

Conclusion & Thoughts

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# Objectives

The main objective of this document is to provide a clarity on usage of AML Studio and its importance in today’s world of ML. Below are high level content provided in this document.

1. Overview on Azure Machine Learning Studio.
2. Define the Pros & Cons
3. Preferred Environment & Software for Machine Learning & Deep Learning.

# AML Studio & Services Introduction

### Introduction of AML Studio:

Azure Machine Learning Studio provides a collaborative & interactive drag & drop experience for creating and designing the Machine Learning Models within the Cloud Solution. It is a browser based with no coding required.

AML Studio helps from Idea creation to Deployment and Production Ready within few clicks. This mostly concentrates on Business Users who has less exposure to Coding and can help the users directly expose the APIs into their current solutions.

# AML Studio Advantages & Disadvantages

### **Advantages Of AML Studio**

1. AML Studio easily integrates with the datasets and even a business user can start working on analysing and creating models in minutes.
2. Easy Drag & Drop Solution helps Data Science tasks to be a normal routine of analysis without any hassle.
3. Code Free Environment and feasibility to Fine tune using Components like Hyper Tune Parameters really helps users to automatically select right tuning parameters.
4. Most of the common Algorithms are readily available as components inside the studio.
5. Best of AML Studio is its browser based which can make it’s a light weight .
6. Many Pre-processing components really helps in data cleansing within minutes which would a tedious process in normal Python based notebooks.
7. Deploy the model in minutes and by a button click whereas the normal deployment process would require a separate devops team to handle on a daily basis.
8. Can compare 2 models by keeping them side by side which is unique and most required feature for all the ML requirements.

### **Disadvantages of AML Studio:**

1. Most important bottleneck for AML Studio is the Visualizations. As the world is generating many open source and best Visualization libraries for data understanding and analysis , AML Studio gives pretty basic visualizations which can only solve the initial understanding of Data.
2. Model Evaluation cannot be done for more than 2 models which is mostly required when you are working on large datasets and complex datatypes.
3. Basic Algorithms can be utilized but when any new algorithm needs to be tested it has to go through the Python Extension Components .
4. Migration of Old Models to AML Studio is not straight forward and requires a lot of rework.
5. Dealing with Large Datasets the time consumed will really impact the development as it is required to Import the data always to implement any Modelling.
6. Deep Learning Models doesn’t work as the AML Studio is very slow and takes ages to execute even a smaller dataset.
7. Scaling the computing power is not effective when compared to current day resources like Data Bricks , AML Services .
8. Not many sources can be directly utilized as import into the AML Studio.

# Preferred Software

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# Reasons

I am sure Azure Machine Learning Studio serves the best in most of the common use cases on daily needs and helps easily manage systems and models in a better way. But I would prefer to go with Azure Machine Learning Services Or Data Bricks which is a new alternative for AML Studio & Big Data Engineering Integrated Solutions which has high capabilities of using Open Source and can customize as per the needs of the user.

Below are the details on the AML Services :

1. Most of the ML Models have a difficulty in deploying and Productionizing the solution because of multiple versions and no proper deployment environments defined.
2. AML Services provide a unified environment with a decoupled approach of computing, Infra, Versioning and Deploying the solutions with Multiple Versions and in Cloud as well as in Edge Devices.
3. It even enables users to use the developers preferred language and models seamlessly such as Open Source TensorFlow , Pytorch etc.

### **Capabilities of AML Services :**

1. *Azure Auto ML* : This automatically identifies the right algorithms & hyperparameters Faster .
2. *Managed Computing* : Train models with ease and reduce costs by autoscaling powerful GPU clusters.
3. *Devops for Machine Learning* : Increase productivity with experiment tracking, model management and monitoring, integrated CI/CD, and machine learning pipelines.
4. *Simple Deployment* : Deploy models on-premises, to the cloud, and at the edge with a few lines of code.
5. *Tool Agnostic* : Azure Machine Learning service integrates with any Python environment, including Visual Studio Code, Jupyter notebooks, and PyCharm.
6. *Support Open Source Frameworks* : Use your favorite machine learning frameworks and tools, such as PyTorch, TensorFlow, and scikit-learn.

### **Capabilities of Azure Data Bricks :**

1. Most of the Machine Learning requirement can only work with right data management. Azure Data Bricks helps in creating Big Data Information Management and Storage with ACID Properties.
2. Accelerate big data analytics and artificial intelligence (AI) solutions with Azure Databricks, a fast, easy and collaborative Apache Spark–based analytics service.
3. A single environment for creating Big Data Engineering & Analytics which can even extend to Machine Learning and Deep Learning Models within the Environment.
4. Launch your new Apache Spark environment in minutes. Seamlessly integrate with other Azure services in an interactive workspace.
5. Globally scale your analytics and machine learning projects. Reduce cost and complexity with a managed platform that auto scales up and down.
6. Help protect your data and business with Azure AD integration, role-based controls, and enterprise-grade SLAs.
7. Build machine learning and AI solutions with your choice of language and deep learning frameworks.
8. An interactive workspace enables data engineers, data scientists, and business users to collaborate and comment on shared projects as a team.
9. Integrates with Azure Services and support multi language platforms.
10. Optimized for Deep Learning and Machine Learning Models.