Microsoft

Feb 2019

Azure Machine Learning & Automated ML
Houston Azure User group (meetup)

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Azure Machine Learning

Agenda – what you will learn

Overview of Azure Machine Learning service (AML)

Overview of Azure Databricks (ADB)/Azure Notebooks (AZNB)

Demo/Hands-on of Azure ML

- How to use Azure Databricks/Azure Notebooks with AML SDK
- How to use Automated ML SDK to train your model
- How to deploy a model as a real time webservice using AML SDK

Summary

Azure AI Platform Capabilities

Domain Specific Pretrained Models
To reduce time to market


Vision


Speech


Language


Search

Familiar Data Science Tools
To simplify model development


PyCharm


Jupyter


Visual Studio Code


Command line

Popular Frameworks
To build machine learning and deep learning solutions


PyTorch


TensorFlow


Scikit-Learn


ONNX

Productive Services
To empower data science and development teams


Azure Databricks


Azure Machine Learning


Machine Learning VMs

Powerful Infrastructure
To accelerate deep learning


CPU

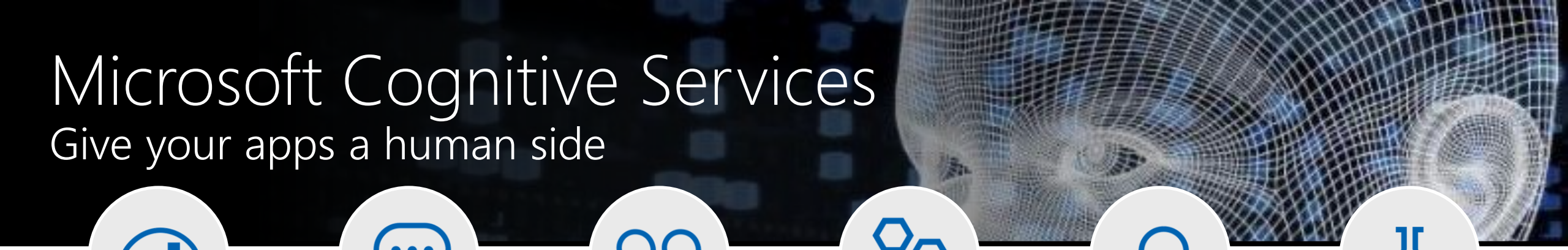

GPU


FPGA


From the Intelligent Cloud to the Intelligent Edge


Microsoft Cognitive Services

Give your apps a human side



Vision

Computer Vision

Content Moderator

Emotion/Face

Video Indexer

Speech

Bing Speech

Language

Bing Spell Check

Text Analytics

Translator Text & Speech

Knowledge

QnA Maker

Search

Bing Autosuggest

Bing Image Search

Bing News Search

Bing Video Search

Bing Web Search

Bing Entity Search

Labs

CUSTOMIZATION

Custom Vision Service

Custom Speech Service

Language Understanding

Custom Decision Service

Bing Custom Search

Microsoft

Custom AI – Azure Machine Learning

Custom AI – Azure Machine Learning

Building your own AI models for Transforming Data into Intelligence

SQL DB

Cosmos DB

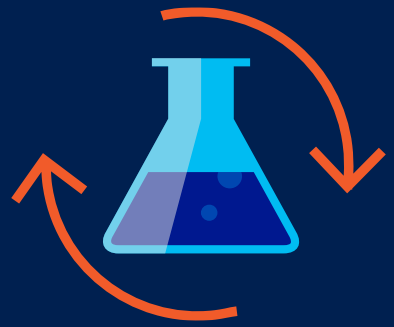
Datawarehouse

Data lake

Blob storage

...

Prepare Data



Build & Train

Deploy

Azure Machine Learning service

Bring AI to everyone with an end-to-end, scalable, trusted platform

Boost your data science productivity

Increase your rate of experimentation

Deploy and manage your models everywhere

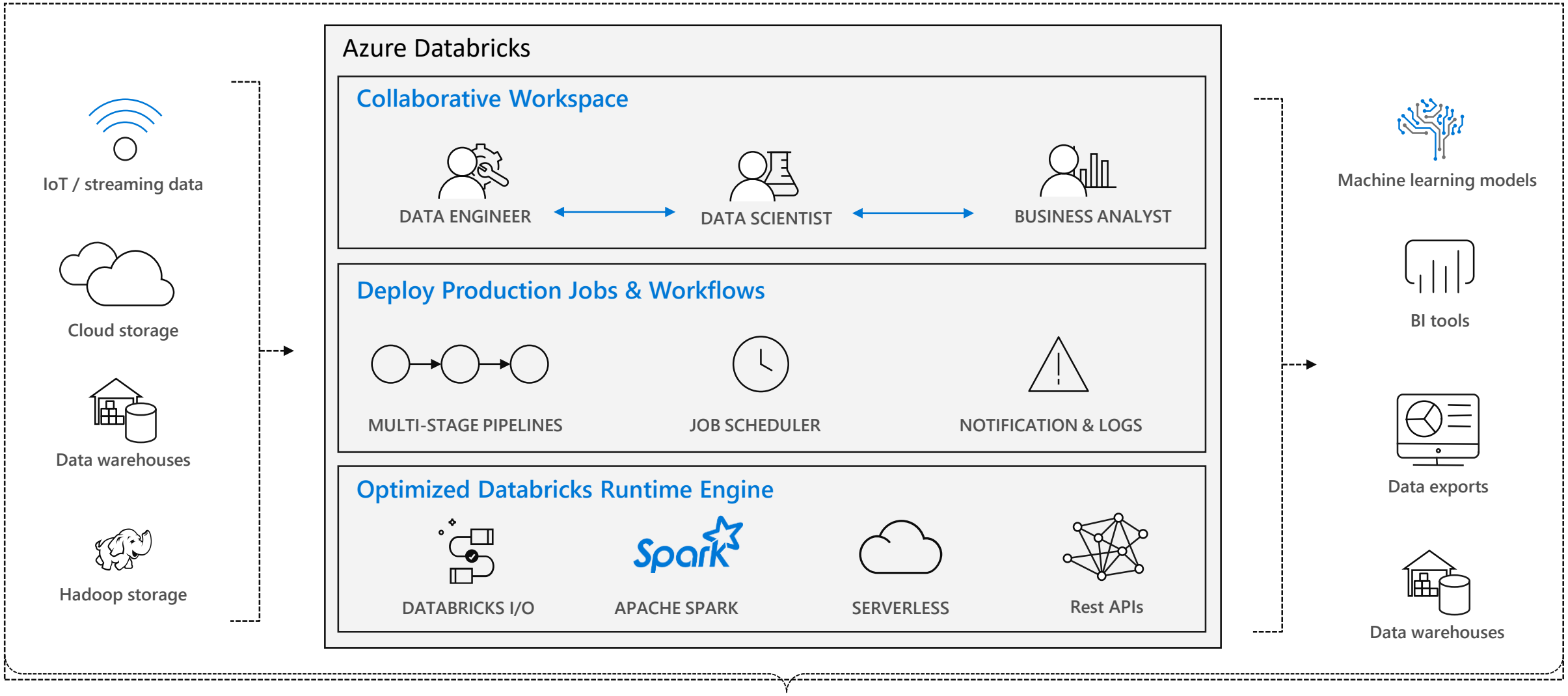
Built with your needs in mind

- Automated machine learning
- Managed compute
- DevOps for machine learning
- Simple deployment
- Tool agnostic Python SDK
- Support for open source frameworks

Seamlessly integrated with the Azure Portfolio

Azure Databricks

Azure Databricks



Enhance Productivity

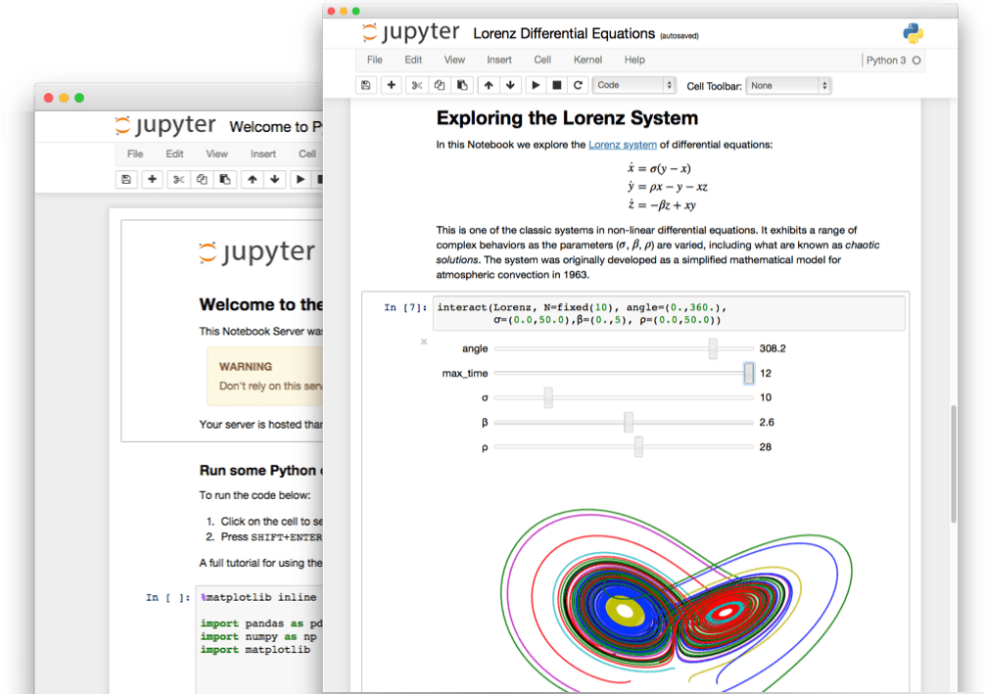
Build on secure & trusted cloud

Scale without limits

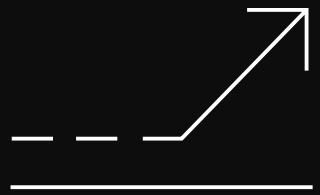
Azure Notebooks

Azure Notebooks

- Develop and run code from anywhere with Jupyter notebooks on Azure.
- Perfect for data scientists, developers, students, or anyone.
- Develop and run code in your browser

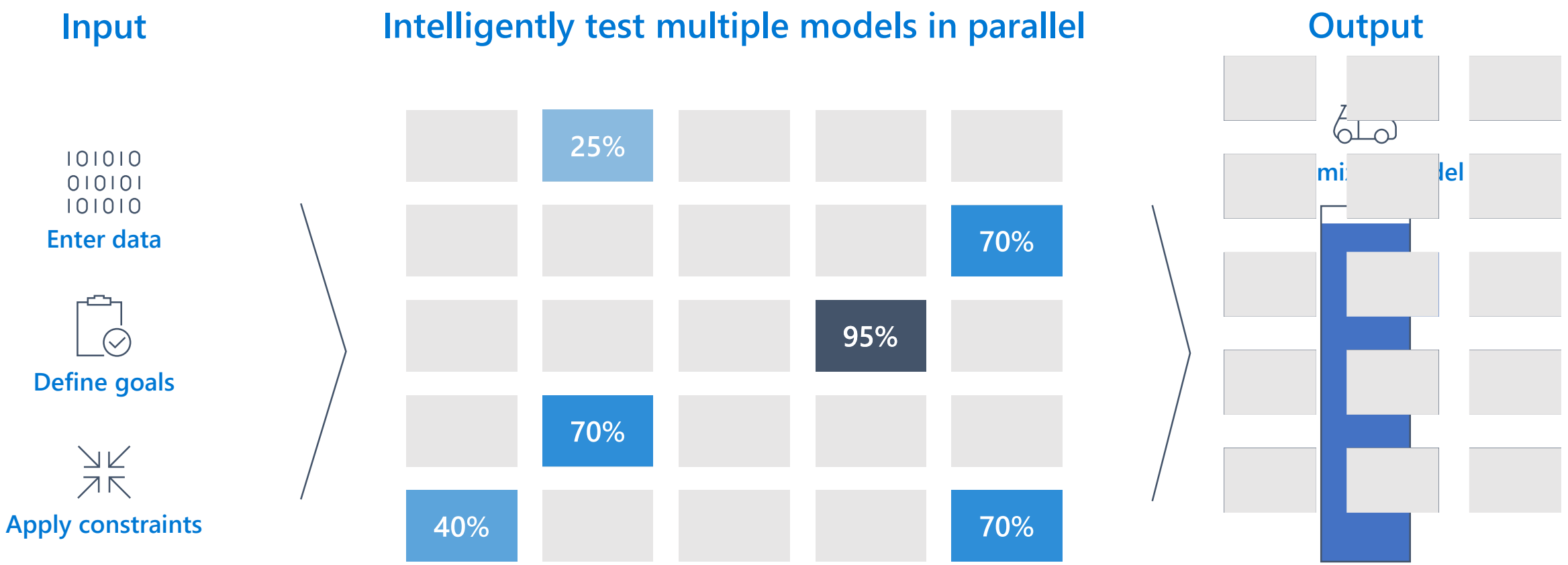


Automated Machine Learning



Azure Automated Machine Learning ‘simplifies’ the creation and selection of the optimal model

Automated ML Accelerates Model Development



Automated ML

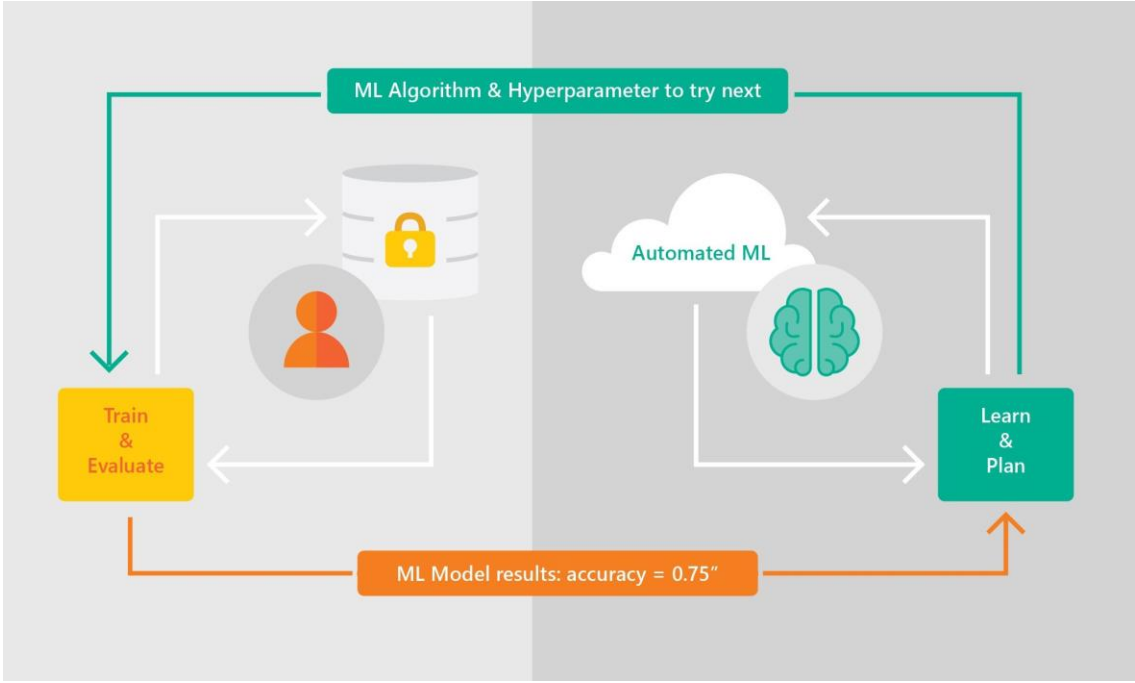
Benefits Overview

Azure Automated ML lets you

- Automate the exploration process
- Use resources more efficiently
- Optimize model for desired outcome
- Control resource budget

Apply it to different models and learning domains

- Pick training frameworks of choice
- Visualize all configurations in one place



Demo/Hands-on workshop

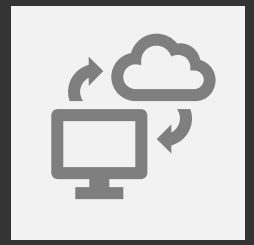
https://aka.ms/automl-adb-labs

https://aka.ms/automl-aznb-pslabs

Predictive maintenance scenario

- Engine degradation simulation was carried out using C-MAPSS.
  - Four different were sets simulated under different combinations of operational conditions and fault modes.
- Records several sensor channels to characterize fault evolution.
- The data set was provided by the Prognostics CoE at NASA Ames.
- Predict Remaining usable life (RUL) of turbofan engines.

Microsoft Automated ML Differentiators

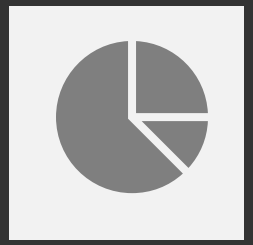


Azure Cloud offering

Is a part of Azure Cloud

Data privacy

no data movement needed



Integration with data platforms

ex: PowerBI, SQL, CosmosDB

Meta-learning

gets better with customer usage

Session resources

- Azure Doc for Automated ML - https://docs.microsoft.com/en-us/azure/machine-learning/service/how-to-configure-auto-train

- Notebooks
  - ADB Notebook to import is 007 here - https://aka.ms/automl-adb-labs
  - AZNB Project to clone - https://aka.ms/automl-aznb-pslabs
  - GitHub notebooks - https://github.com/Azure/MachineLearningNotebooks/tree/master/how-to-use-azureml

- Email Automated ML team – askautomatedml@microsoft.com

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