



Visual Interface for Azure Machine Learning Service

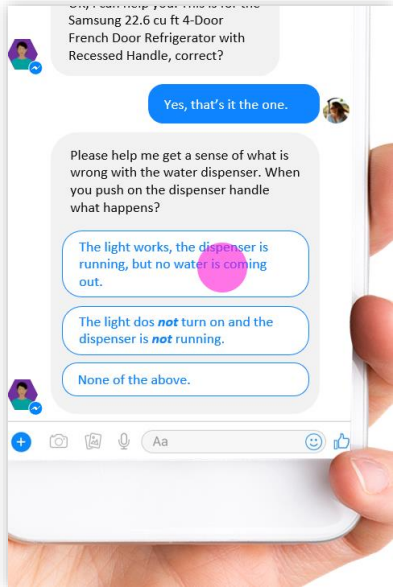
Heather Grandy

Technical Specialist, Azure Data & AI

ML/AI is core component of many applications

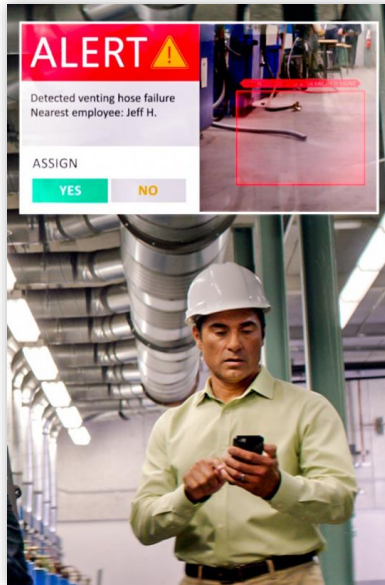
New generation of business agents

B2B, B2C, B2E



Person, object, and activity detection

Retail, manufacturing, security



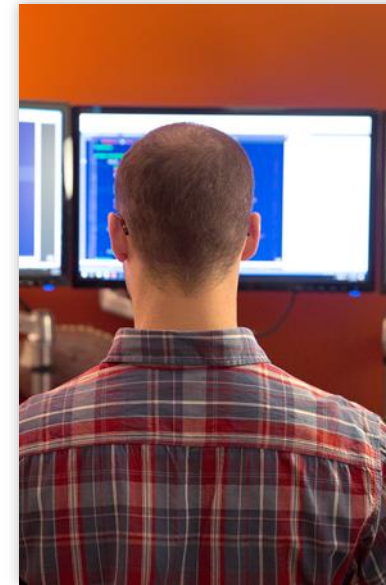
AI assisted professionals

Marketing, legal, financial



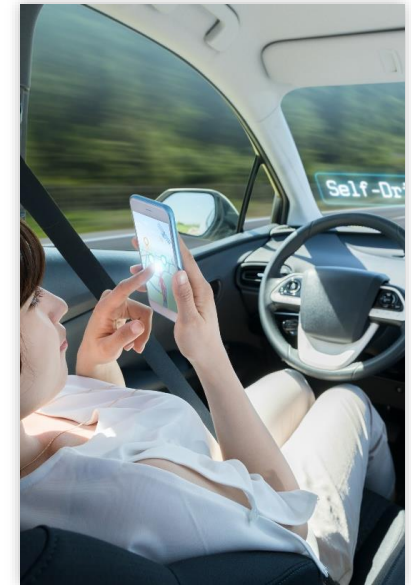
Knowledge mining

Documents, video

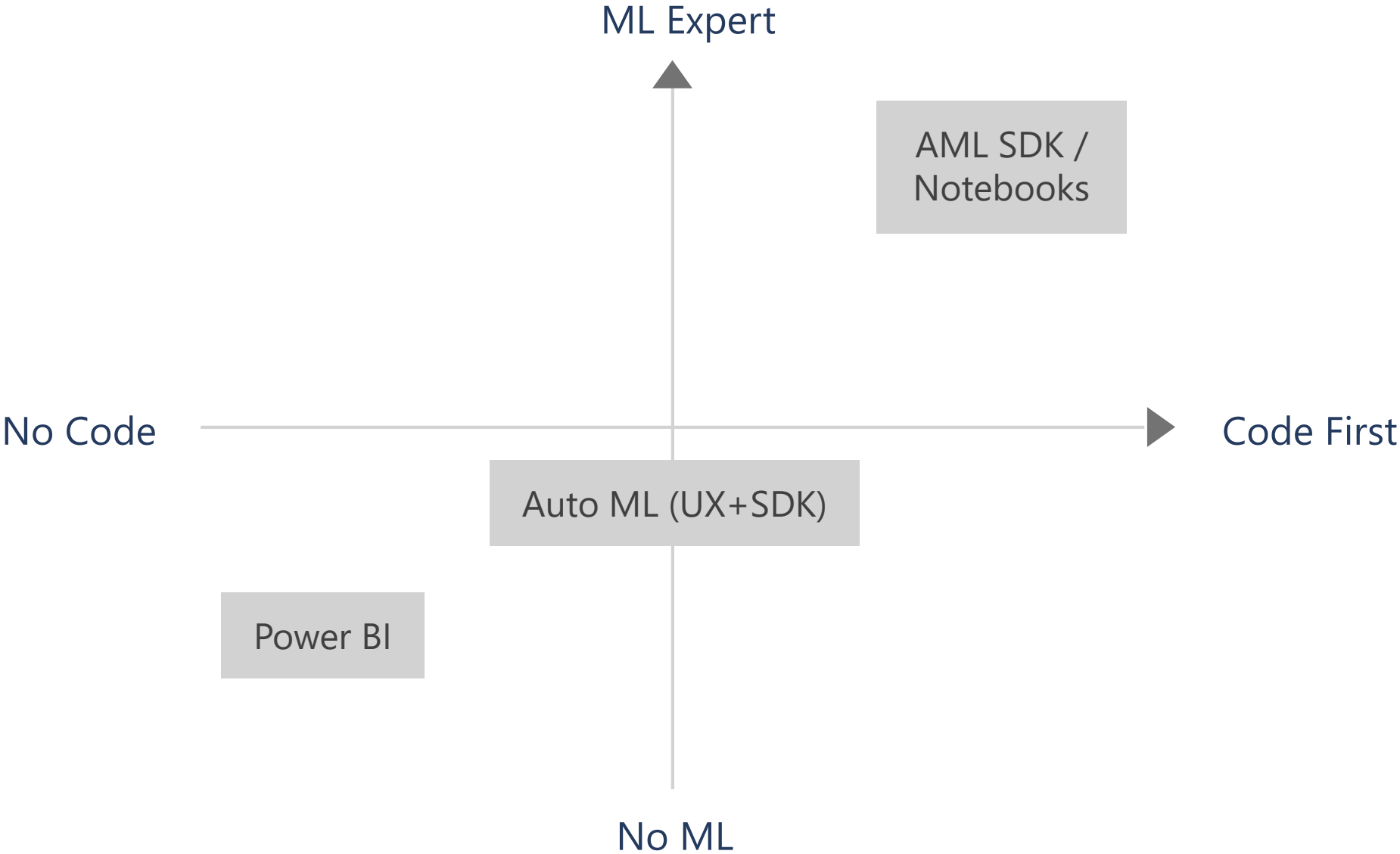


Autonomous systems

Vehicles, networks, RPA



More People Building Machine Learning Models



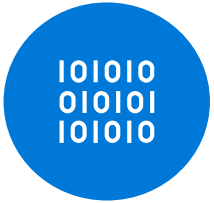
Challenges



Setup development environment



Not familiar with syntax



Manage hardware & infrastructure



Manage scale (training and inference)

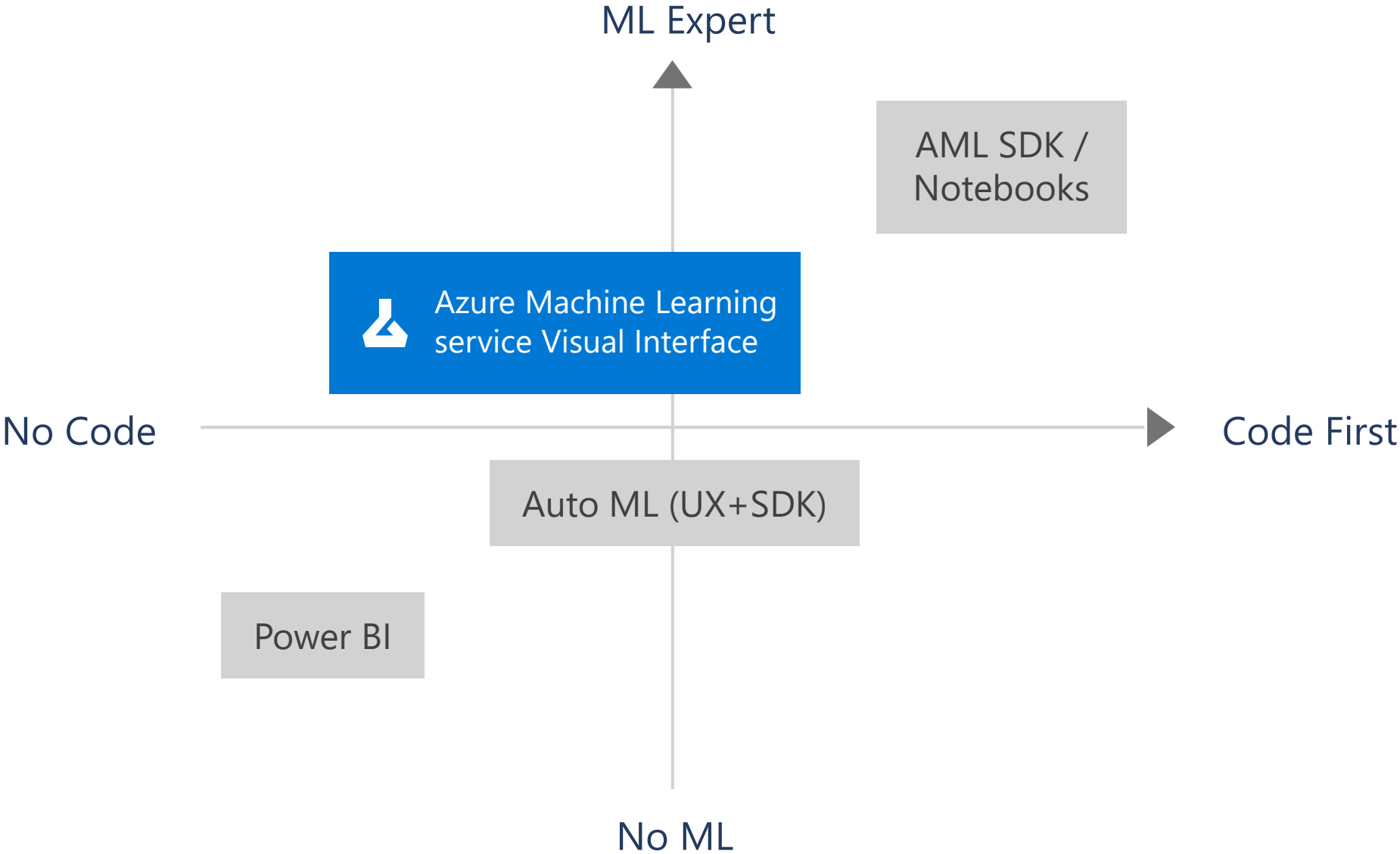


Lack of flexibility



Integration with production environment

More People Building Machine Learning Models



Authoring Experiences in Azure Machine Learning



Automated
Machine Learning



Visual Interface



Notebooks



Authoring Experiences in Azure Machine Learning



Automated
Machine Learning



Visual Interface



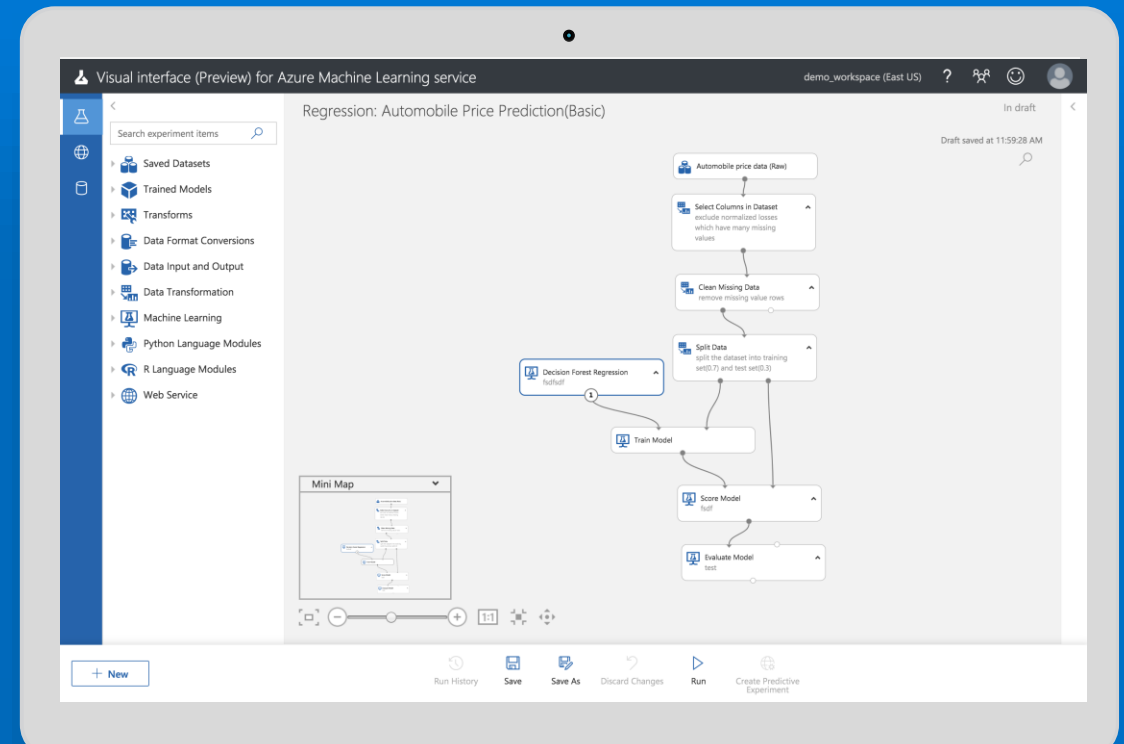
Notebooks





Visual Interface for Azure Machine Learning service (Public Preview)

Visual workflow to build, test,
and deploy ML models more
easily and efficiently



Demo – Building a model with the Visual Interface

Who should use the Visual Interface?



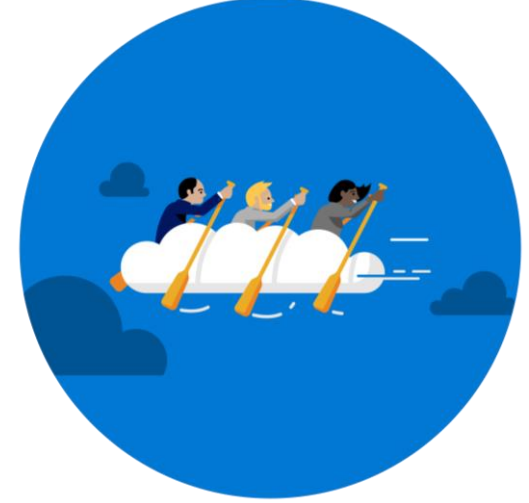
New to Machine Learning

Learn machine learning



Novice Data Scientists

Build model and prefer visual
tool than coding



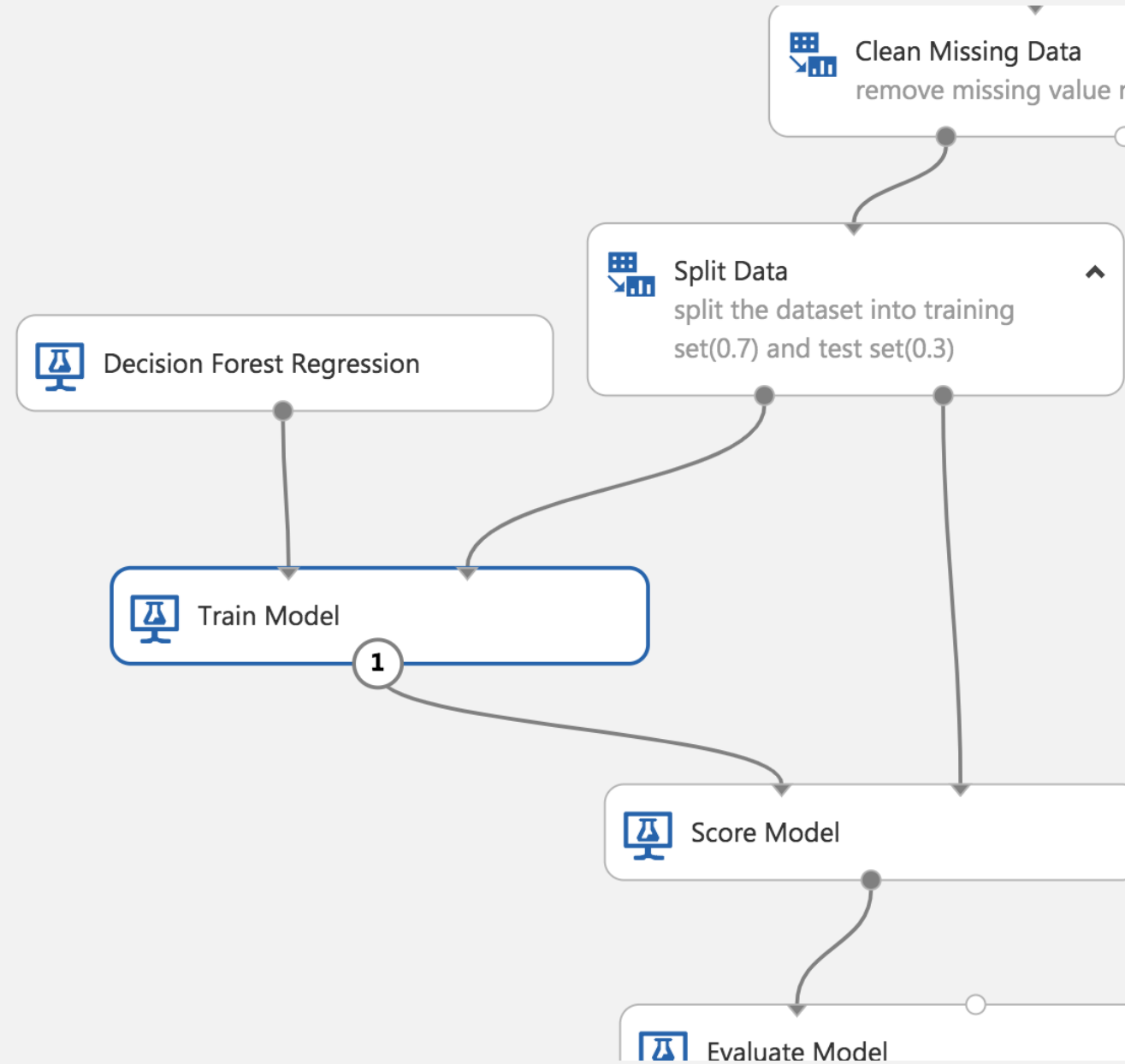
ML Experts

Quick prototype



Visual Interface

- Drag-and-drop
- Built-in modules
- Data visualization
- Model evaluation



Best from AML service

- Bring your own compute

- Scale align with data growth or model complexity

- Auto cool-down for cost savings

- Deploy to your own environment

- Run history & versioning

- Debuggability



The screenshot displays the Azure Machine Learning (AML) environment. In the background, a workflow is visible with nodes such as 'CRM Dataset Shared - Copy...', 'CRM Churn Labels Shared', 'Add Columns', 'Split Data', 'Train Model', 'Score Model', and 'Evaluate Model'. A 'Map' view is also shown at the bottom left. Overlaid on the right is a dialog box titled 'Setup Compute Target to Run Experiment'. The dialog has two radio buttons: 'Select existing' (which is selected) and 'Create new'. Below these is a table of 'Existing compute target(s)'. The table has columns for 'Compute name', '#Idle nodes / Max nodes', 'Region', and 'Status'. The first row, 'test-aml', is selected with a blue checkmark. A note at the bottom of the dialog states: 'Note: Compute preparation takes time, may be a few minutes or even longer. Experiment will start to run as soon as the compute resource is available.' At the bottom right of the dialog are 'Cancel' and 'Run' buttons. The bottom of the screenshot shows the AML toolbar with icons for 'Run History', 'Save', 'Save As', 'Discard Changes', 'Run', and 'Create Predictive Experiment'.

Setup Compute Target to Run Experiment

Compute target

☒ Select existing ☐ Create new

Existing compute target(s) Refresh

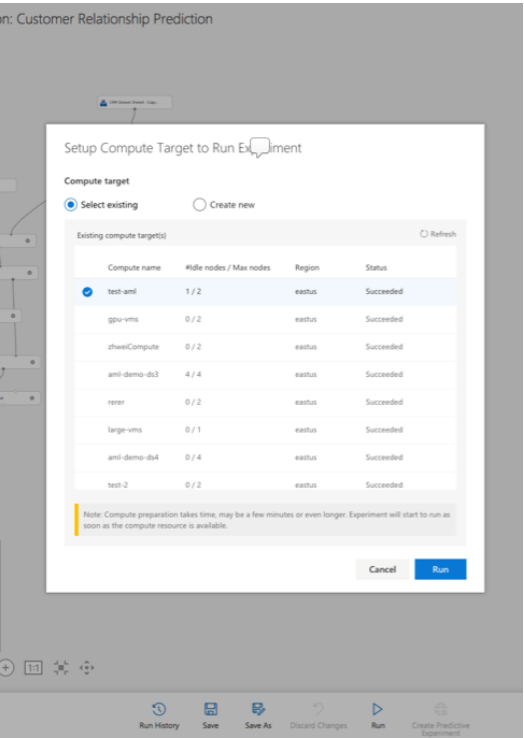
Compute name	#Idle nodes / Max nodes	Region	Status
<input checked="" type="checkbox"/> test-aml	1 / 2	eastus	Succeeded
gpu-vm	0 / 2	eastus	Succeeded
zhweiCompute	0 / 2	eastus	Succeeded
aml-demo-ds3	4 / 4	eastus	Succeeded
rerer	0 / 2	eastus	Succeeded
large-vm	0 / 1	eastus	Succeeded
aml-demo-ds4	0 / 4	eastus	Succeeded
test-2	0 / 2	eastus	Succeeded

Note: Compute preparation takes time, may be a few minutes or even longer. Experiment will start to run as soon as the compute resource is available.

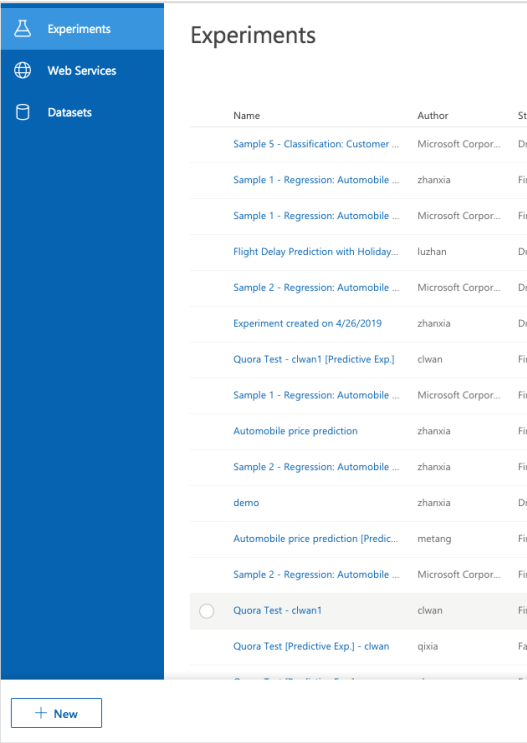
Cancel Run

Fully Integrated with AML Service

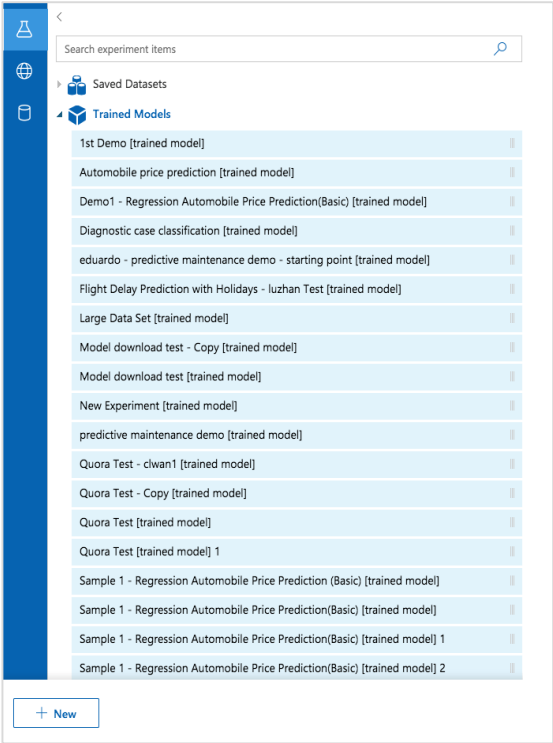
Computes



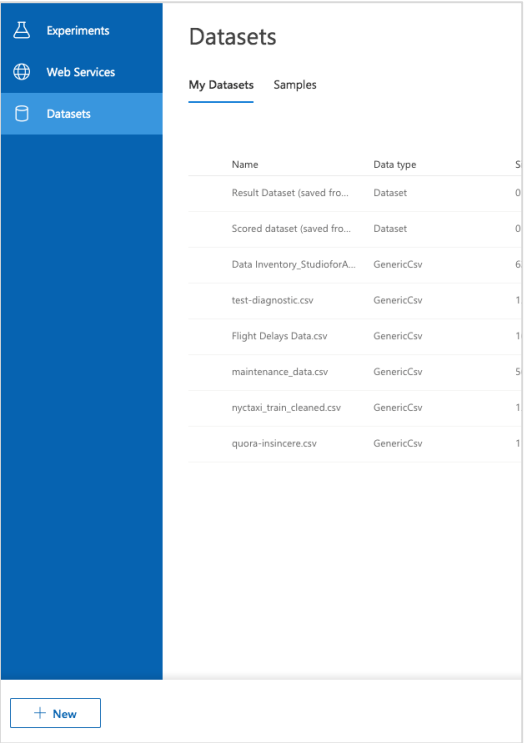
Experiments



Models



Web Services



Visual Interface



Fully Integrated with AML Service

Computes

Compute		
<div>+ Add Compute Refresh Delete Detach</div>		
NAME	TYPE	PROVISIONING STATUS
DefaultAKS	Kubernetes Service	Succeeded
Secure-AKS	Kubernetes Service	Failed
mem140GB	Machine Learning Compute	Succeeded (0 node)
Basic	Machine Learning Compute	Succeeded (0 node)
default-compute	Machine Learning Compute	Succeeded (0 node)
test-compute	Machine Learning Compute	Succeeded (0 node)

Experiments

Experiments		
<div>Refresh</div>		
NAME		
Quora_Test_-_clwan1_Predictive_Exp_		
Automobile_price_prediction_Predict		
Automobile_price_prediction		
Experiment_created_on_4_24_2019		
Quora_Test_-_clwan1		
Quora_Test_Predictive_Exp_-_clwan		
Sample_3_-_Classification_Credit_Ri		
Quora_Test_-_Copy_Predictive_Exp_		
Experiment_created_on_4_18_2019		
Quora_Test_-_Copy		
Quora_Test_Predictive_Exp_		
Quora_Test		
Tutorial_-_Predict_Automobile_Price_		
Tutorial_-_Predict_Automobile_Price		
Taxi_Weather_Join_Test		
Experiment_created_on_4_16_2019		

Models

Models		
<div>Refresh Create Image Add Model Delete</div>		
NAME	VERSION	DESCRIPTION
amlstudio-sample-1---regress...	3	Sample 1 - Regression: Autom
amlstudio-quora-test---clwan1	1	Quora Test - clwan1 [Predictiv
amlstudio-sample-2---regres...	2	Sample 2 - Regression: Autom
amlstudio-automobile-price...	1	Automobile price prediction [f
amlstudio-eduardo---predicti...	1	eduardo - predictive maintene
amlstudio-quora-test---predicti	1	Quora Test [Predictive Exp.]
amlstudio-tutorial---predict-a	2	Tutorial - Predict Automobile
amlstudio-tutorial---predict-a	1	Tutorial - Predict Automobile
amlstudio-predictive-mainte...	1	predictive maintenance demo
AutoML4646c1e90best	1	Automated Machine Learning

Web Services

Deployments		
<div>Refresh Edit Delete</div>		
NAME	LAST UPDATED	
amlstudio-7d3998f76b27448ea...	04/28/2019, 6:41:25 AM UTC	S
amlstudio-0b43d7388e4c461e...	04/26/2019, 3:07:20 AM UTC	C
amlstudio-88349c67064d474e...	04/25/2019, 9:52:44 AM UTC	S
amlstudio-b8fe35b8a9a5467eb...	04/25/2019, 4:20:42 AM UTC	A
amlstudio-26696e005d1e420e...	04/18/2019, 10:03:22 PM UTC	e
amlstudio-77eb563356ac4cd9...	04/18/2019, 11:58:12 AM UTC	C
amlstudio-d63f4bf44ea94b698...	04/18/2019, 6:04:58 AM UTC	T
amlstudio-caf3ecf6056b48eaa...	04/18/2019, 3:18:51 AM UTC	p
amlstudio-eea1c27db7a649329...	04/15/2019, 2:03:49 AM UTC	N
amlstudio-3ab57ae936f548dd...	04/03/2019, 4:48:03 AM UTC	S



Easy Deployment

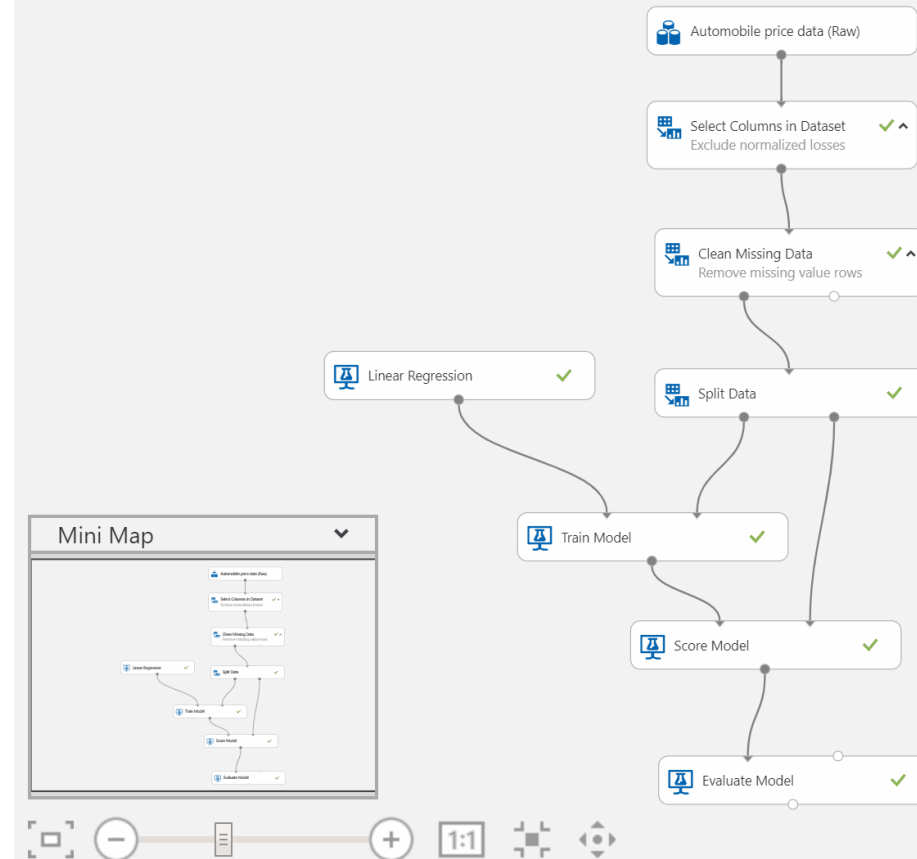
- A few clicks
- Automatic generate scoring file
- Model registration
- Build image
- AKS for scale

Preview) for Azure Machine Learning service

demo_workspace (East US)

Automobile price prediction

Finished



Run History

Save

Save As

Discard Changes

Run

Predictive Web
Service



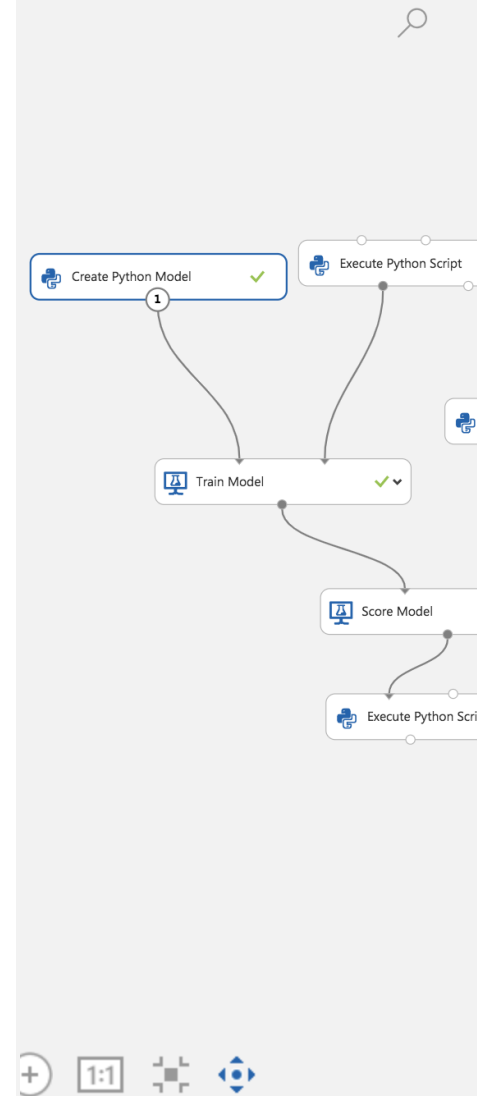
Demo – Easy Deployment

Custom Code

Run Python code

Create Model

on - PyModel Finished running ✓



Properties

▲ Create Python Model

Python script

```
2 from __future__ import print_function
3 import pickle
4 import time
5 import math
6 import csv
7 import sys
8 from PIL import Image
9 import io
10
11 import pandas as pd
12 import pyarrow.parquet as pq
13 import torch
14 import torch.nn as nn
15 import torch.optim as optim
16 import torch.nn.functional as F
17 from torch.utils.data import DataLoader
18 from torch.utils.data import Dataset
19 import torchvision.transforms as transforms
20
21
22 class CNNSetting:
```

Start time 4/25/2019 6:38:32 PM
End time 4/25/2019 6:38:59 PM
Elapsed time 0:00:26.999
Status code Finished
Status details None

[View output log](#)

? Quick Help



History

Save

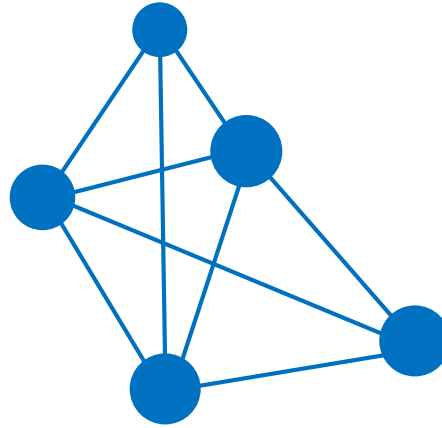
Save As

Discard Changes

Run

Create Predictive
Experiment

Azure Machine Learning Service



Simplify machine learning for any skill level

Learn More



Start Free

Build, train, and deploy models
with an Azure free account

<https://azure.microsoft.com/free>



Documentation

Dig into our technical
documentation

<https://aka.ms/zero-code-ml>



Give feedback

Tell us what you think, ask for a
feature

https://aka.ms/AzureML_feedback



Thank you!