

Using AI models for Machine Learning with Microsoft Fabric

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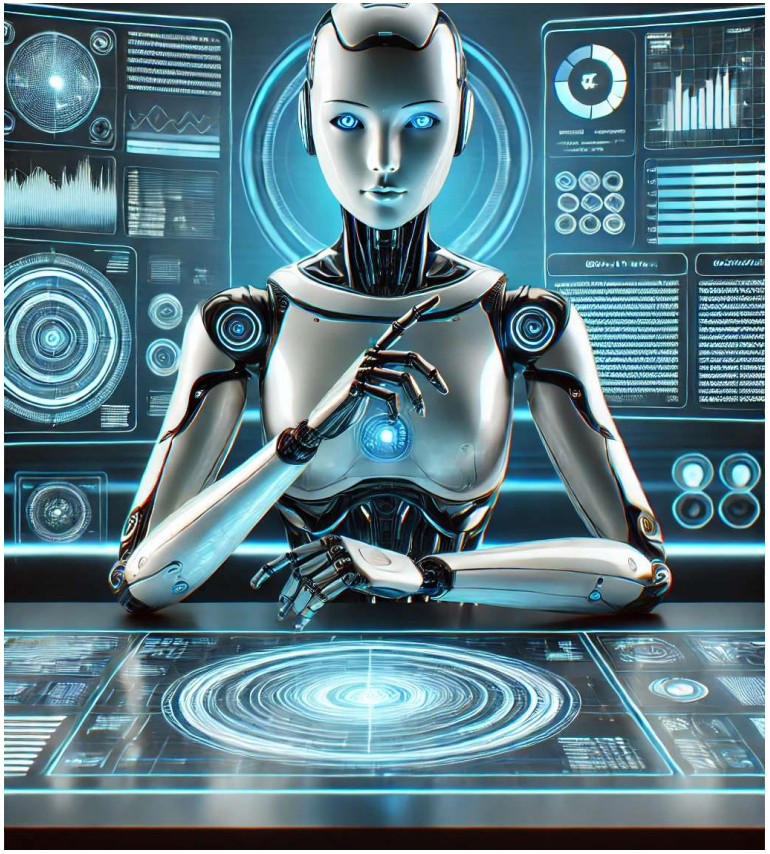
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Agenda

- Understanding AI
- Introduction to Copilot in Fabric
- Machine Learning in Fabric Spark



What is AI ?



- Identifying trends and patterns by comparing data
- Machine Learning
- Tool which uses data to do other tasks
- The New Big Data

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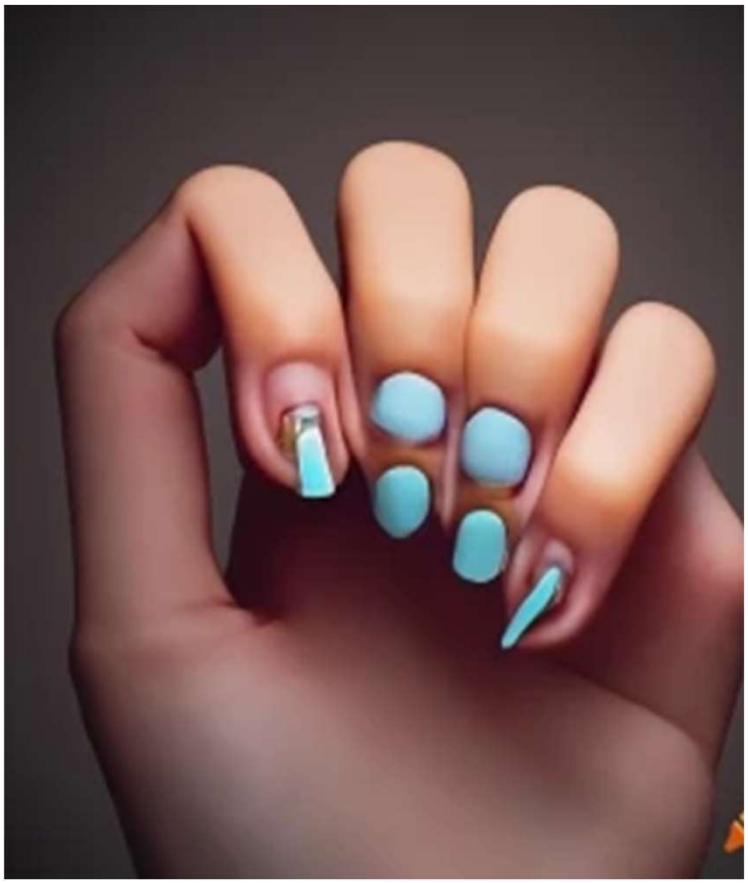
Generative AI



- Generates new output
- Requires training on vast amounts of data
- Can be used for many different tasks

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Issues with Generative AI



- It lies
- Big data set training takes time
- Difficult to implement
- Expect 10% errors

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Why Use AI?

- Massive improvement in productivity
- Learn new skills
- Get new ideas
- Summarize long texts
- Faster way to browse the interwebs



Prompt Engineering

- Tips and tricks to use AI more effectively
- Get better answers
- Check for Validity



Getting better answers from AI

- Pick your Expert and Tone
- Tell AI how to think or respond
- Clarify the previous question
- Get the Sources
- Ask AI how to Ask AI a question





Demonstration

Prompt Engineering with Copilot

Adding Copilot to Notebooks

- Install libraries
- More magic commands
- Integrated development chat
- Similar to copilot in github



Fabric Notebook Copilot magic commands

- %describe
- %set_sharing_levels
- %configure_privacy_settings
- %pin Dataframe
- %new_task

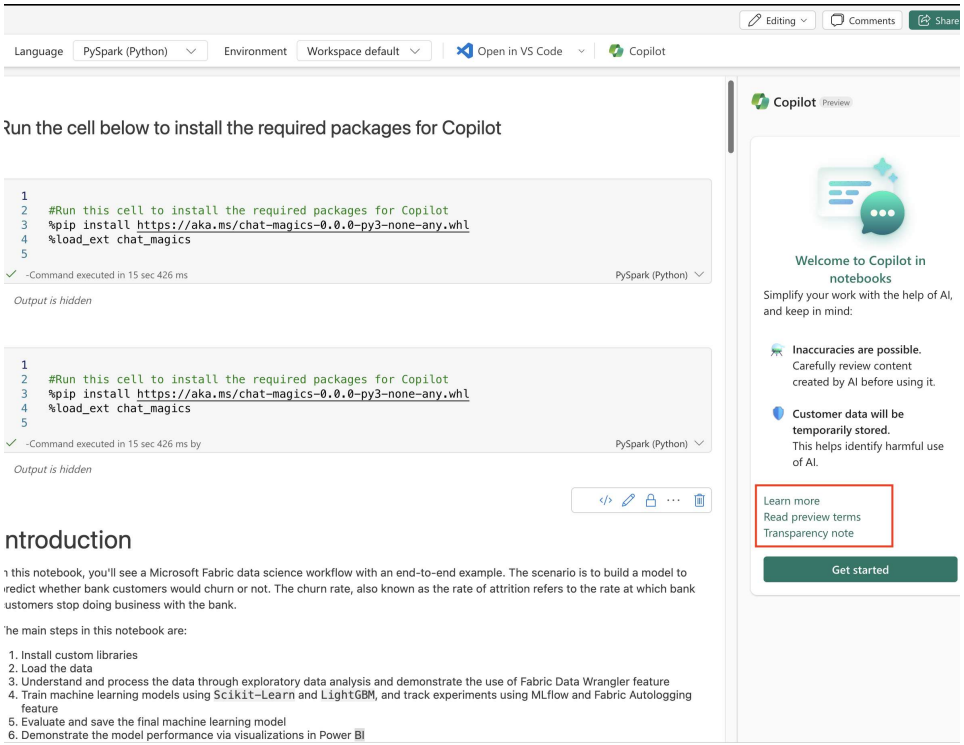


Copilot context and focus

- %%add_comments
- %%fix_errors
- %%chat
- %%code



Copilot chat panel



Use the Copilot side panel to ask questions about the code

Generate code for you that you can paste into your notebook

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Getting started with Copilot in Fabric

Click on the icon in the top

Will need to run a lot of library

Causes a restart of the compute, so it should be first

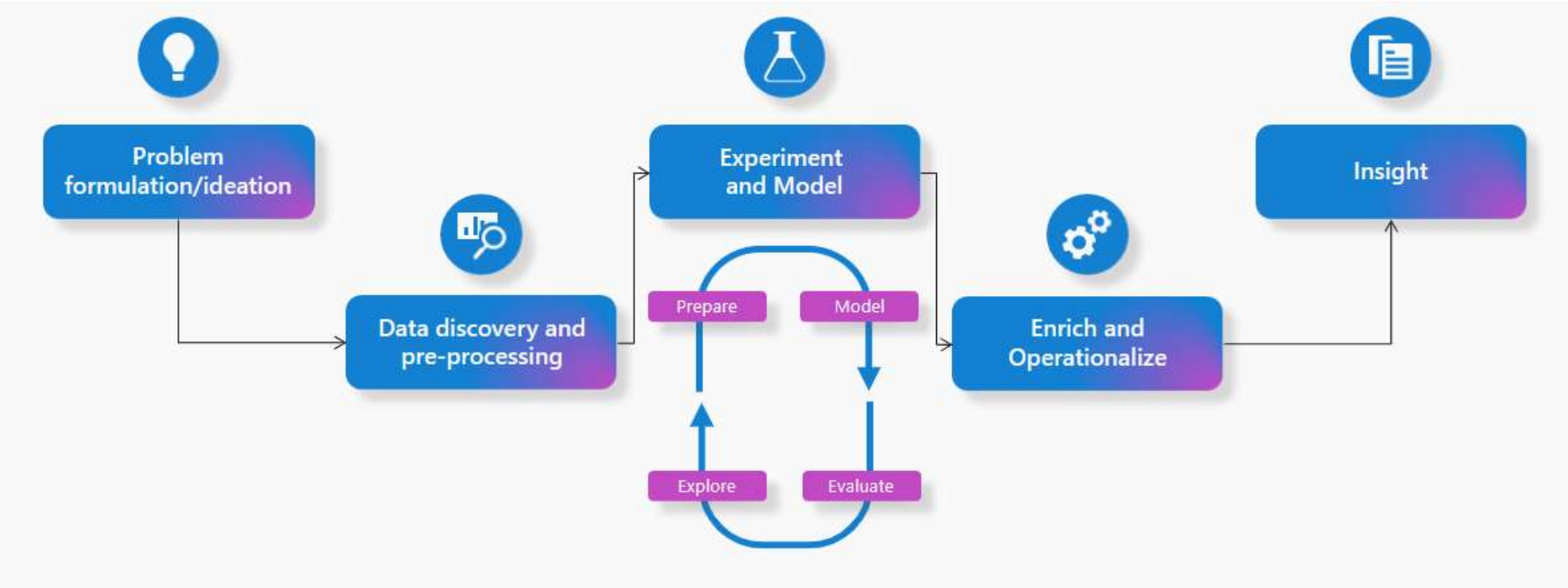




Demonstration

Using Copilot in Fabric

Machine Learning Process



Differences Between AI and Machine Learning



Uses data from a variety of different sources and content



Tailored datasets of limited scope



Can create independent elements



Applies rules to predict a result



Wide number of uses



Used to make specific decisions

AutoML

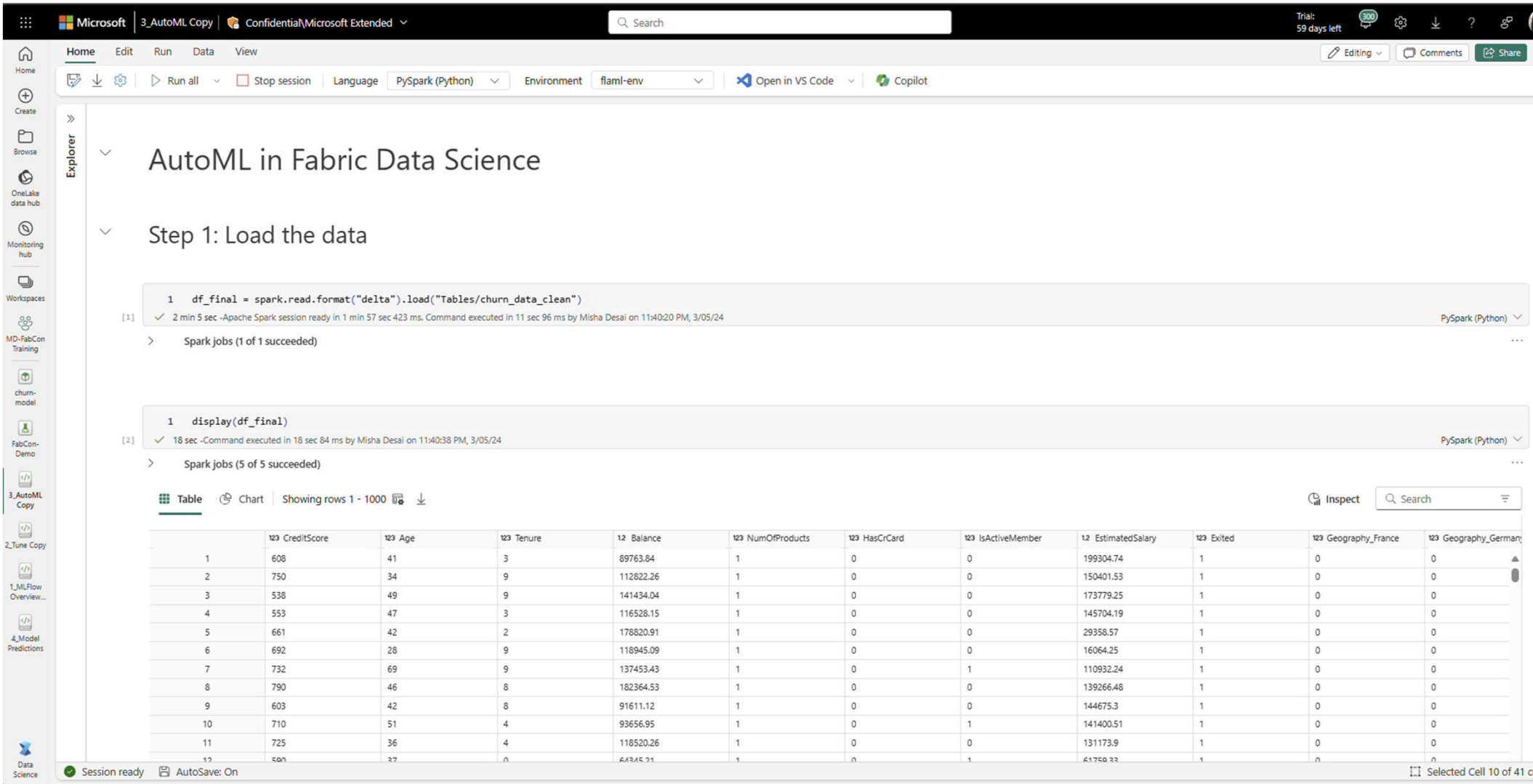
- Fabric library designed to assist in developing models
- Azure Machine Learning includes AML library to select algorithms
- Within a Synapse Notebook execute the code
- Select an algorithm using parameters you chose





Demonstration

Using AI to help with Machine Learining



	CreditScore	Age	Tenure	Balance	NumOfProducts	HasCrCard	IsActiveMember	EstimatedSalary	Exited	Geography_France	Geography_Germany
1	608	41	3	89763.84	1	0	0	199304.74	1	0	0
2	750	34	9	112822.26	1	0	0	150401.53	1	0	0
3	538	49	9	141434.04	1	0	0	173779.25	1	0	0
4	553	47	3	116528.15	1	0	0	145704.19	1	0	0
5	661	42	2	178820.91	1	0	0	29358.57	1	0	0
6	692	28	9	118945.09	1	0	0	16064.25	1	0	0
7	732	69	9	137453.43	1	0	1	110932.24	1	0	0
8	790	46	8	182364.53	1	0	0	139266.48	1	0	0
9	603	42	8	91611.12	1	0	0	144675.3	1	0	0
10	710	51	4	93656.95	1	0	1	141400.51	1	0	0
11	725	36	4	118520.26	1	0	0	131173.9	1	0	0
12	590	37	0	64345.21	1	0	1	61759.33	1	0	0

Auto ML's -FLAML

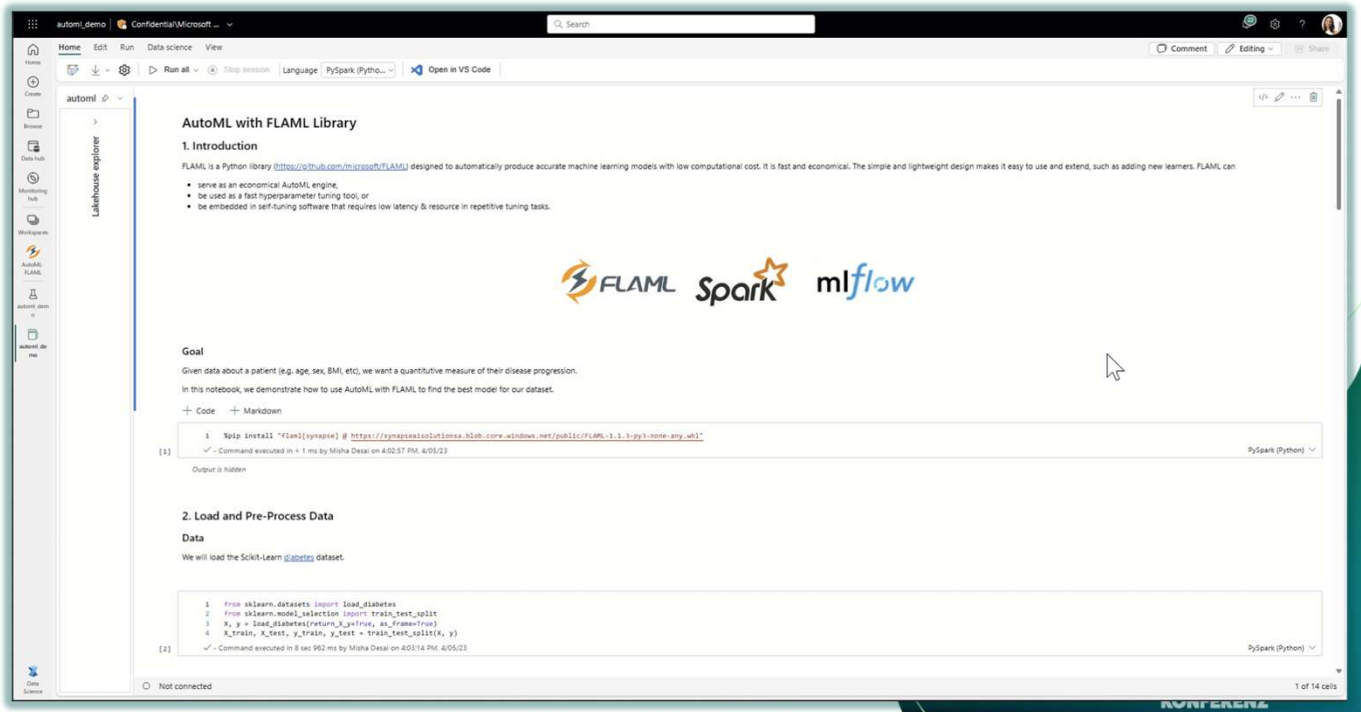
- Included as part of Data Sci Experience
- Designed to use ML to select ML workflows
- Fast Library for Automated Machine learning
- Simplify the process of developing ML models
- Automates model training and optimization
- Tunes Hyperparmeters automatically with flaml.tune



Automate the process of building machine learning models with FLAML

Code-first integration to **parallelize AutoML trials also supported with Spark**

Run **AutoML**
Integrated with MLFlow to automatically capture runs & metrics



2024

Synapse ML

- Renamed MMLSpark
- Open-source library designed to building scalable ML pipelines
- Makes it easier to call Microsoft AI libraries like text analytics, vision, and anomaly detection



Summary

- Understanding AI
- Introduction to Copilot in Fabric
- Machine Learning in Fabric Spark



Questions ?



More Fabric Training

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