

**Lab Manual- Azure Machine Learning Workspace**

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# Introduction

Systems are working with massive amounts of data in petabytes or even more and it is still growing at an exponential rate. Big data is present everywhere around us and comes in from different sources like social media sites, sales, customer data, transactional data, etc

[Apache Spark](https://spark.apache.org/) is an open-source, fast cluster computing system and a highly popular framework for big data analysis. This framework processes the data in parallel that helps to boost the performance. It is written in [Scala](https://spark.apache.org/docs/0.9.1/scala-programming-guide.html), a high-level language, and also supports APIs for Python, SQL, Java and R.

Azure Databricks is the implementation of Apache Spark on Azure. With fully managed Spark clusters, it is used to process large workloads of data and also helps in data engineering, data exploring and also visualizing data using Machine learning.

In this notebook, we will explore combining streaming and batch processing with a single pipeline. We will begin by defining the following logic:

* Ingest streaming JSON data from disk and write it to a Delta Lake Table **/activity/Bronze**
* perform a Stream-Static Join on the streamed data to add additional geographic data
* transform and load the data, saving it out to our Delta Lake Table **/activity/Silver**
* summarize the data through aggregation into the Delta Lake Table /activity/Gold/groupedCounts
* materialize views of our gold table through streaming plots and static queries

We will then demonstrate that by writing batches of data back to our bronze table, we can trigger the same logic on newly loaded data and propagate our changes automatically.

# Exercise 1 – Provision Azure Machine Learning Workspace

In this quickstart, you'll create a workspace and then add compute resources to the workspace. You'll then have everything you need to get started with Azure Machine Learning.

The workspace is the top-level resource for your machine learning activities, providing a centralized place to view and manage the artifacts you create when you use Azure Machine Learning. The compute resources provide a pre-configured cloud-based environment you can use to train, deploy, automate, manage, and track machine learning models.



















































