Raport Lab 3: AutoML and Copilot

Mouad GUEDAD

Year : 2023/2024

Major : QFM

Instructor: Pr. Fahd KALLOUBI

Introduction :

Embarking on a transformative laboratory exploration, our mission unfolds in response to a critical challenge faced by a meteorological analysis team tasked with improving weather prediction for a vital operational hub. In this context, our role as data scientists takes center stage as we leverage the formidable capabilities of AutoML, Microsoft Azure's cutting-edge cloud service, and a suite of open-source tools to navigate towards a sophisticated weather prediction solution.

To tackle this challenge, we strategically deploy Microsoft Azure's AutoML, a potent tool designed to automate and streamline the machine learning model selection and training process. This, coupled with the collaborative features of Azure's cloud infrastructure and the adaptability of open-

source tools, underscores our commitment to a comprehensive exploration of predictive analytics.

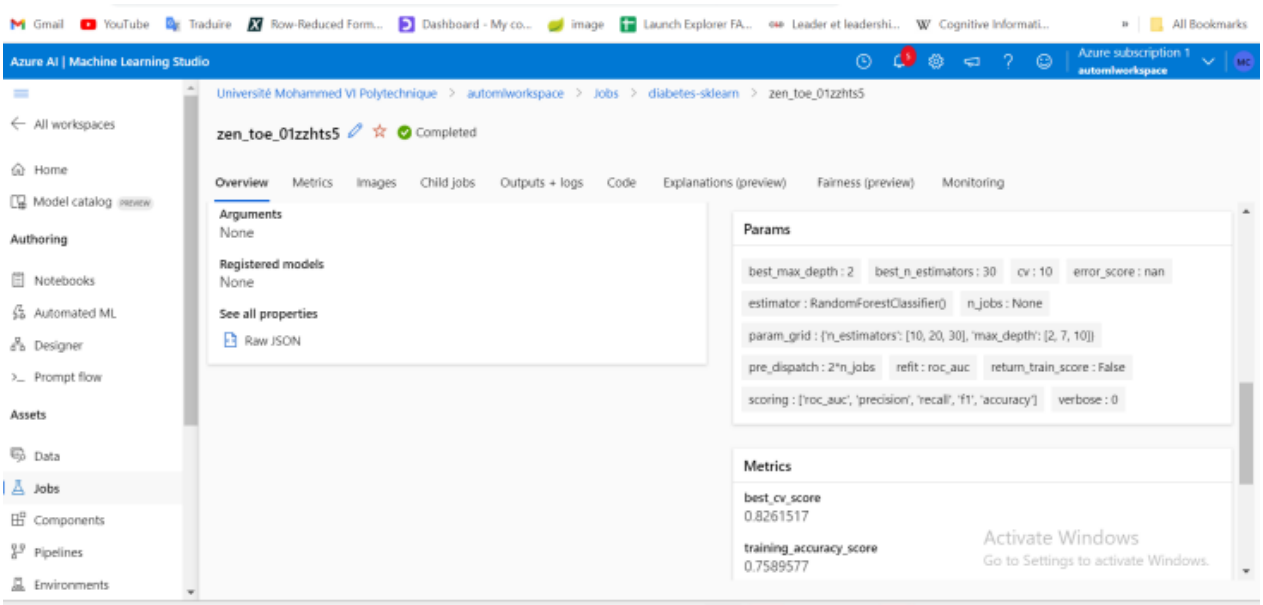
Deploying a ML model as a service using Azure Auto ML :

AutoML, an abbreviation for Automated Machine Learning, plays a crucial role in this undertaking. It serves to streamline the model development and deployment process, enabling practitioners to concentrate on high-level tasks while automating intricate details.

This section explores the utilization of AutoML, particularly within the Azure environment, for deploying machine learning models as services on servers. Harnessing the capabilities of AutoML empowers organizations to expedite the deployment timeline, minimize manual intervention, and improve the overall efficiency of their machine learning initiatives.

Model training:

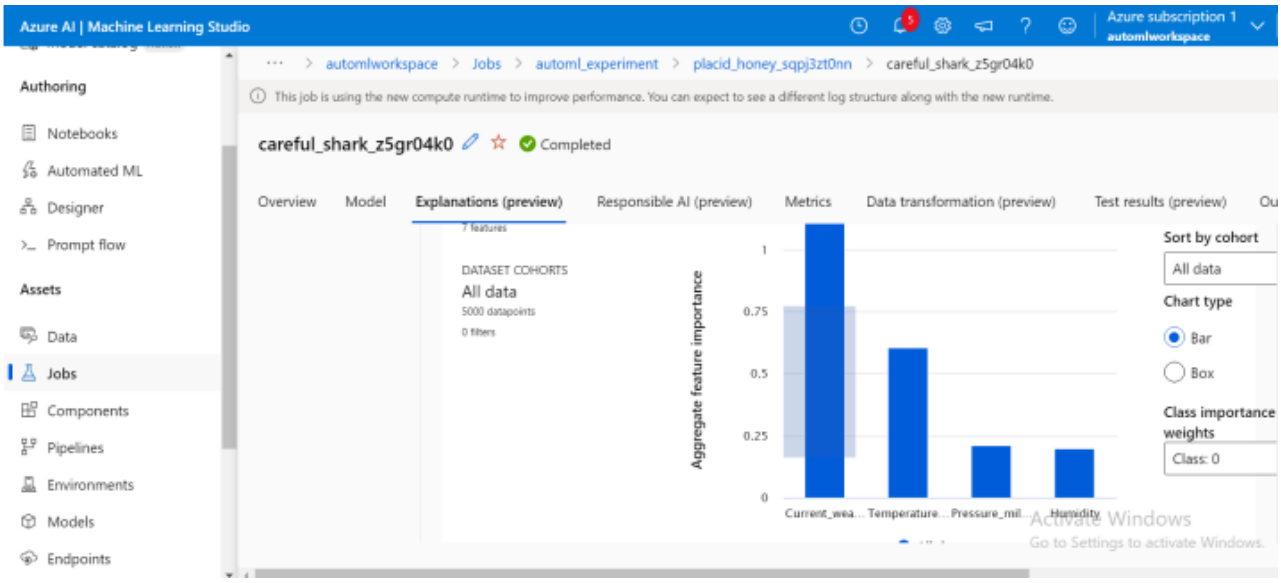
In this step we upload our dataset then we trigger our autoML pipeline to train and evaluate on different models:



Gaining Insights into the Best Model:

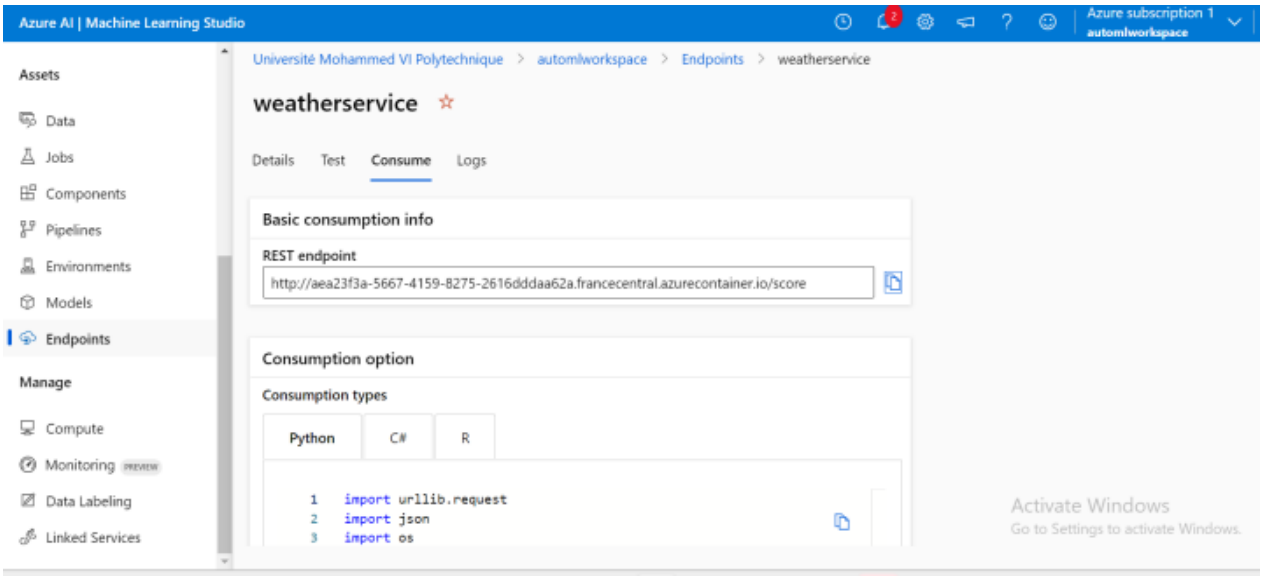
Following the completion of the AutoML training process, a diverse array of models emerges, each encapsulating unique characteristics and predictive capabilities. This broad spectrum of models stands as evidence of the versatility and adaptability inherent in automated machine learning.

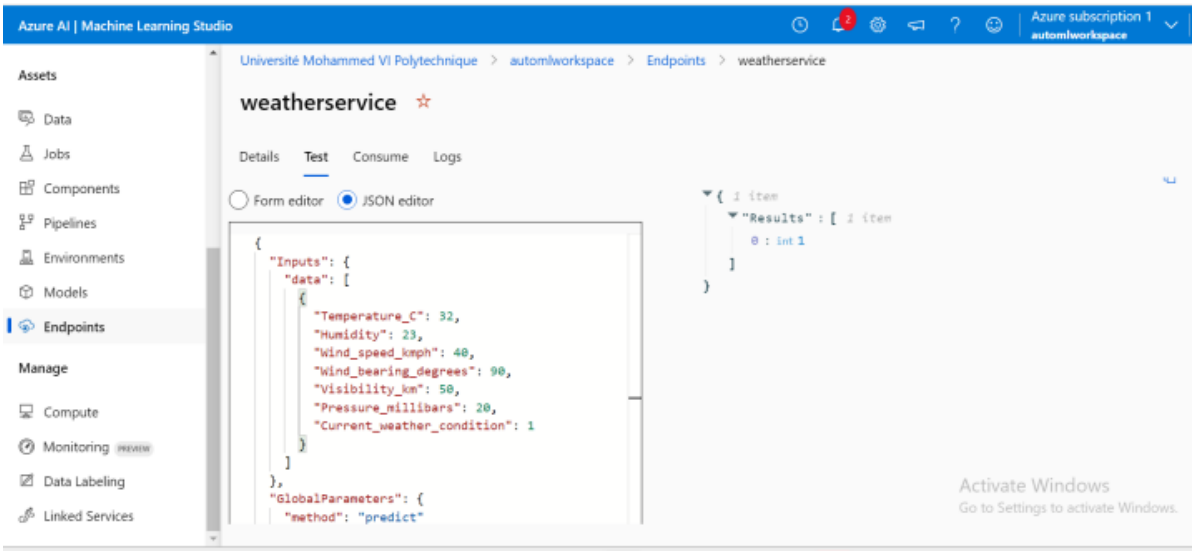
In this phase, AutoML meticulously explores various algorithms, hyperparameter configurations, and feature engineering techniques. The outcome is an ensemble of models specifically tailored to the dataset and the problem at hand, providing a comprehensive overview of the diverse options available for further evaluation and selection.



Deploy the best model :

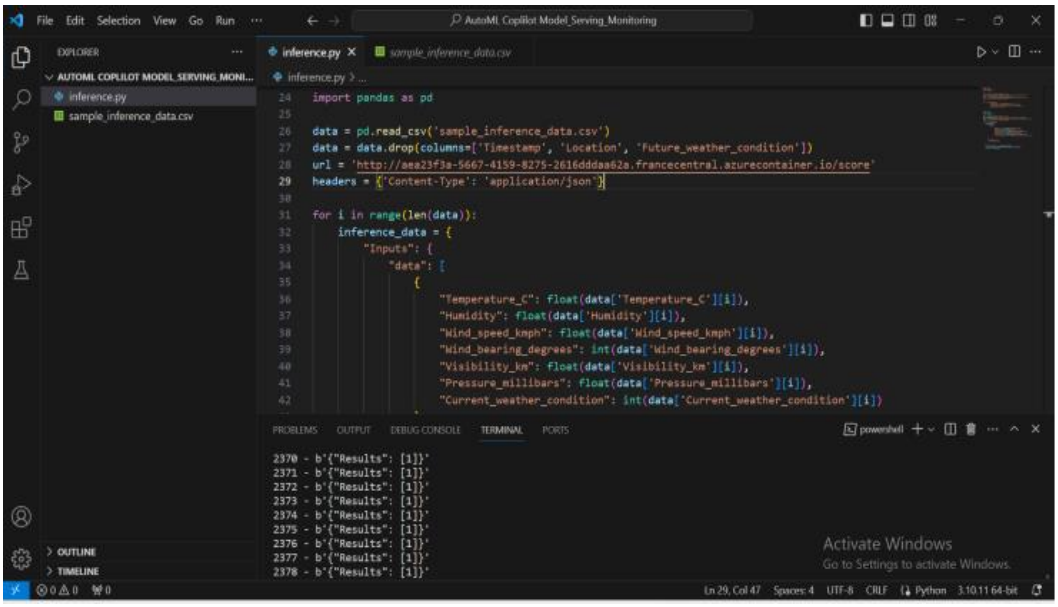
We have consumed our app through a rest api as shown in the picture below.





Inference using the deployed model :

Now we can use our deployed model to consume it locally for the prediction.



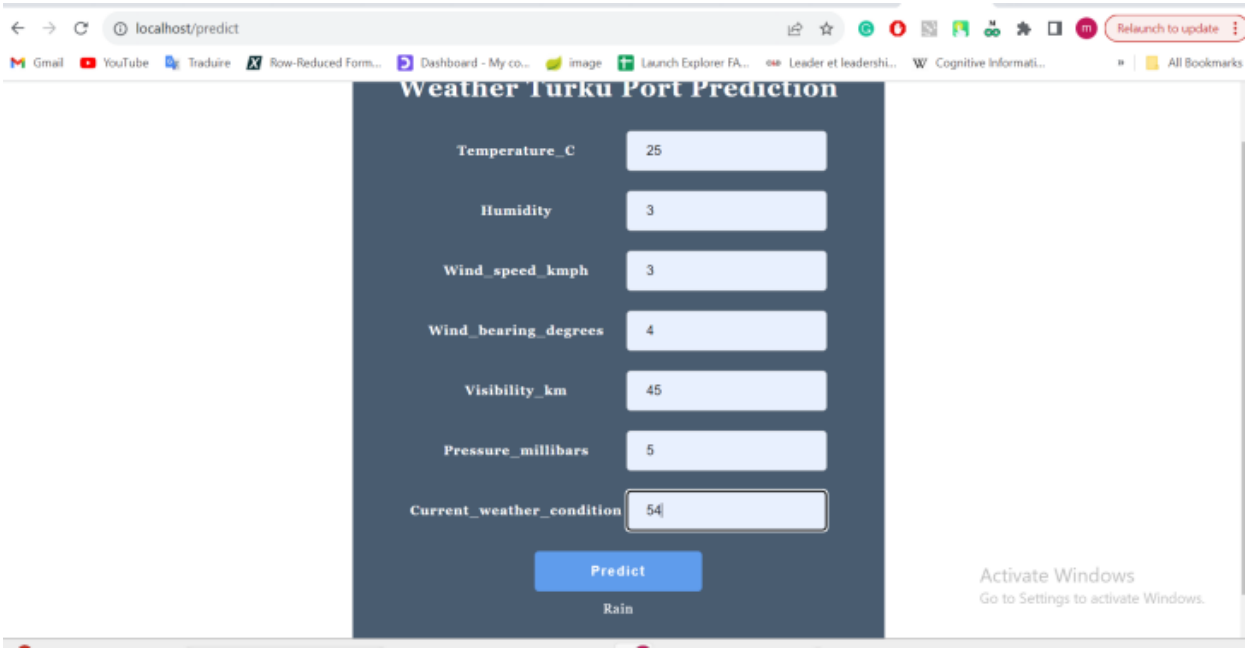
Discovering Amazon Sagemaker Autopilot :

The video has been viewed, and we now comprehend Amazon SageMaker Autopilot.

To Do:

Create and dockerize the web application :

In this section we create a form then we call our model endpoint to consume it directly.



Conclusion

Throughout this lab, we navigate the complexities of uniting the efficiency of AutoML with the expansive resources of Azure, showcasing the seamless integration of cutting-edge technologies. Our journey goes beyond mere exploration, it aims to redefine the paradigm of weather prediction in an era where precision is paramount. Join us as we unravel the potential of AutoML in revolutionizing weather prediction and ushering in a new era of informed decision-making for weather-dependent industries.