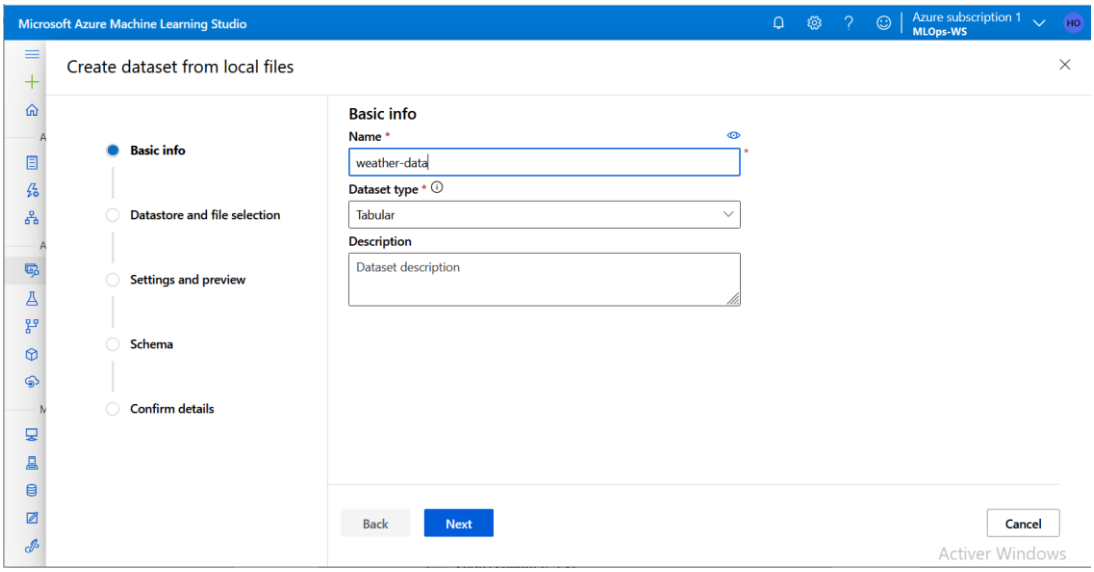
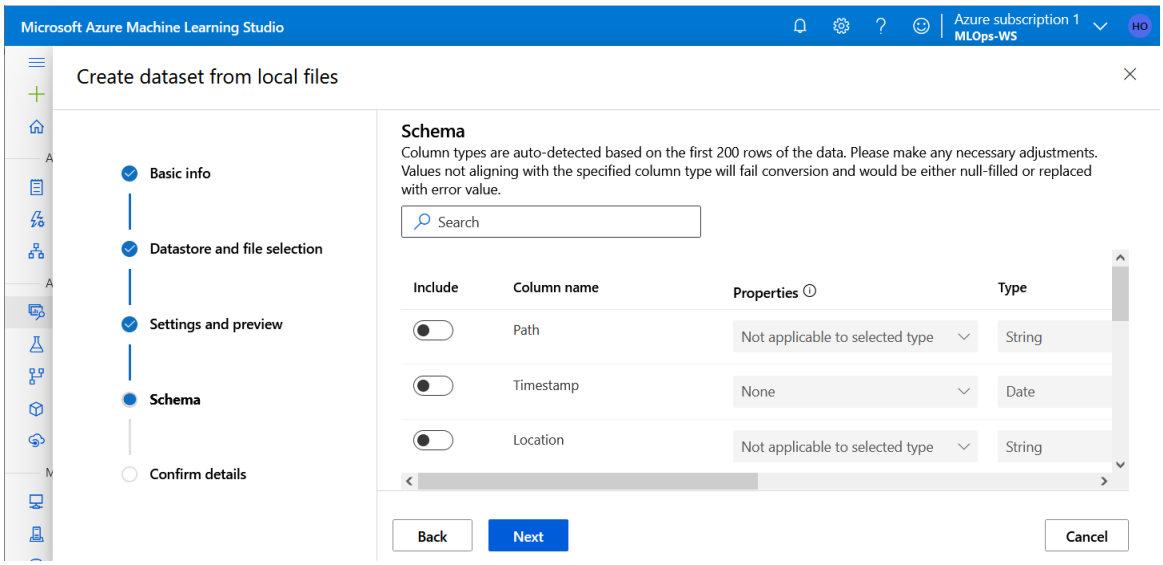
Lab: AutoML & Copilot
Professor : Fahd KALLOUBI
Year : 2022/2023
Major : QFM – 2nd year

Deploying a ML model as a service using Azure Auto ML

We will operate on our "weather_data.csv" dataset to deploy an ML model using a machine learning automation service called Azure Automated ML. To get started, open "azure machine learning studio" and then go to "Datasets" and click "create dataset > from local file".



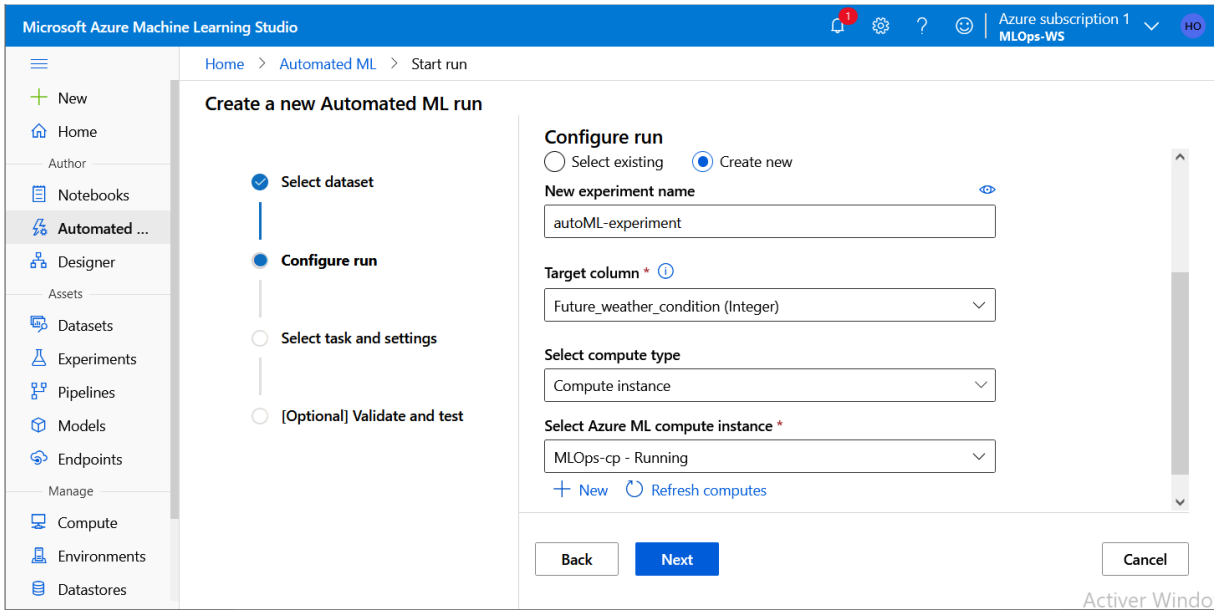
Give your dataset a name and click "Next". During the second step, click on "Upload > upload file" and choose the "weather_dataset_processed.csv" dataset that you will find in the Lab folder and then on "Next".



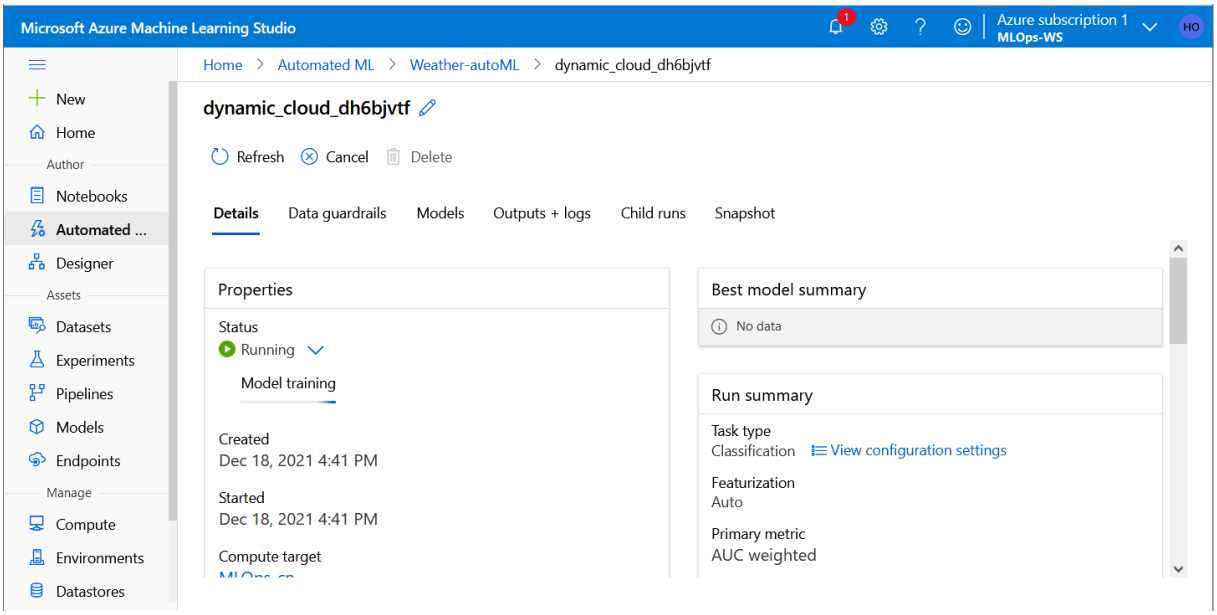
Then, in the Schema part, uncheck “Timestamp” and “Location” as shown in the figure above. Continue by clicking “Next” and “Create”.

In the next step we will train a set of models on the recently created dataset. To do this, click on “Auomated ML” and then on “+ New Automated ML run”

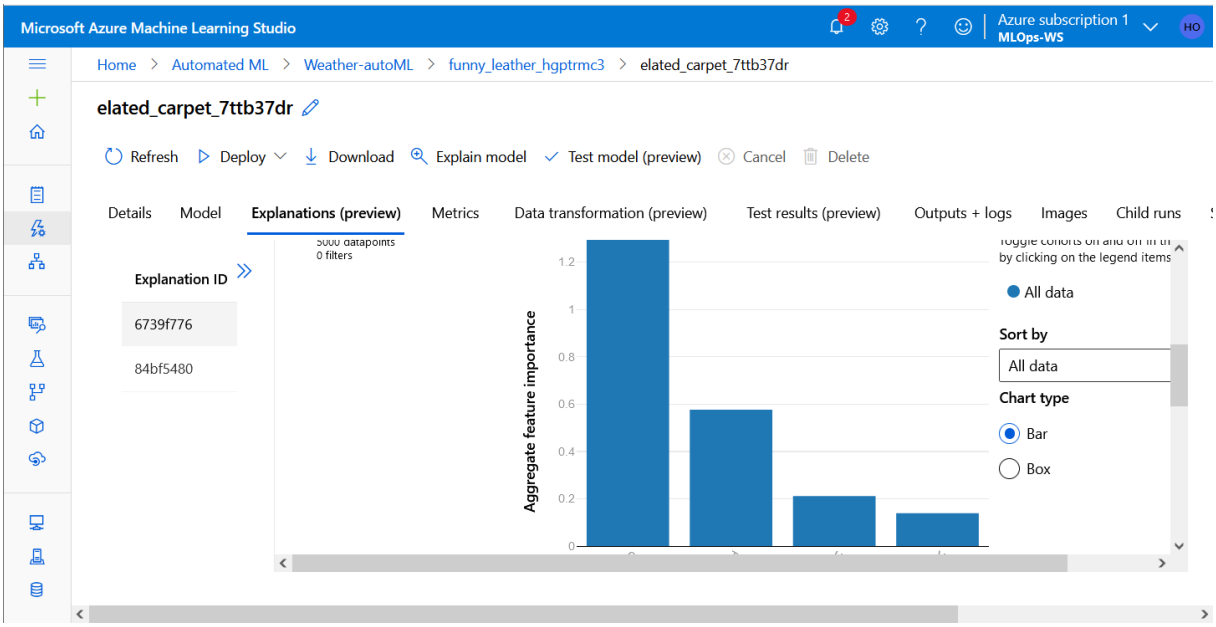
1. Select the dataset and then “Next”
2. Check “create new” and give a name to your experiment
3. Choose the target column “Future_weather_condition”
4. Choose “Compute instance”
5. Given that your instance is created and started, choose it and then “Next”



6. Choose the classification and then “Next”
7. Finally, click on “Next” and “Finish”



The “Azure Auomated ML” tool trains a set of models with a set of preprocessing techniques, you can see the trained models by clicking on “models”. Once the training is completed, you will have all models with their performance. As you may notice, the best performance is given by the “voting” ensemble model. However, Azure ML provides the explanation for the model with the best performance, you can view this explanation by clicking on “View explanation”.

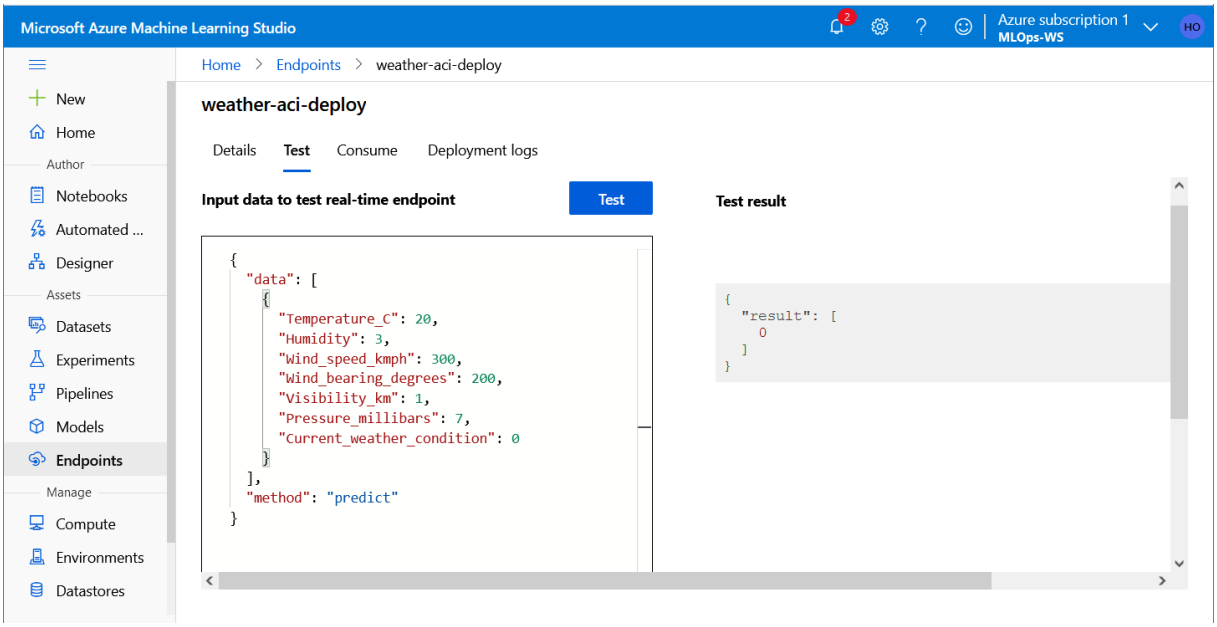


To deploy this model, you must choose it and then click on “Deploy > Deploy to web service”.

1. Give your deployment a name
2. Choose “Azure Container Instance” and then “Deploy”

Then go to “Endpoints” and click on your deployment and you will see that the status of your deployment is “transitioning” (which means that your service is being deployed).

Subsequently, the status of your deployment will change to “Healthy” and you will see the appearance of the rest type endpoint. Furthermore, you can test this service by clicking on “Test” and entering some values.



Inference using the deployed model

In the Lab folder, open the “inference.py” file and try replacing the URL variable with your own endpoint.
This file contains the code to consume our model deployed as a REST type web service.

Run the file in question by launching the command “python inference.py”.

Discovering Amazon Sagemaker Autopilot

In the “AWS Academy Machine Learning Foundations” course that you are invited to, visit the “Demo - Accelerate with Amazon Sagemaker Autopilot” section in Chapter 3.

To Do:

1. Create a web application (i.e., form) allowing you to consume this service.
2. Using the prebuilt image used previously, deploy this application as a container.