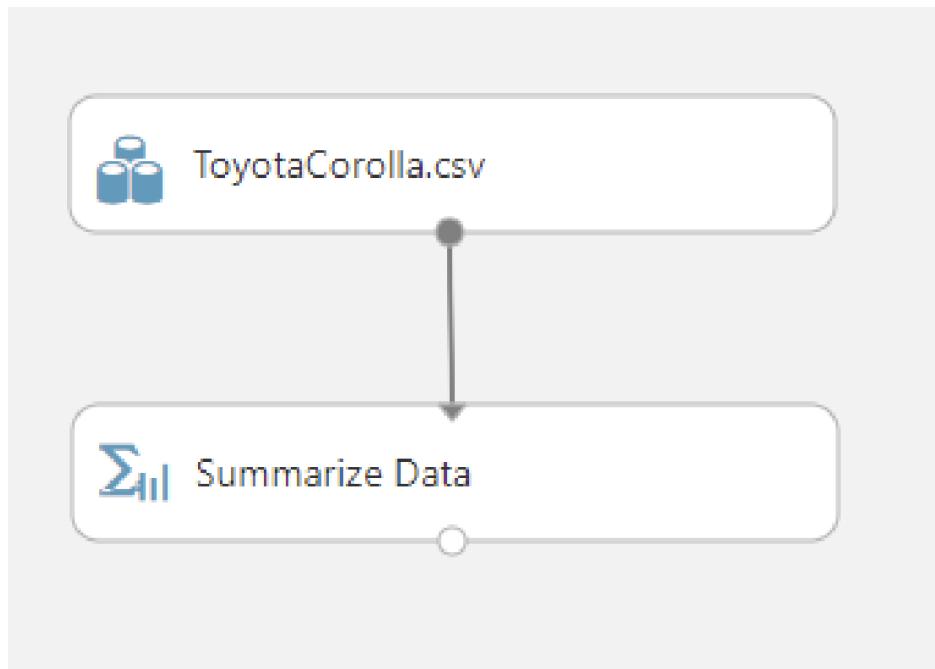
Experiment created on 10/22/2022

In draft

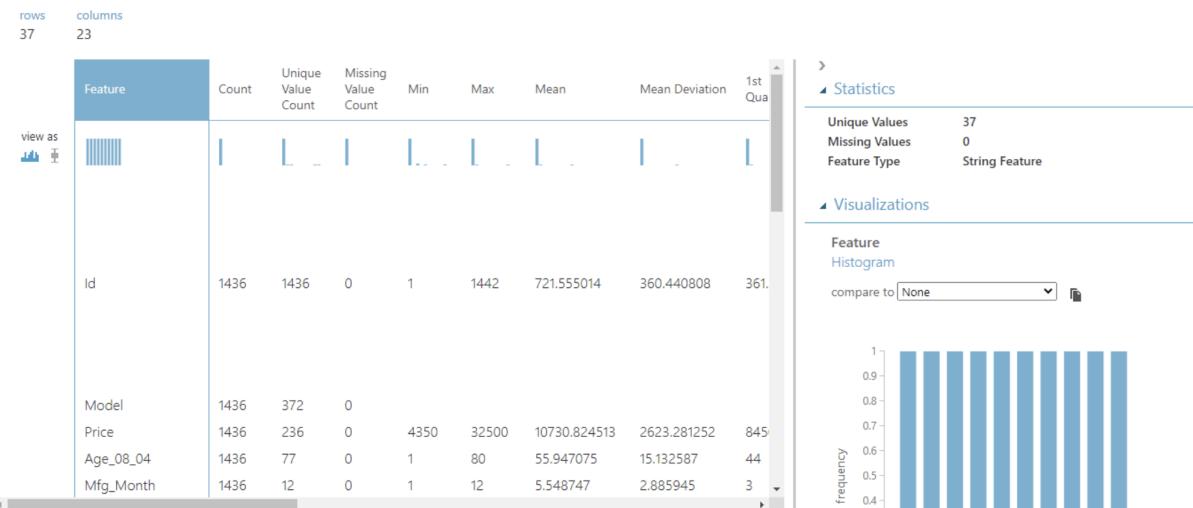


### iii Summarize

On "Search experiment items," do a search for "Summarize Data". Drop "Summarize Data" onto the dashboard by dragging. Connect the dataset to "Summarize Data" after that. Run the experiment. By selecting Summarize Data > Result dataset > Visualization from the context menu, we can now view the summary of our dataset. We might also observe missing data here.

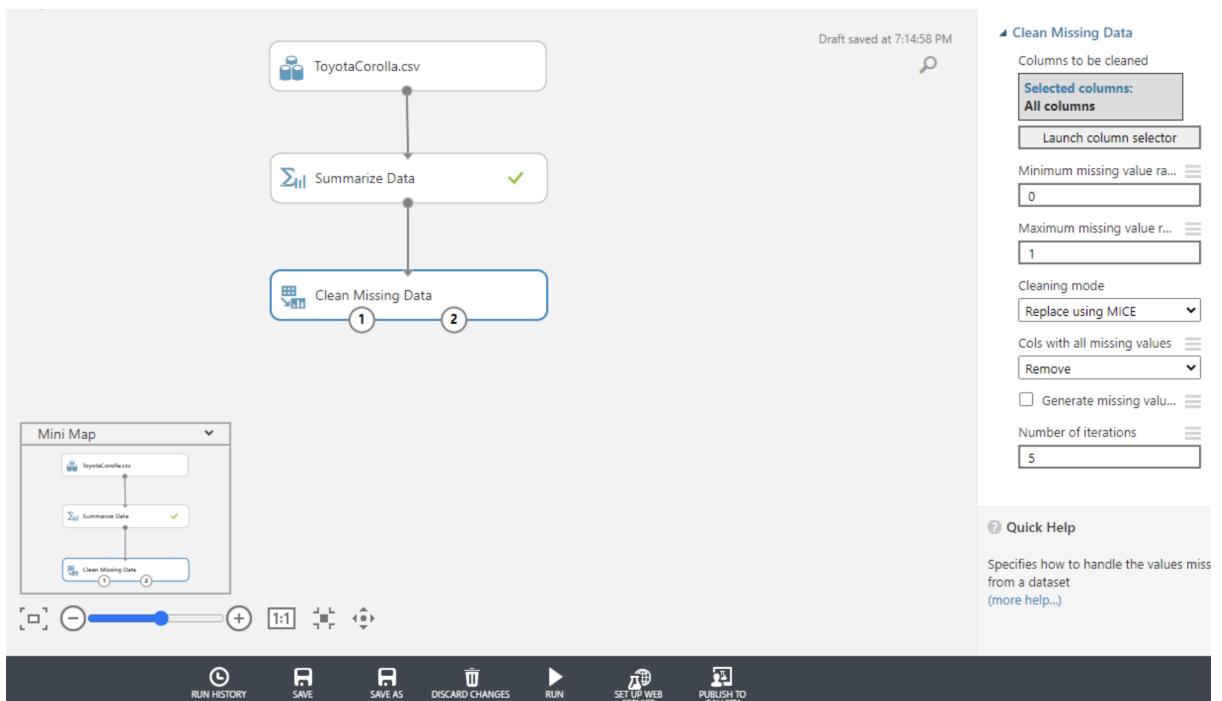


## Visualize



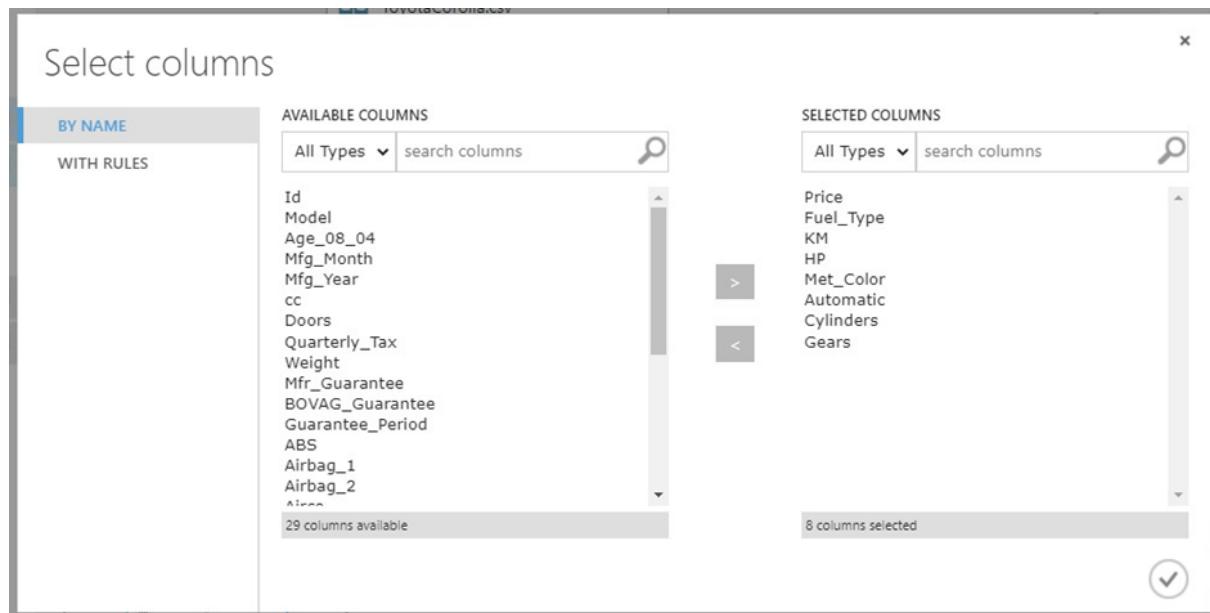
## iv Clean

We do not clean since there is no missing values



## v Prediction

We will choose a column that includes a price column since we plan to forecast the price based on some advantage. Connect to our dataset by dragging and dropping the "Select Column in Dataset" box. Choose "Price," "Fuel Type," "KM," "HP," "Met Color," "Automatic," "Cylinders," and "Gears" from the launch column choice.



Drag and drop ‘Split Data’ item and connect with ‘Select Column in dataset’. Enter value 0.7 in “Fraction of rows”.

Properties Project >

Split Data

Splitting mode

Split Rows

Fraction of rows in the first split

0.7

Randomized split

Random seed

0

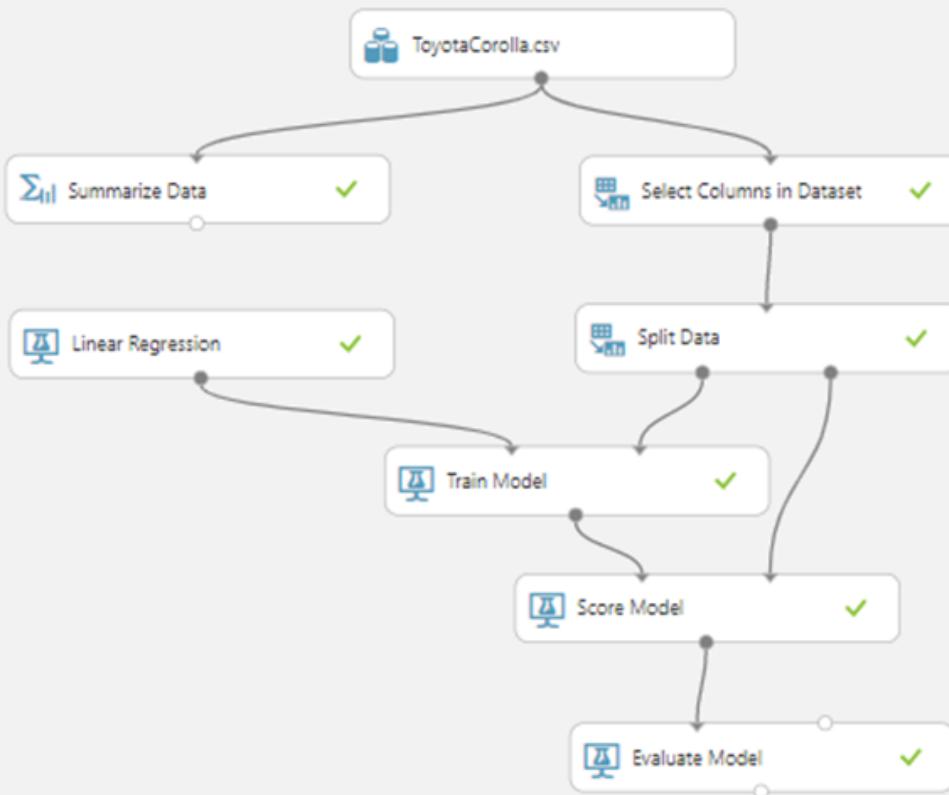
Stratified split

False

The screenshot shows the 'Split Data' properties panel. At the top, there's a dropdown menu set to 'Split Rows'. Below it, a slider is set to 0.7. There's a checked checkbox for 'Randomized split' and a text input for 'Random seed' containing '0'. At the bottom, a dropdown menu is set to 'False'.

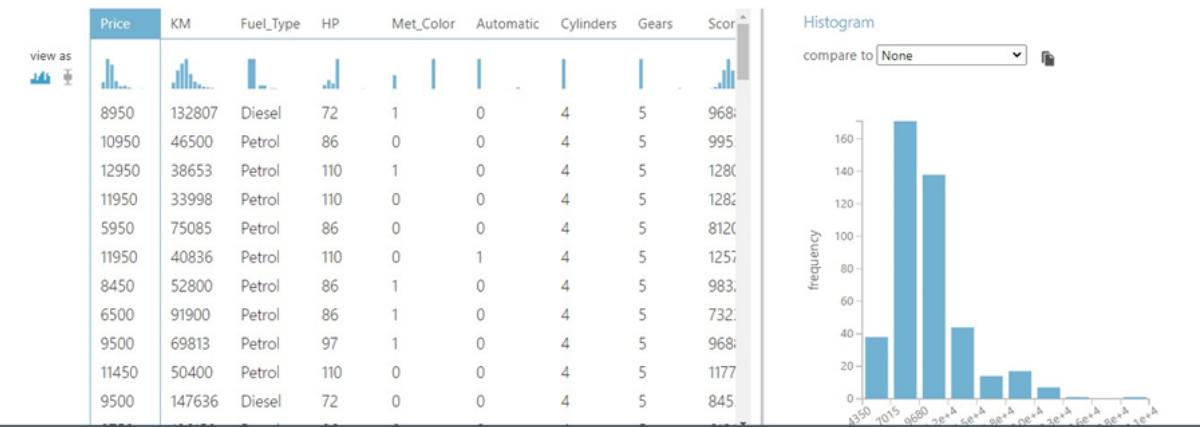
Drag and drop the elements labelled "Linear Regression" and "Train Model." The "Train Model" item should be connected to the "Split Data" and "Linear Regression" items. The "Price" column should be chosen. Drag and drop the elements labelled "Score model" and "Evaluate model." Join the elements "Score model," "Train Model," and "Split Data" together. And link the "Score model" to the "Evaluate model."

# Car price prediction



Save the file, then run the experiment. Now that the 'Score Model' component has been seen, we can view our Scored Labels. and the error histogram from the item "Evaluate Model."

rows 431 columns 9

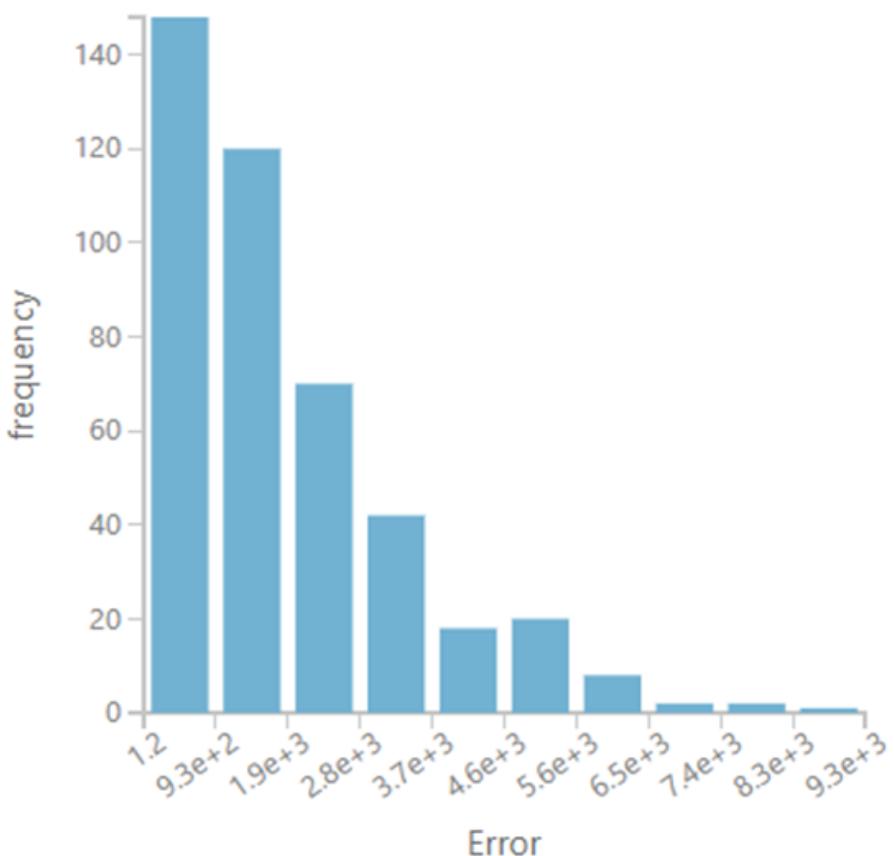


## Car price prediction > Evaluate Model > Evaluation results

**Coefficient of Determination**

0.517571

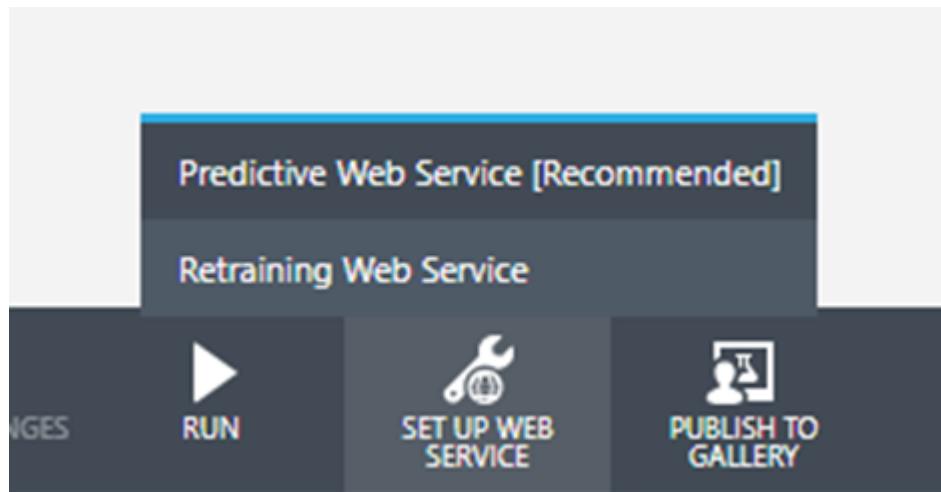
### Error Histogram



## 2. Setup Web Service

A training experiment can be changed into a predict experiment as follows:

Clicking "Run." , then Select "Predictive Web Service" from the "Set Up Web Service" button.



Now, remove the link between the "web services input" and "Select Column in Dataset" items in the prediction experiment. 'Web services input' and 'Score model' should be connected. Deleting the "Price" column from the dataset's "Select Column" options. At the bottom of the experiment canvas, select "Run" and then "Deploy Web Service."

car price prediction [predictive exp.]

DASHBOARD    CONFIGURATION

General    New Web Services Experience [preview](#)

Published experiment

[View snapshot](#)    [View latest](#)

Description

No description provided for this web service.

API key

w1/9j5akVp9eTFcZM7Hyo+plFyavQcGZj+ia75gwVfZaNGsoMWNZKUt3F5oABozPslcnPV85y4ZouFm81Y0MdA==

Default Endpoint

API HELP PAGE    TEST    APPS

REQUEST/RESPONSE    Test [preview](#)    Excel 2013 or later | Excel 2010 or earlier workbook

BATCH EXECUTION    Test [preview](#)    Excel 2013 or later workbook

To view the experiment code in C#, Python, or R, click 'REQUEST/RESPONSE'

Sample Code

C#	Python	R
----	--------	---

```
// This code requires the Nuget package Microsoft.AspNet.WebApi.Client to be installed.  
// Instructions for doing this in Visual Studio:  
// Tools -> Nuget Package Manager -> Package Manager Console  
// Install-Package Microsoft.AspNet.WebApi.Client  
  
using System;  
using System.Collections.Generic;  
using System.IO;  
using System.Net.Http;  
using System.Net.Http.Formatting;  
using System.Net.Http.Headers;  
using System.Text;  
using System.Threading.Tasks;  
  
namespace CallRequestResponseService  
{  
  
    public class StringTable  
    {  
        public string[] ColumnNames { get; set; }  
        public string[,] Values { get; set; }  
    }  
  
    class Program  
    {  
        static void Main(string[] args)  
        {
```

Click '**Test**' to predict a price.

Test Car price prediction [Predictive Exp.] Service

Petrol

HP

100

MET\_COLOR

1

AUTOMATIC

0

CYLINDERS

7

GEARS

2

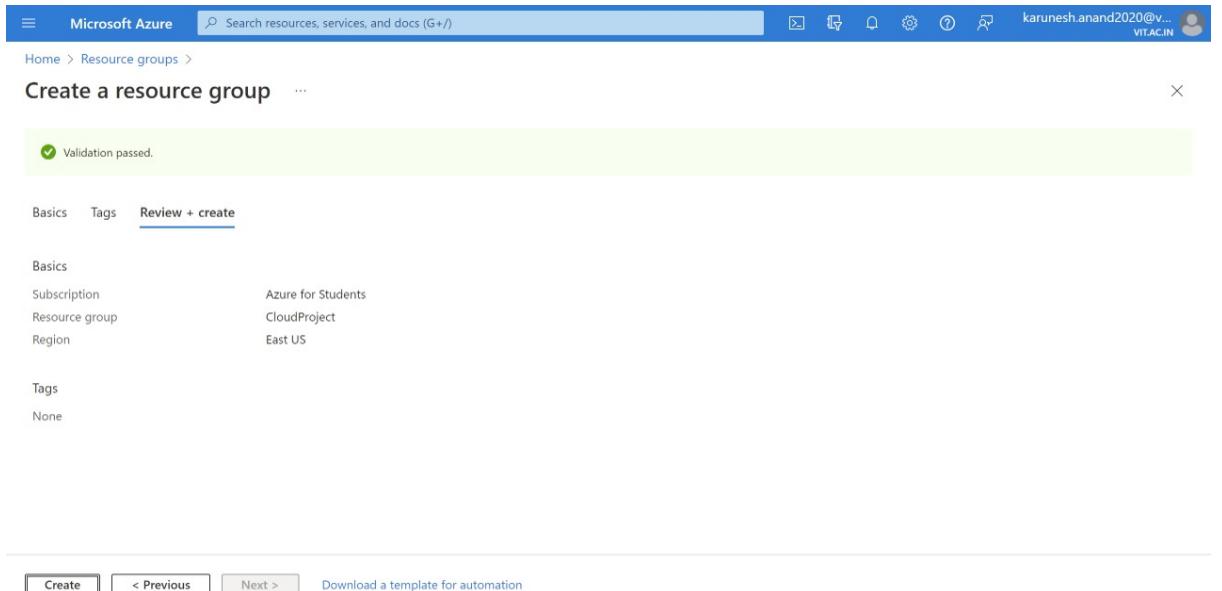
✓

Car price prediction [Predictive Exp.] test returned ["2","Petrol","100","1","0","7","2","16680.1901788237"]...

The predicted price is 16680.1901788237

# Machine learning model for predicting diabetes patients on MICROSOFT AZURE MACHINE LEARNING STUDIO.

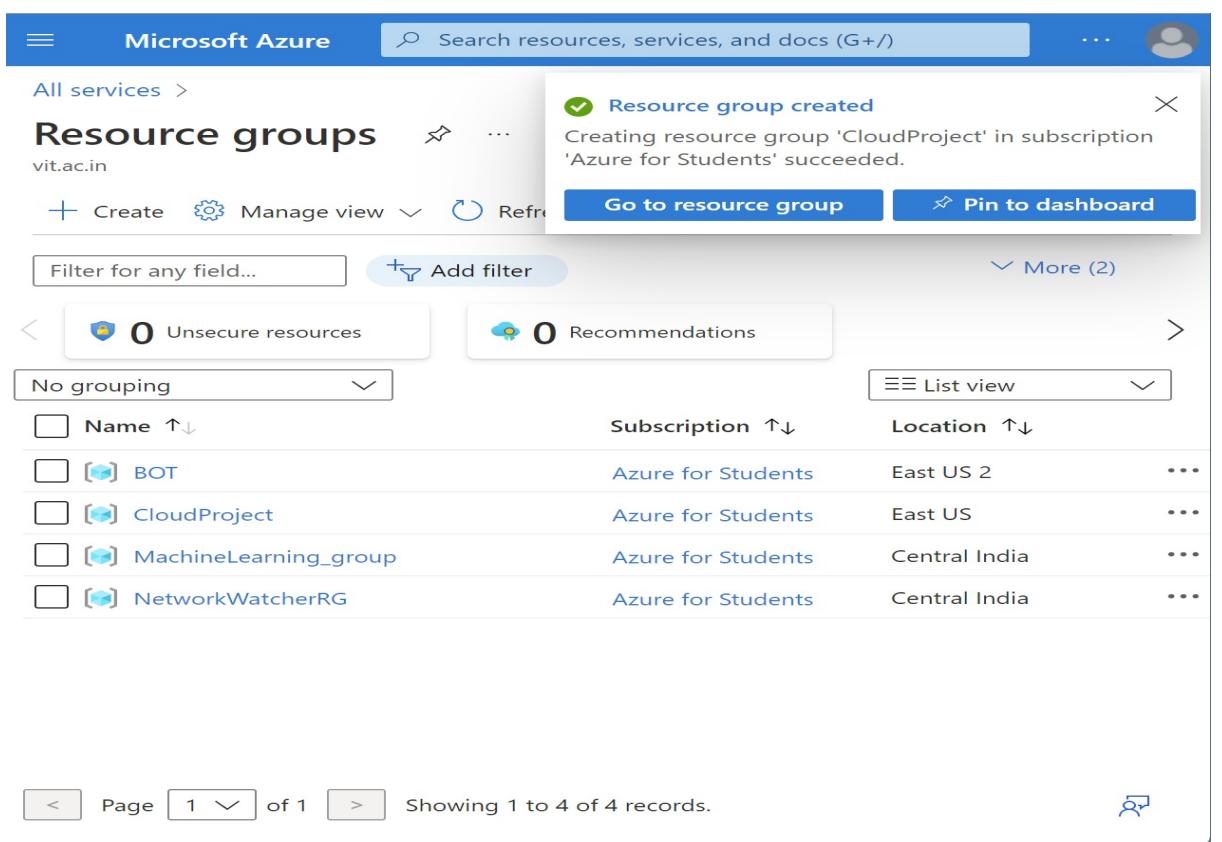
## 1. Creation of resource group and validation



The screenshot shows the 'Create a resource group' wizard in Microsoft Azure. The validation step has passed, indicated by a green bar at the top. The 'Review + create' tab is selected. The 'Basics' section shows the following details:

Subscription	Azure for Students
Resource group	CloudProject
Region	East US

The 'Tags' section shows 'None'. At the bottom, there are 'Create', '< Previous', 'Next >', and 'Download a template for automation' buttons.



The screenshot shows the 'Resource groups' page in Microsoft Azure. A success message 'Resource group created' is displayed, stating 'Creating resource group 'CloudProject' in subscription 'Azure for Students' succeeded.' The 'Go to resource group' and 'Pin to dashboard' buttons are visible. The main area lists existing resource groups:

Name	Subscription	Location	Actions
BOT	Azure for Students	East US 2	...
CloudProject	Azure for Students	East US	...
MachineLearning_group	Azure for Students	Central India	...
NetworkWatcherRG	Azure for Students	Central India	...

Pagination controls at the bottom indicate 'Page 1 of 1' and 'Showing 1 to 4 of 4 records.'

## 1. Create the workspace for machine learning model

The screenshot shows the 'Create a machine learning workspace' page in the Azure portal. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information. The main title is 'Azure Machine Learning ...'. Below it, a sub-header says 'Create a machine learning workspace'. The 'Basics' tab is selected, while 'Networking', 'Advanced', 'Tags', and 'Review + create' are also available. The 'Resource details' section asks for a subscription and resource group. A note states that every workspace must be assigned to an Azure subscription. The 'Subscription' dropdown is set to 'Azure for Students', and the 'Resource group' dropdown is set to 'CloudProject'. The 'Workspace details' section includes fields for 'Workspace name' (set to 'CloudProjectWorkspace'), 'Region' (set to 'East US'), and 'Storage account' (set to '(new) cloudprojecttwo6750344731'). At the bottom are 'Review + create' and 'Next : Networking' buttons.

The screenshot shows the 'Microsoft.MachineLearningServices | Overview' page. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information. The main title is 'Microsoft.MachineLearningServices | Overview'. The left sidebar has a 'Deployment' icon and links for 'Overview', 'Inputs', 'Outputs', and 'Template'. The main content area shows a green checkmark icon and the message 'Your deployment is complete'. It provides deployment details: Deployment name: Microsoft.MachineLearn..., Start time: 11/7/2022, 7:38:03 PM, Subscription: Azure for Students, Correlation ID: baa9cd5a-028c-4ed8-a90b-07d2295a0. Below this are sections for 'Deployment details' and 'Next steps'. A 'Go to resource' button is at the bottom. On the right side, there are promotional cards for 'Cost Management', 'Microsoft Defender for Cloud', 'Free Microsoft tutorials', and 'Work with an expert'.

## 2. Launching Studio

The screenshot shows the Microsoft Azure CloudProjectWorkspace overview page. At the top, there's a search bar and a user profile for 'karunesh.anand2020@vit.ac.in'. Below the header, the page title is 'CloudProjectWorkspace' with a star icon and three dots. A left sidebar contains links for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Events, Settings (Networking, Properties, Locks), Monitoring (Alerts, Metrics, Diagnostic settings), and a 'Search' bar. The main content area displays subscription details: Subscription 'Azure for Students' (Subscription ID: e8e56b6c-1703-4210-8860-fd0e4afa9beb, Storage: cloudprojectwo6750344731), a Key Vault (cloudprojectwo4596988447), Application Insights (cloudprojectwo1531522672), and an MLflow tracking URI (azurerm://eastus.api.azureml.ms/mlflow/v1.0/subscriptions/e8e56b6c-170...). A central graphic is a grey 3D cube icon. Below it, a section titled 'Work with your models in Azure Machine Learning Studio' explains that it's a web app for building, training, testing, and deploying ML models. It includes a 'Launch studio' button and a link to learn more about the Azure Machine Learning Studio.

## 3. Machine Learning Studio

The screenshot shows the Microsoft Azure Machine Learning Studio welcome page. At the top, there's a search bar and a user profile for 'vit.ac.in'. The main heading is 'Welcome to the Azure Machine Learning Studio'. It says 'Create a new workspace, or open one of your recent workspaces to pick up where you left off.' Below this, a 'Recent workspaces' section shows a box for 'Karunesh' (Subscription: Azure for Students). To the right is a 3D cube graphic with a 'Create workspace' button and a 'View all workspaces' link. The 'Learning components' section features three cards: 'Build AI solutions with Azure Machine Learning', 'Introduction to the Azure Machine Learning SDK', and 'Train a machine learning model with Azure ML'. A 'View all learning components' link is also present. The 'Tutorials' section includes three cards: 'What is Azure Machine Learning?', 'Train your first ML model with Notebook', and 'Create, explore and deploy Automated ML experiments.'

## 4. Creating Dataset

Microsoft Azure Machine Learning Studio Search within your workspace (preview) This workspace CloudProjectWorkspace

vit.ac.in > CloudProjectWorkspace > Data

Data assets Datastores Dataset monitors (preview)



Create data assets to manage, share, and track data in your machine learning workflows.

With Azure Machine Learning data assets, you can keep a single copy of data in your storage referenced by data assets and seamlessly access data during model training without worrying about connection strings or data paths. [Learn more](#)

[Create](#)

Explore Github repository [View Azure Machine Learning tutorials](#)

vit.ac.in

- + New
- Home
- Author
- Notebooks
- Automated ML
- Designer
- Assets
- Data**
  - Jobs
  - Components
  - Pipelines
  - Environments
  - Models
  - Endpoints
- Manage
- Compute

Microsoft Azure Machine Learning Studio Search within your workspace (preview) This workspace CloudProjectWorkspace

Create data asset

Data type

Data source

**Choose a source for your data asset**  
Choose the data source you want to create your asset from. A data source can be from a local storage location on your computer, from an attached datastore, from Azure storage, or from a publicly available web location.

[From a URI](#)

Create a data asset by providing a web URL or a URI that represents a path to your data.

[From local files](#)

Create a data asset by uploading files from your local drive.

[Back](#) [Create](#) [Cancel](#)

## 5. Inputting the dataset

**Create data asset**

**Specify a URI**

Enter the URL of a public web page you want your data retrieved from or a supported URI format representing the path to your data.

**URI \***

`https://raw.githubusercontent.com/MicrosoftLearning/mslearn-dp100/main/data/diabetes.csv`

**Skip data validation**

If you choose to skip validation, we will not validate your data path, or try to access your data for preview and schema.

Skip data validation

**Supported URI formats**

When you create a data asset in Azure Machine Learning, you'll specify a path parameter that points to the data location. These are the supported formats:

1. A path on a public http(s) server, such as:  
`https://githubusercontent.com/pandas-dev/pandas/main/doc/data/titanic.csv`
2. A path on Azure storage, such as:  
`http[s]://<account_name>.blob.core.windows.net/<container_name> or  
abfs[s]://<file_system>@<account_name>.dfs.core.windows.net or  
wasb[s]://<container_name>@<account_name>.blob.core.windows.net`
3. A path on a datastore, such as:  
`azureml://datastores/<datastore_name>/paths/dataFolder/myContainer`

[Learn more about supported URI formats](#)

**Back** **Next** **Cancel**

## 6. Creating data set to predict diabetic patients

**Create data asset**

**Settings**

These settings determine how the data is parsed. The initial settings are automatically detected; you can change them as needed to reparse the data.

File format	Delimiter	Example	Encoding
Delimited	Comma	Field1,Field2,Field3	UTF-8

**Column headers**

Only first file has headers

**Skip rows**

None

Dataset contains multi-line data

Note: Processing tabular files with multi-line data is slower because multiple CPU cores cannot be used to ingest the data in parallel. Checking this option may Data preview slower processing times.

PatientID	Pregnant...	PlasmaG...	Diastolic...	TricepsT...	SerumIn...	BMI	Diabetes...	Age	Diabetic
1354778	0	171	80	34	23	43.51	1.213	21	0
1147438	8	92	93	47	36	21.241	0.158	23	0
1640031	7	115	47	52	35	41.512	0.079	23	0

**Back** **Next** **Review** **Cancel**

## 7. Dataset created

The screenshot shows the Microsoft Azure Machine Learning Studio interface. The top navigation bar includes 'Microsoft Azure Machine Learning Studio', a search bar 'Search within your workspace (preview)', and a dropdown 'This workspace'. On the right, there are icons for help, settings, and account information, along with 'Azure for Students' and 'CloudProjectWorkspace'.

The main content area shows a dataset named 'Diabetes'. The breadcrumb navigation indicates the path: vit.ac.in > CloudProjectWorkspace > Data > Diabetes. The dataset card shows the following details:

- Details:** Version 1 (latest)
- Attributes:** Type: Table (mutable), Dataset type (from Azure ML v1 APIs): Tabular, Created by: KARUNESH ANAND 20BCE2387, Profile: View profile, Job: --, Current version: 1, Latest version: 1, Created time: Nov 7, 2022 7:58 PM.
- Tags:** No data
- Description:** Click edit icon to add a description.
- Data sources:** URI: <https://raw.githubusercontent.com/MicrosoftLearning/mslearn-dp100/main/data/diabetes.csv>

## 8. Creating Pipeline for running machine learning model

The screenshot shows the Microsoft Azure Machine Learning Studio Designer interface. The top navigation bar includes 'Microsoft Azure Machine Learning Studio', a search bar 'Search within your workspace (preview)', and a dropdown 'This workspace'. On the right, there are icons for help, settings, and account information, along with 'Azure for Students' and 'CloudProjectWorkspace'.

The main content area shows the 'Designer' section with the following details:

- New pipeline:** Classic prebuilt (selected) and Custom options. A link 'Show more samples' is available.
- A note: This low-code option uses existing prebuilt components and earlier dataset types (tabular, file), and is best suited for data processing and traditional machine learning tasks like regression and classification. This option continues to be supported but will not have any new components added.
- Pipelines:** Pipeline drafts and Pipeline jobs.
- Components:** A row of five icons representing different pipeline templates:
  - Create a new pipeline using classic prebuilt components
  - Image Classification using DenseNet
  - Binary Classification using Vowpal Wabbit Model - A...
  - Wide & Deep based Recommendation - Restau...
  - Regression - Automobile Price Prediction (Basic)
- Bottom controls:** Refresh, Delete, Edit columns, Reset view, Search, View my only, Created by, All filters, Clear all.

Pipeline-Created-on-11-07-2022

Save pipeline | Settings

Data Component

Diabetes Version 1

KARUNESH ANAND 20... 11/7/2022

## 9. Creating a VM for running the model

Create compute cluster

CPU GPU

Virtual machine size

Select from recommended options Select from all options

Name ↑	Category	Workload types	Av...	Cost
Standard_DS11_v2 2 cores, 14GB RAM, 28GB storage	Memory optimized	Development on Notebooks (or other IDE) and light weight testing	6 cores	\$0.18/hr
Standard_DS3_v2 4 cores, 14GB RAM, 28GB storage	General purpose	Classical ML model training on small datasets	6 cores	\$0.29/hr
Standard_DS12_v2 4 cores, 28GB RAM, 56GB storage	Memory optimized	Data manipulation and training on medium-sized datasets (1-10GB)	6 cores	\$0.37/hr
Standard_F4s_v2 4 cores, 8GB RAM, 32GB storage	Compute optimized	Data manipulation and training on large datasets (> 10 GB)	16 co...	\$0.17/hr

Back Next Cancel

Microsoft Azure Machine Learning Studio Search within your workspace (preview) This workspace AutoSave Azure for Students CloudProjectWorkspace KA

vit.ac.in > CloudProjectWorkspace > Designer > Authoring

Undo Redo Validate Show lineage Clone AutoSave Save pipeline Settings

Pipeline-Created-on-11-07-2022

Search by name, tags and description

Tags : All Add filter

Data Component

1 + Last update... 11/7/2022

You can find the prebuilt sample data under Component tab. Click here

Diabetes Version 1 KARUNESH ANAND 20... 11/7/2022

Settings

Default compute target Select compute type Compute cluster

Select Azure ML compute cluster CloudProject-VM Create Azure ML compute cluster Refresh Compute

Pipeline parameters

Default output settings Datastore workspaceblobstore

Draft details

Navigator 100%

Microsoft Azure Machine Learning Studio Search within your workspace (preview) This workspace Notifications Azure for Students CloudProjectWorkspace KA

vit.ac.in > CloudProjectWorkspace > Designer > Authoring

Undo Redo Validate Show lineage

Pipeline-Created-on-11-07-2022

Search by name, tags and description

Tags : All Add filter

Data Component

1 + Last update... 11/7/2022

You can find the prebuilt sample data under Component tab. Click here

Diabetes Version 1 KARUNESH ANAND 20... 11/7/2022

Notifications

To disable in-app notifications, go to [Settings](#)

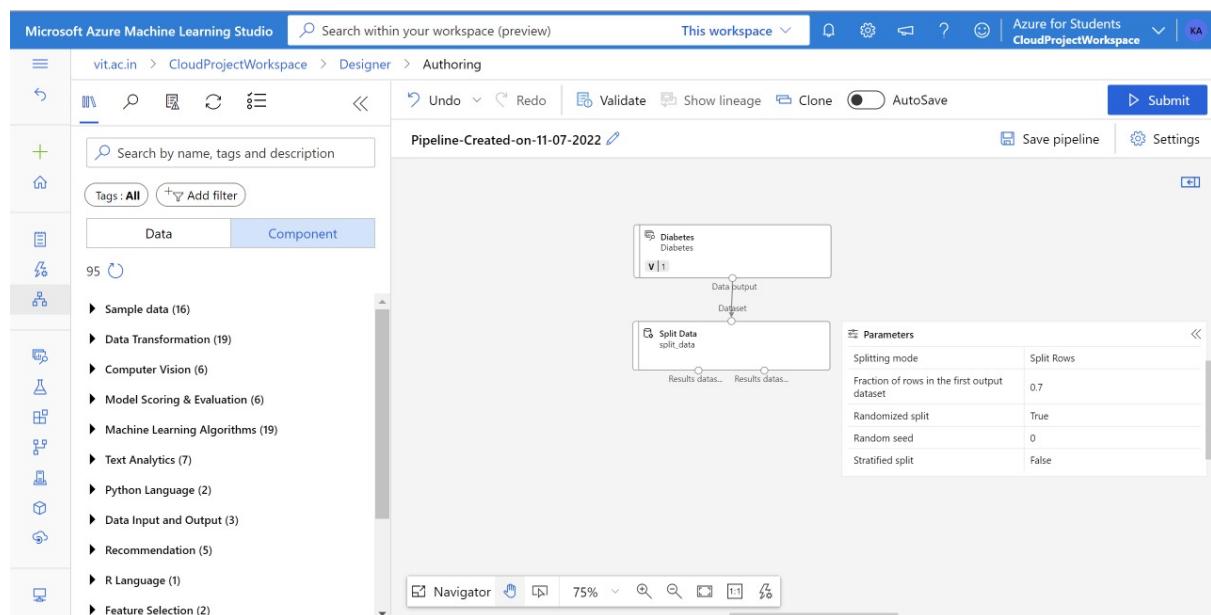
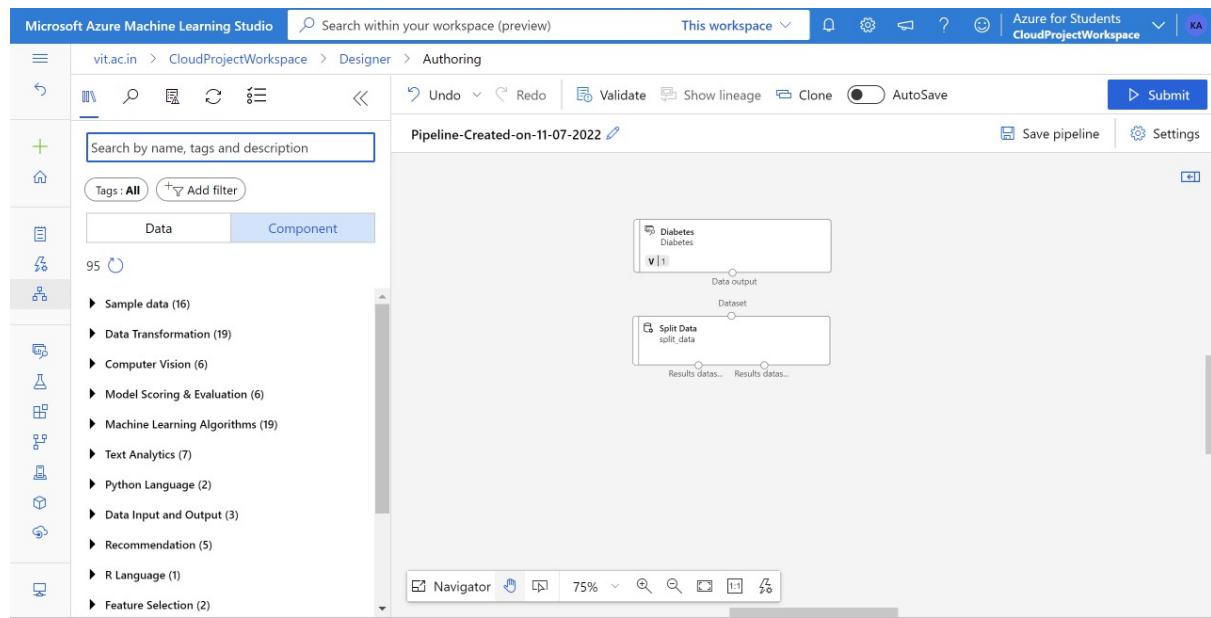
Dismiss all

Compute "CloudProject-VM" provisioning succeeded

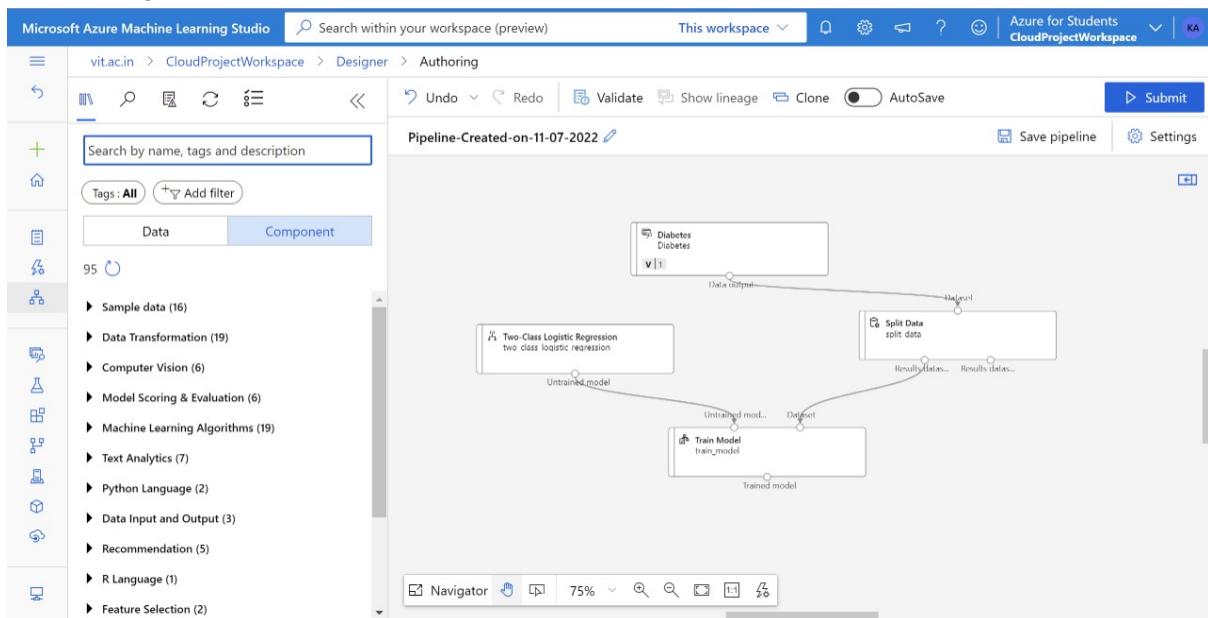
Compute details November 7, 2022 8:08 PM

Navigator 100%

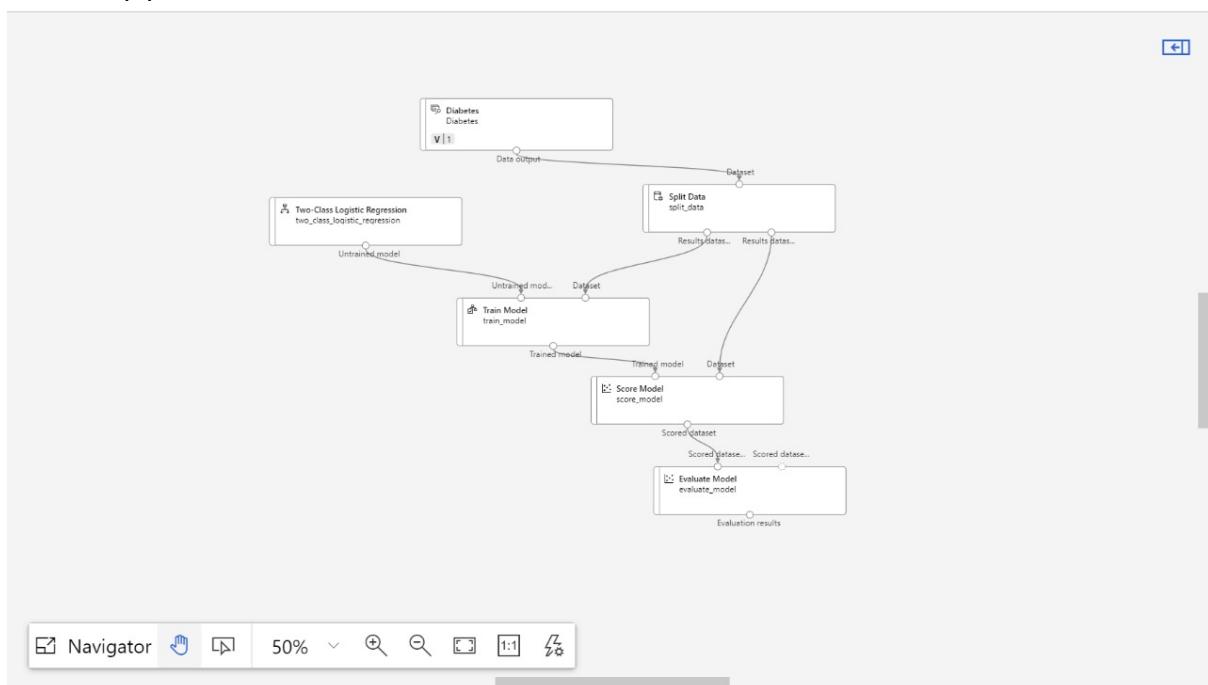
## 11.Pipeline Creation



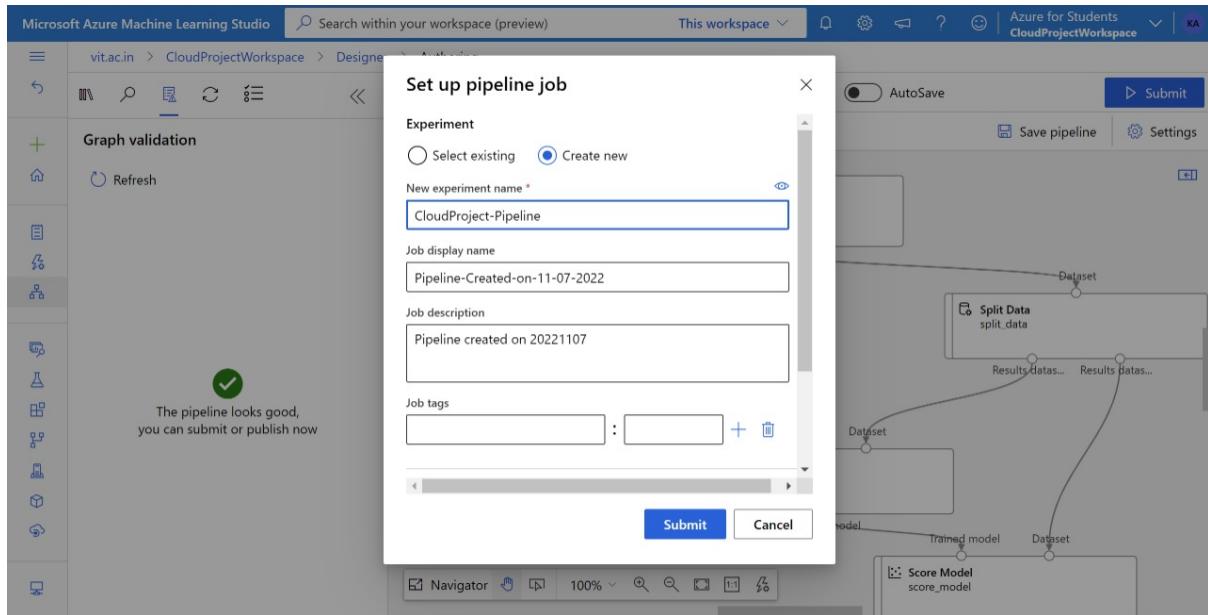
## 12. Training the model



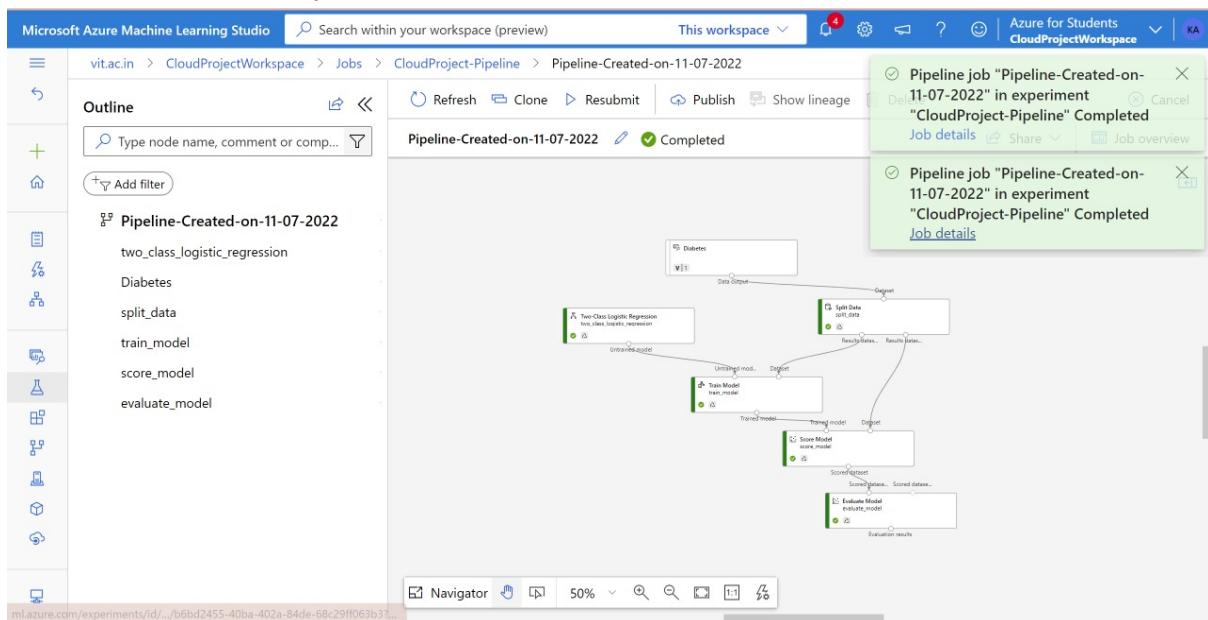
## 13. Final pipeline obtained



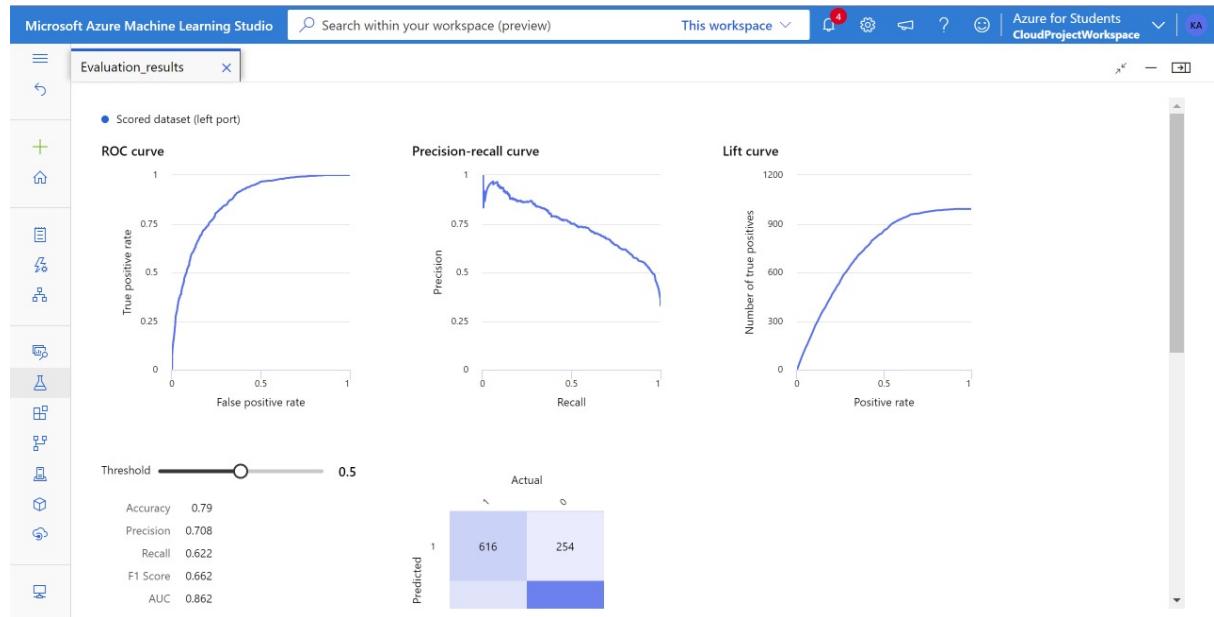
## 14. Submitting the pipeline



## 15. Pipeline Successfully Compiled and Completed



## 16. Data output from the machine learning model

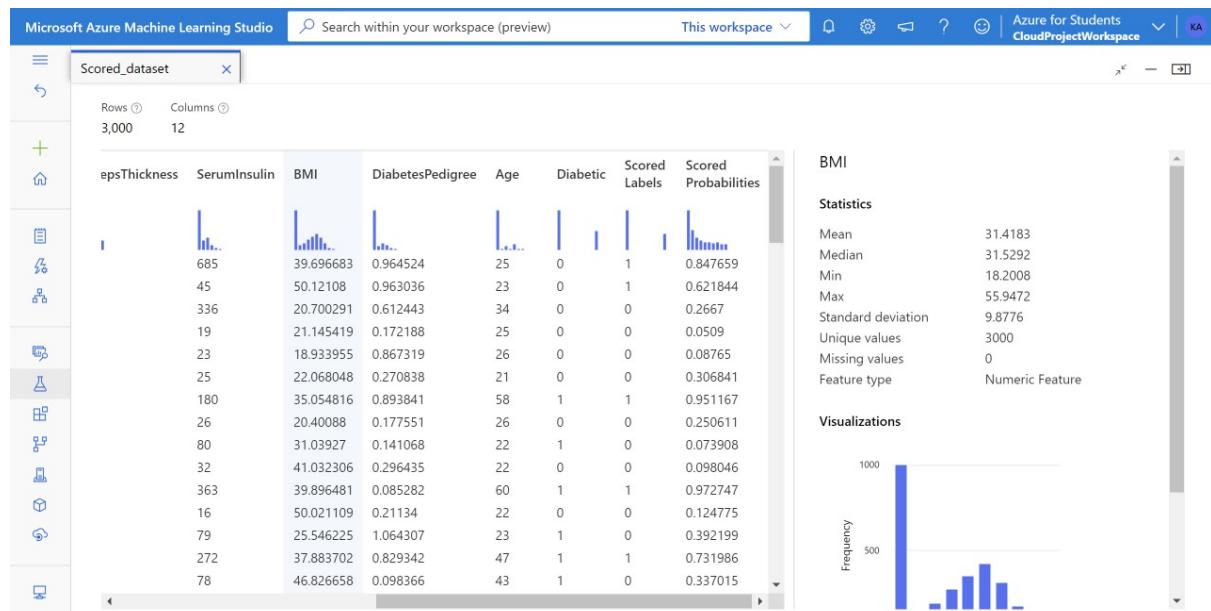
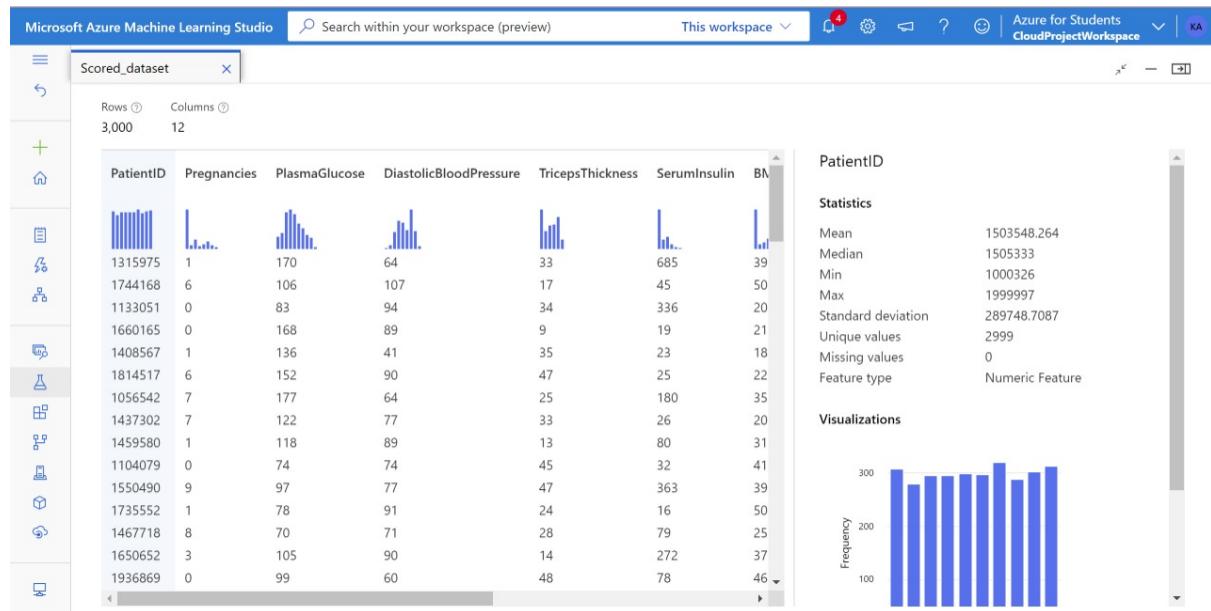


## 17. Evaluation Results

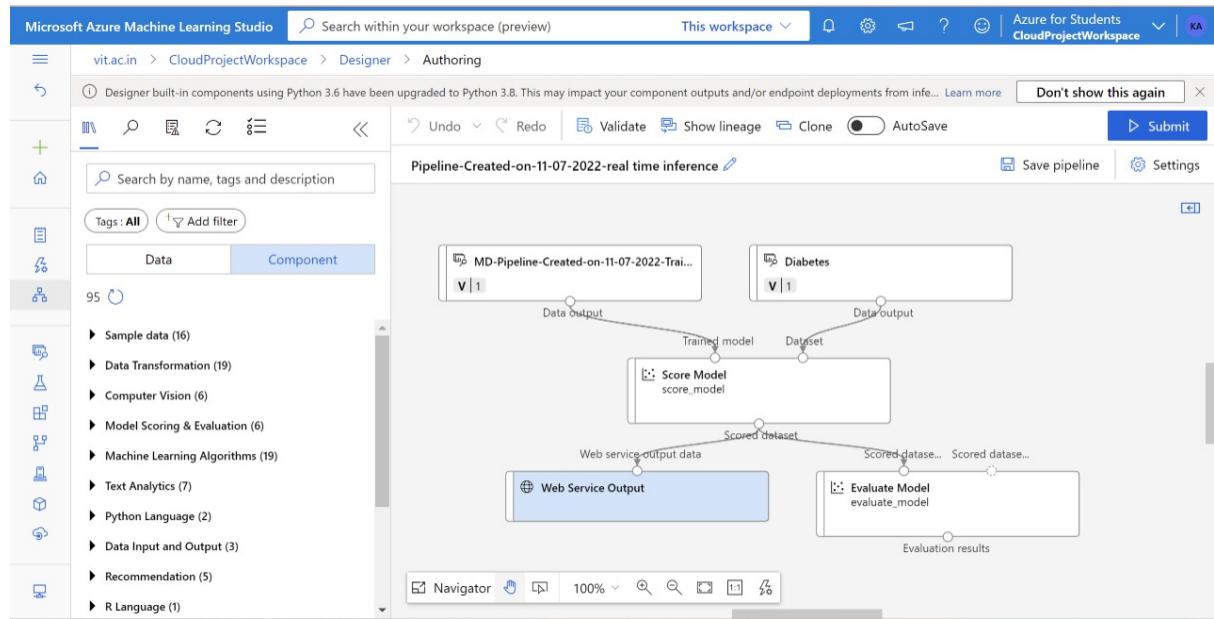
The screenshot shows the Microsoft Azure Machine Learning Studio interface with the title "Evaluation\_results". It displays a detailed table of evaluation results across score bins:

Score bin ↓	Positive exam...	Negative exam...	Fraction above thresh...	Accuracy	F1 Score	Precisi...	Recall	Negative precisi...	Negative recall	Cumula...
(0.900,1.000]	131	13	0.048	0.709	0.231	0.910	0.132	0.699	0.994	0.001
(0.800,0.900]	126	28	0.099	0.742	0.399	0.862	0.259	0.728	0.980	0.003
(0.700,0.800]	124	58	0.160	0.764	0.518	0.794	0.384	0.758	0.951	0.013
(0.600,0.700]	118	67	0.222	0.781	0.603	0.750	0.504	0.789	0.917	0.028
(0.500,0.600]	117	88	0.290	0.790	0.662	0.708	0.622	0.824	0.874	0.053
(0.400,0.500]	97	106	0.358	0.787	0.691	0.664	0.719	0.856	0.821	0.088
(0.300,0.400]	89	149	0.437	0.767	0.697	0.612	0.809	0.888	0.747	0.145
(0.200,0.300]	98	224	0.544	0.725	0.686	0.551	0.908	0.933	0.635	0.240
(0.100,0.200]	69	467	0.723	0.593	0.613	0.447	0.978	0.974	0.403	0.461
(0.000,0.100]	22	809	1.000	0.330	0.497	0.330	1.000	1.000	0.000	0.862

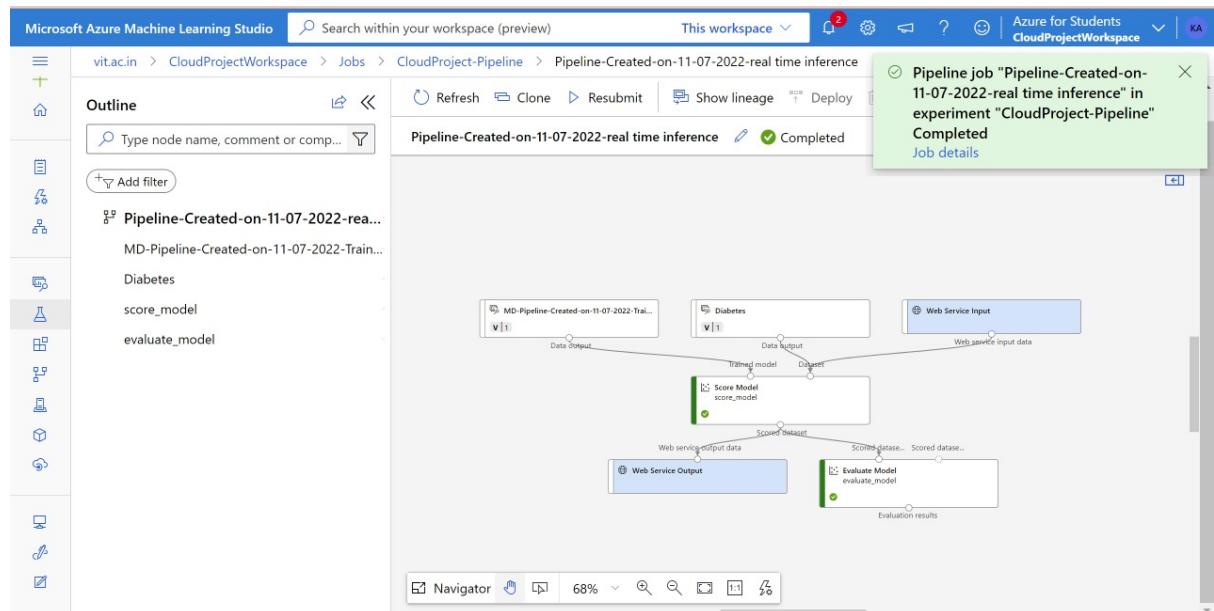
## 18. The Scored Dataset



## 19. Deploying the model on a real time inference pipeline



## 20. Pipeline created on real time inference model



## 21. Creating Inference cluster for deploying the model

The screenshot shows the 'Create inference cluster' dialog in Microsoft Azure Machine Learning Studio. On the left, there's a sidebar with various icons. The main area has a title 'Configure compute cluster settings for your selected virtual machine size.' At the top left of this area, there are two checked options: 'Virtual Machine' and 'Advanced Settings'. Below these, a table shows a single row: 'Standard\_A2\_v2' under 'Name', 'General purpose' under 'Category', '2' under 'Cores', '4 cores' under 'Available quota', '4 GB' under 'RAM', and '20 GB' under 'Storage'. Underneath the table, there are several configuration fields:

- 'Compute name \*': A text input field containing 'Inference-CldProj'.
- 'Cluster purpose': A radio button group where 'Dev-test' is selected.
- 'Number of nodes \*': A slider set to the value '3'.
- 'Network configuration': A radio button group where 'Basic' is selected.
- 'Enable SSL configuration': A toggle switch that is turned off.

At the bottom of the dialog are three buttons: 'Back', 'Create' (which is highlighted in blue), and 'Cancel'.

## 22. Deploying setting up at real time endpoint

The screenshot shows the 'Set up real-time endpoint' dialog in Microsoft Azure Machine Learning Studio. On the left, there's a sidebar with various icons. The main area shows an outline of a pipeline named 'Pipeline-Created-on-11-07-2023'. The dialog itself has a title 'Set up real-time endpoint' and contains the following fields:

- A radio button group for 'Deploy new real-time endpoint' (selected) and 'Replace an existing real-time endpoint'.
- 'Name \*': A text input field containing 'cloudprojectend'.
- 'Description': A large text area that is currently empty.
- 'Compute type \*': A dropdown menu showing 'Azure Kubernetes Service'.
- 'Compute name \*': A dropdown menu showing 'CloudProject'.

At the bottom of the dialog are two buttons: 'Deploy' (highlighted in blue) and 'Cancel'. To the right of the dialog, a portion of the pipeline canvas is visible, showing components like 'Web Service Input', 'Scored database...', 'Evaluate Model', and 'Evaluation results'.

## Final result:

The screenshot shows the Microsoft Azure Machine Learning Studio interface. The top navigation bar includes 'Search within your workspace (preview)', 'This workspace', and 'Azure for Students'. The left sidebar has a tree view with 'vit.ac.in > CloudProjectWorkspace > Data > Diabetes'. The main content area is titled 'Diabetes Version 1 (latest)'. It features tabs for 'Details', 'Consume', 'Explore' (which is selected), 'Models', and 'Jobs'. A yellow banner at the top says 'Profile: This is the quick profile generated by the top 10,000 rows. Please generate profile to view the schema and summary statistics for full data.' Below are buttons for 'New version', 'Refresh', 'Generate profile', and 'Archive'. Under 'Preview', it says 'Number of columns: 10 Number of rows: 50 (of 10000)'. A table displays the first 50 rows of the dataset with columns: PatientID, Pregnancies, PlasmaGluco..., DiastolicBlo..., TricepsThick..., SerumInsulin, BMI, DiabetesPed..., Age, and Diabetic.

PatientID	Pregnancies	PlasmaGluco...	DiastolicBlo...	TricepsThick...	SerumInsulin	BMI	DiabetesPed...	Age	Diabetic
1354778	0	171	80	34	23	43.51	1.213	21	0
1147438	8	92	93	47	36	21.241	0.158	23	0
1640031	7	115	47	52	35	41.512	0.079	23	0
1883350	9	103	78	25	304	29.582	1.283	43	1
1424119	1	85	59	27	35	42.605	0.55	22	0
1619297	0	82	92	9	253	19.724	0.103	26	0
1660149	0	133	47	19	227	21.941	0.174	21	0

## Script:

### Data.json

```
{  
  "Inputs": {  
    "WebServiceInput0": [  
      {  
        "PatientID": 1354778,  
        "Pregnancies": 0,  
        "PlasmaGlucose": 171,  
        "DiastolicBloodPressure": 80,  
        "TricepsThickness": 34,  
        "SerumInsulin": 23,  
        "BMI": 29.582,  
        "Age": 21,  
        "Diabetic": 0  
      }  
    ]  
  }  
}
```

```
    "DiabetesPedigree": 1.283,  
    "Age": 43,  
    "Diabetic": 0  
}  
]  
,  
"GlobalParameters": {}  
}
```