



# Azure ML Studio - Overview

Citizen Analytics – An Initiative by Data Science Team

START ►

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# Learning Objectives

By the end of this module, you will be able to:



01

Understand the concept of Azure Machine Learning and Machine Learning Studio (classic).

02

Differentiate between Azure Machine Learning and Machine Learning Studio (classic).

03

Identify the components available in Azure Machine Learning Studio.

# Content

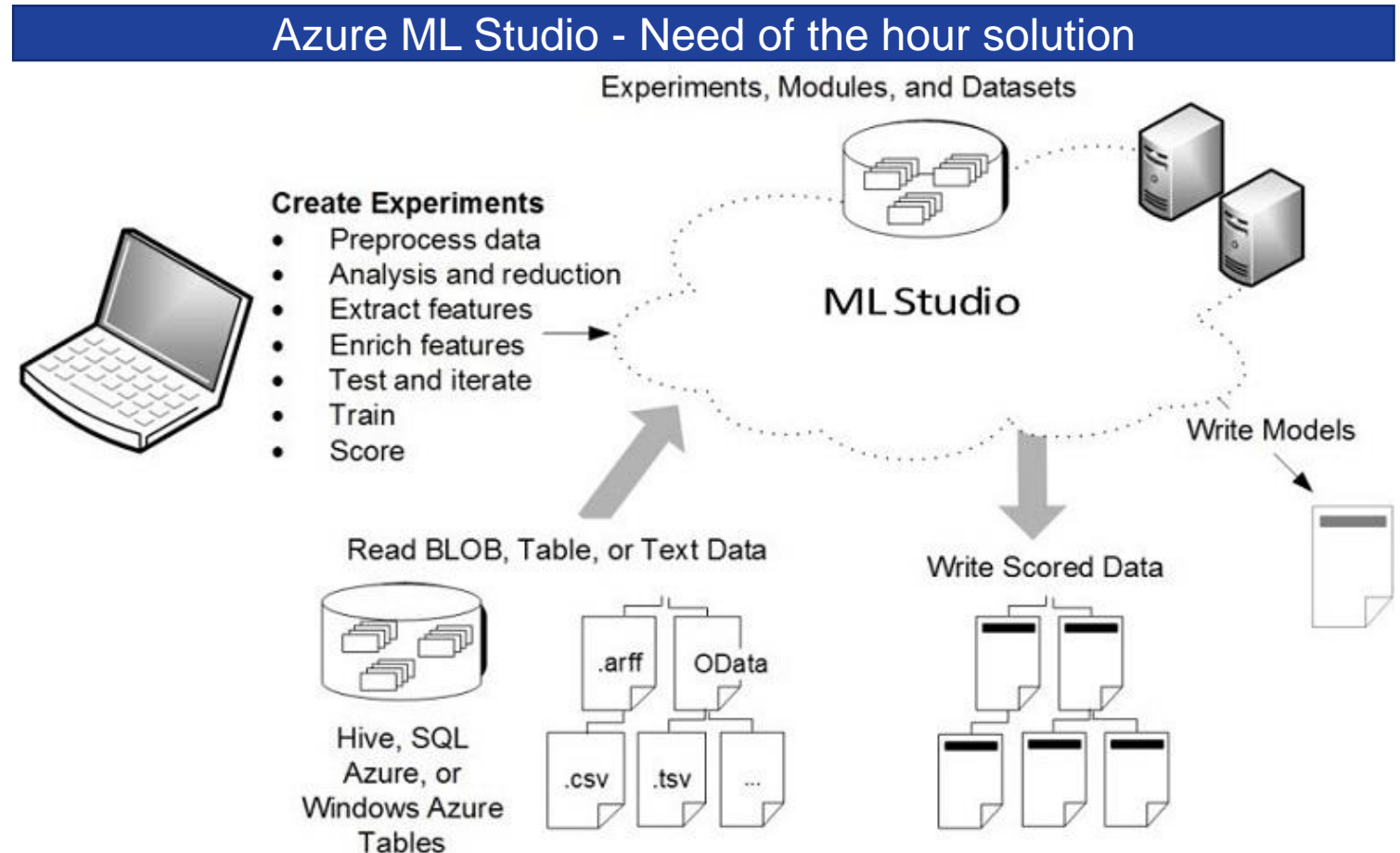
<b>01. Azure ML Studio</b>	<b>04</b>	<b>04. Components</b>	<b>35</b>
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b. What is Azure ML?		b. Experiments, Web Services	
c. Why Azure ML Studio (Classic)?		c. Datasets, Deployments, Trained Models	
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# Azure ML Studio

# Current challenges with advanced analytics projects

There is a huge demand for advanced analytics projects, but below are the constraints which organization is facing currently:

- The need for people with a **very specific, very expensive and a very hard-to-come-by** skillset.
- The **tools and methods to develop machine learning applications** are often **very expensive** and have historically led to projects that take months to develop and implement.
- Models are typically developed and consumed in a **very specific programming language for a very specific application** and are not regularly available for use across the organization.





# What is Azure ML?

- Azure ML is an **end-to-end, cloud-based, advanced/predictive analytics platform**.
- Azure ML allows users to **import training data, build, train, and deploy machine learning models, and even predict outcomes and cluster data all from a simple web browser**.
- Provide a large library of **pre-built machine learning algorithms** and modules
- Allows for extending models with custom **build R and Python code**
- Once deployed, the model can then be accessed from almost anywhere including **custom applications, web sites, Azure Data Factory, Excel and Power BI**

## There are 2 versions of Azure ML available:

- Machine Learning Studio (classic)
- Azure Machine Learning

Microsoft Azure Machine Learning (Classic)

Microsoft Azure Machine Learning Studio (classic) TEST user 5-Free-Workspa... ?

PROJECTS EXPERIMENTS WEB SERVICES DATASETS TRAINED MODELS SETTINGS

experiments

MY EXPERIMENTS SAMPLES

	NAME	AUTHOR	STATUS	LAST EDITED	PROJECT
	Logistic Regression 2 cl...	TEST.USER5	Finished	5/4/2020 9:49:13 PM	None
	Two class logistic regre...	TEST.USER5	Draft	4/28/2020 9:15:15 AM	None
	Comparison of feature ...	TEST.USER5	Draft	4/23/2020 7:02:16 PM	None
	NLP Customer complai...	TEST.USER5	Finished	4/19/2020 8:42:59 PM	None
	Recommendation - Res...	TEST.USER5	Draft	4/19/2020 6:03:02 PM	None
	Fisher based feature se...	TEST.USER5	Draft	4/19/2020 4:04:02 PM	None
	Wine quality - Feature ...	TEST.USER5	Draft	4/19/2020 3:48:04 PM	None
	Join Data	TEST.USER5	Draft	4/19/2020 1:17:35 PM	None
	Principal component a...	TEST.USER5	Draft	4/19/2020 1:08:20 PM	None
	Normalize data	TEST.USER5	Draft	4/19/2020 12:56:37 PM	None
	SMOTE - Loan	TEST.USER5	Draft	4/19/2020 12:45:22 PM	None
	Missing value imputati...	TEST.USER5	Draft	4/19/2020 12:17:21 PM	None
	Data Processing	TEST.USER5	Finished	4/19/2020 9:37:46 AM	None
	K Means clustering -As...	TEST.USER5	Finished	4/18/2020 10:39:51 PM	None
	K Means clustering -Ca...	TEST.USER5	Draft	4/18/2020 10:32:49 PM	None
	Decision Tree Regressi...	TEST.USER5	Draft	4/18/2020 8:19:14 PM	None
	Linear Regression - OG...	TEST.USER5	Draft	4/18/2020 7:40:24 PM	None

+ NEW DELETE ADD TO PROJECT

Flowchart diagram illustrating a machine learning pipeline:

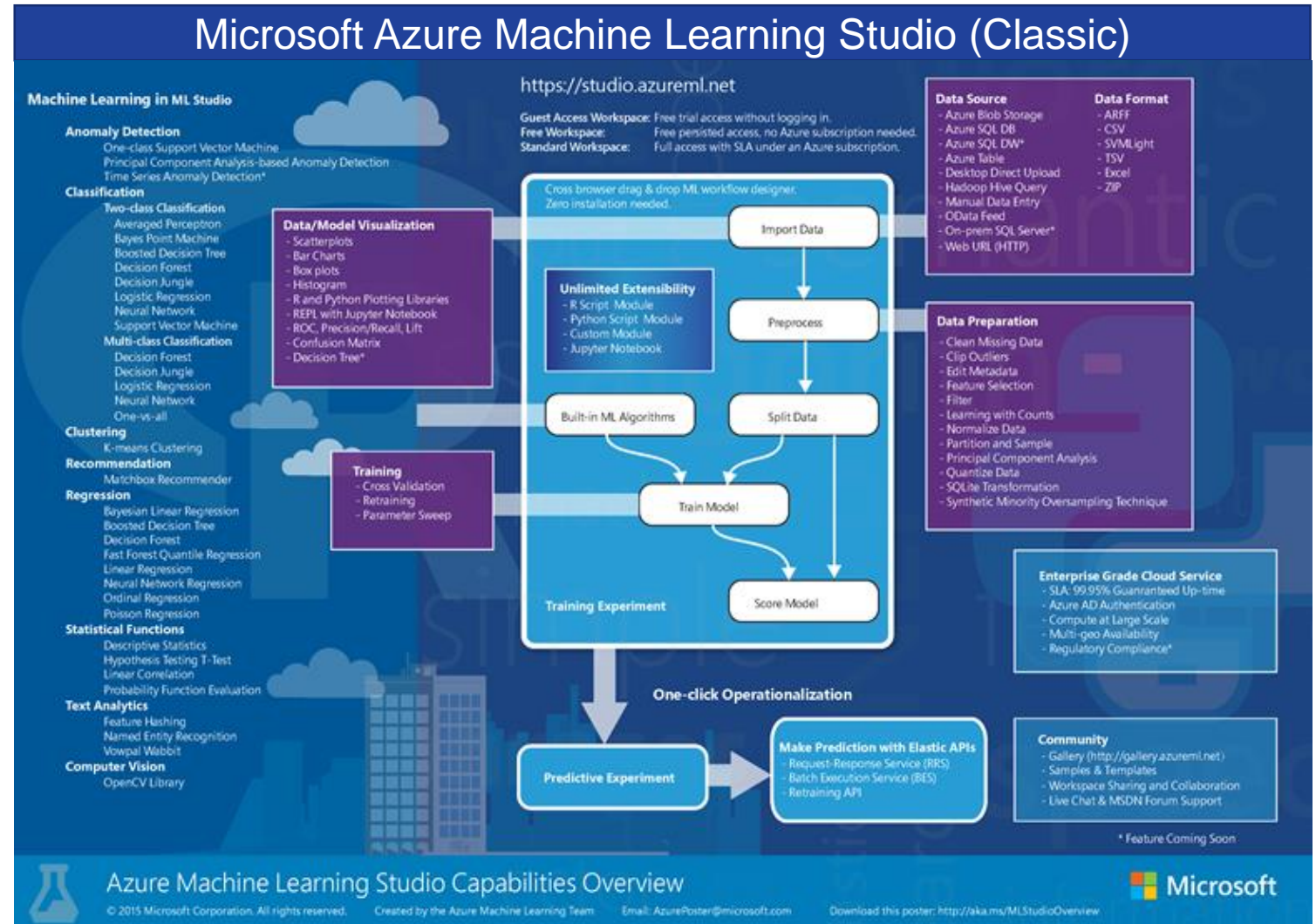
- Import Data
- Clean Missing Data
- Apply Math Operation
- Split Data
- Train Model
- Evaluate Model
- Score Model
- Convert to Indicator Values

# Why Azure ML Studio (Classic)?

The most significant reasons to choose Azure ML for Machine Learning solutions

- **Use Machine Learning as a Service**
- **Easy & Flexible building interface**
- **Wide range of supported algorithms**
- **Easy implementation of web services**
- **Great documentation for Machine Learning Solutions**
- **The ability to train/retrain models through APIs**
- **Learn with terabyte-sized data**

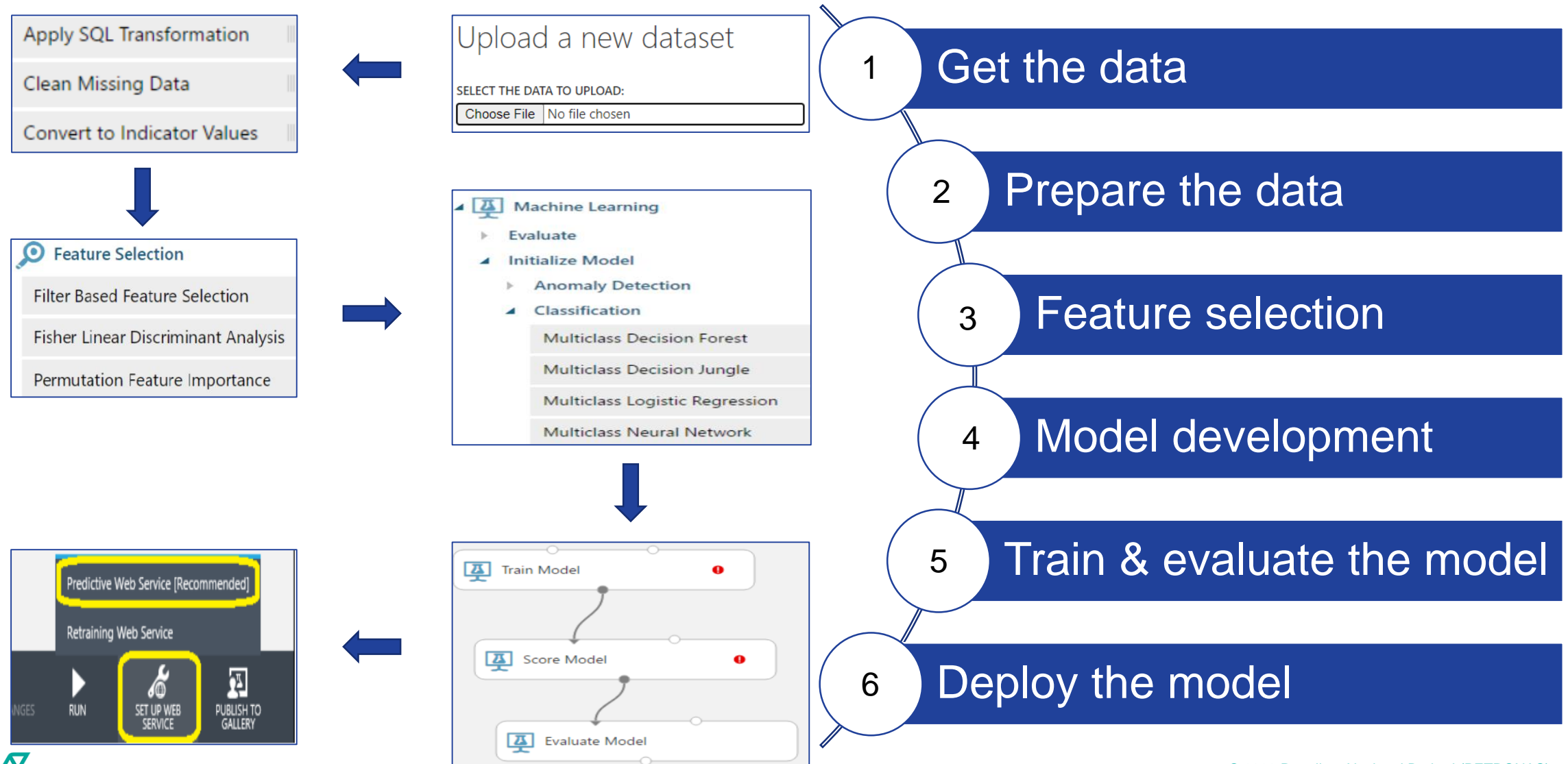
With the above significant reasons, it is obvious for businesses to go ahead with auto ML solutions like Azure ML



# Architecture and concepts



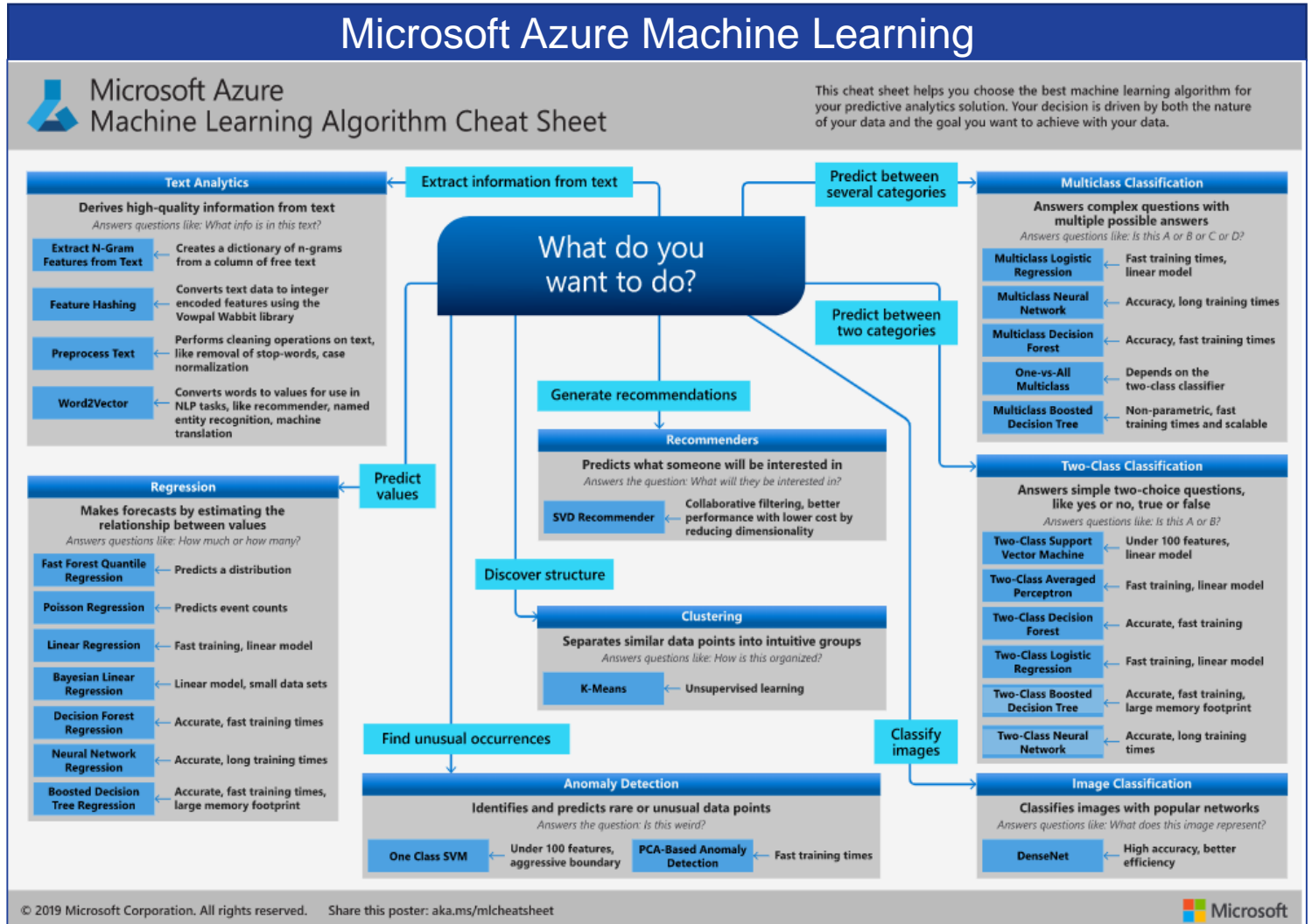
# Azure ML Studio (Classic) - ML Model Workflow



# ML Model: Choose The Best Algorithm

What algorithms should be used?

- **Scenario: Extract information from text**
  - Text analytics
- **Scenario: Predict values**
  - Regression
- **Scenario: Find unusual occurrences**
  - Anomaly Detection
- **Scenario: Discover structures**
  - Clustering
- **Scenario: Generate Recommendations**
  - Recommendation
- **Scenario: Classification**
  - Two-class
  - Multi-class



# Differences: Machine Learning Studio (Classic) vs Azure Machine Learning

<u>Features</u>	<u>Machine Learning Studio (classic)</u>	<u>Azure Machine Learning</u>
01. Drag and drop interface	Supported	Supported
02. Experiment	Scalable (10-GB training data limit)	<b>Scale with compute target</b>
03. Training / Deployment compute	Proprietary compute target, CPU support only	Wide range of customizable <u>training compute targets</u> . <b>Includes GPU and CPU support</b>
04. ML Pipeline	Not supported	Build flexible, modular <u>pipelines</u> to automate workflows
05. MLOps	Basic model management and deployment	Advanced model management and deployment
06. Automated model training and hyperparameter tuning	Not supported	<u>Supported in the SDK and visual workspace</u>
07. Data drift detection	Not supported	<u>Supported in the SDK and visual workspace</u>

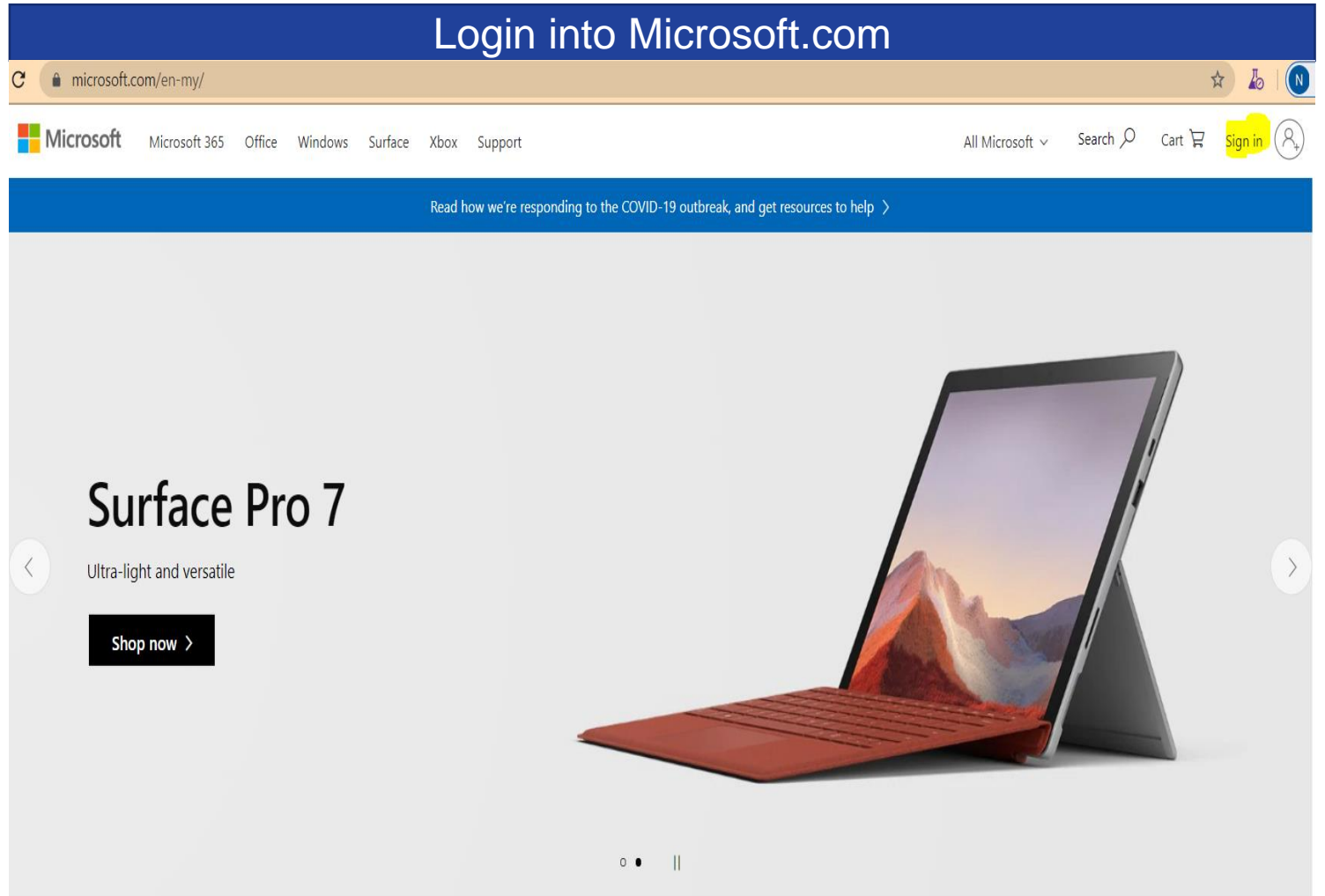
# Getting started with Azure ML



# Create Azure account

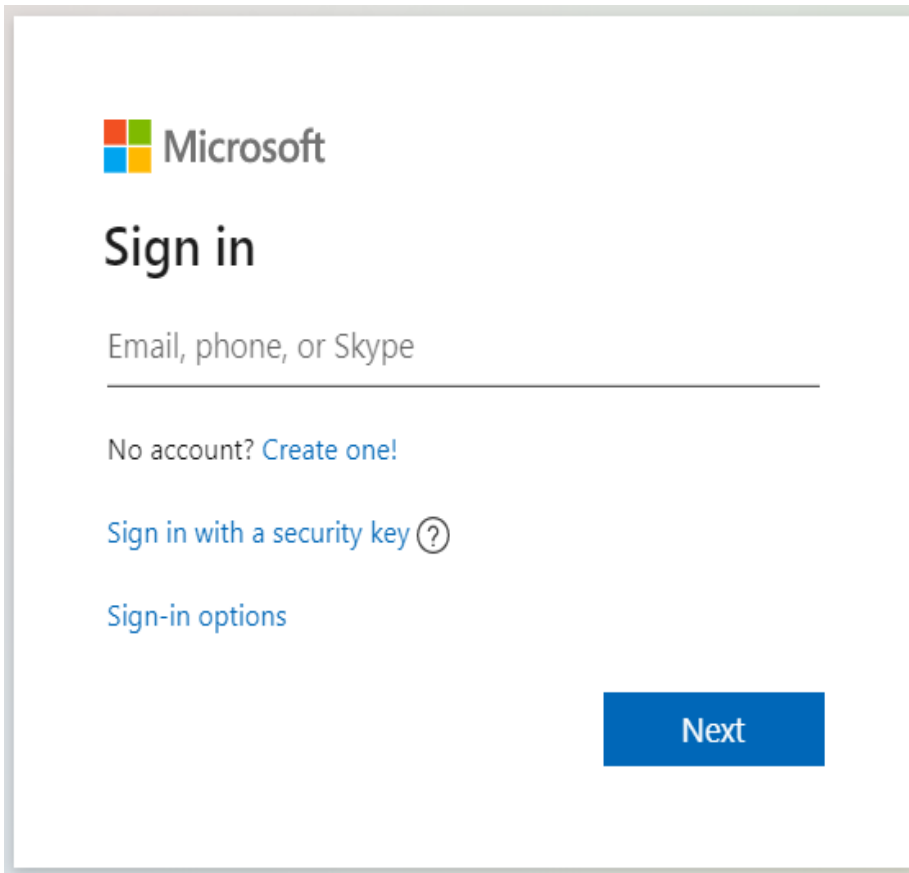
Login into Microsoft.com

Click on “**Sign In**”



# Create Azure account

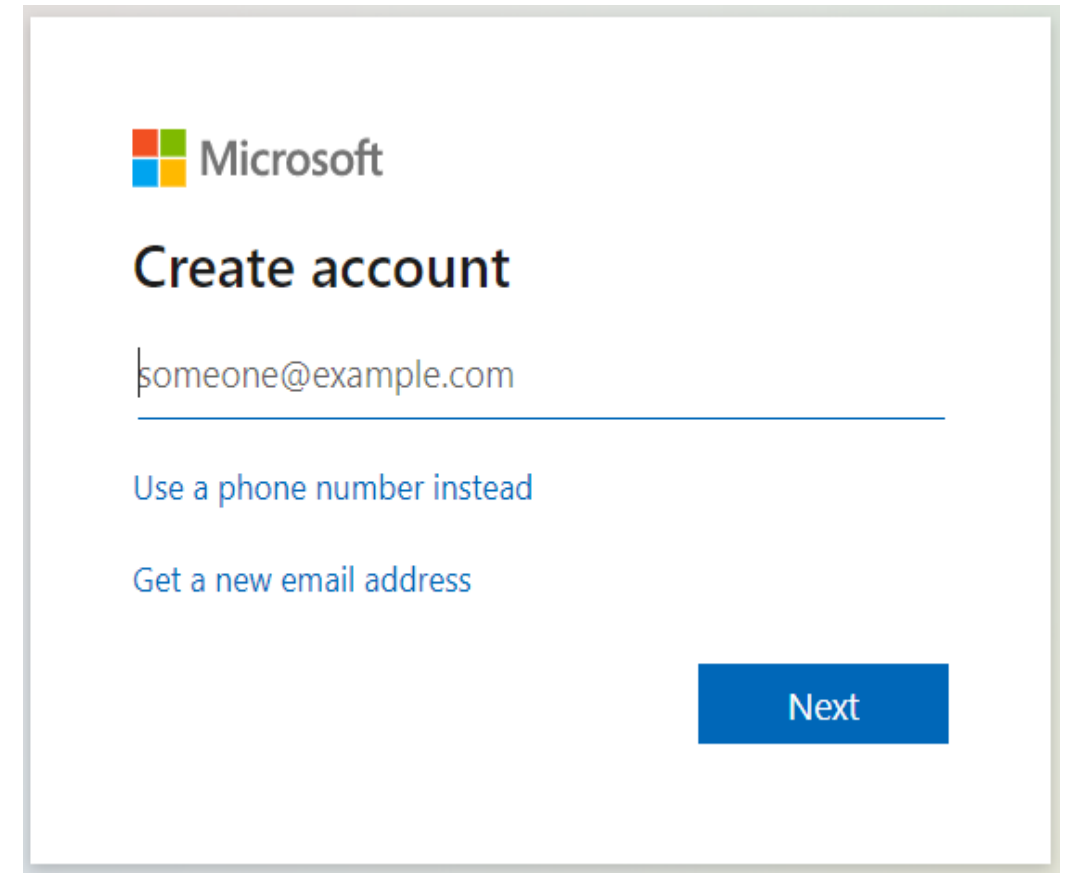
Click on “**Create One**”



The image shows the Microsoft sign-in page. At the top is the Microsoft logo. Below it is the heading "Sign in". There is a text input field with the placeholder text "Email, phone, or Skype". Below the input field, there are three links: "No account? [Create one!](#)", "Sign in with a security key (?)", and "Sign-in options". At the bottom right is a blue button labeled "Next".



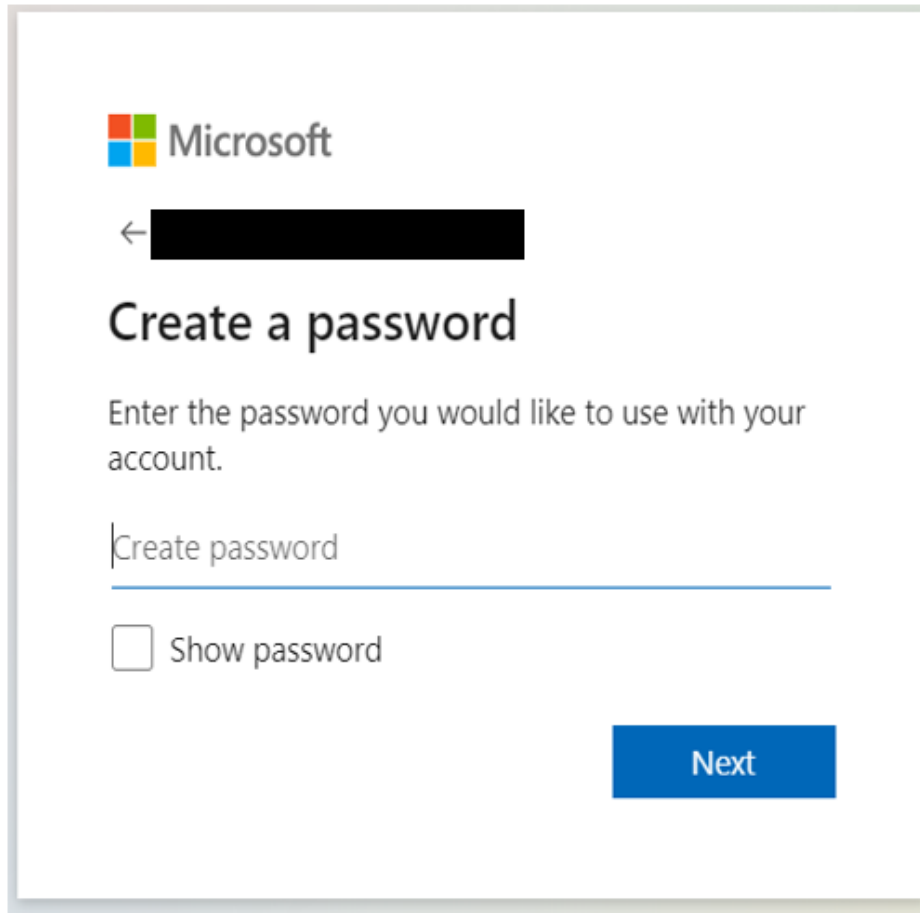
Create a new account. Put your email Id



The image shows the Microsoft "Create account" page. At the top is the Microsoft logo. Below it is the heading "Create account". There is a text input field with the placeholder text "someone@example.com". Below the input field, there are two links: "Use a phone number instead" and "Get a new email address". At the bottom right is a blue button labeled "Next".

# Create Azure account

Enter a password for the account



Microsoft

← [Redacted]

## Create a password

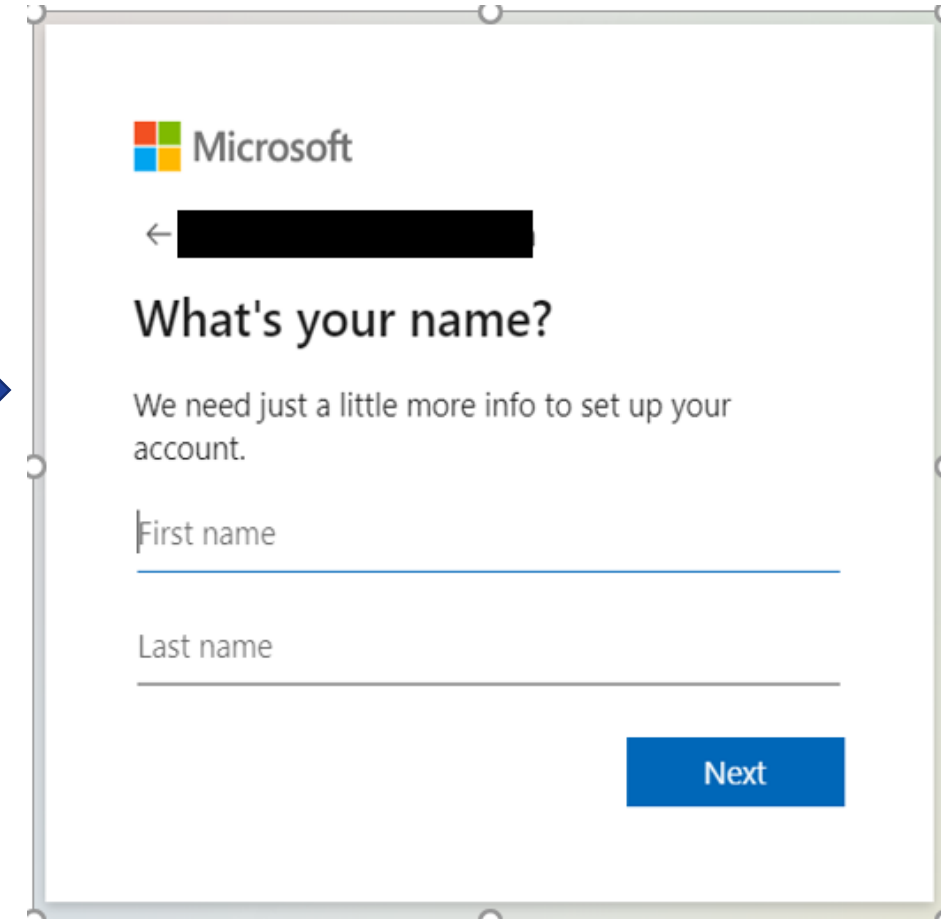
Enter the password you would like to use with your account.

Create password

☐ Show password

Next

Enter account details



Microsoft

← [Redacted]

## What's your name?

We need just a little more info to set up your account.

First name

Last name

Next

# Create Azure account

Provide the account related details



Microsoft

← [Redacted]

## What's your birth date?

We need just a little more info to set up your account.

Country/region

Malaysia ▼

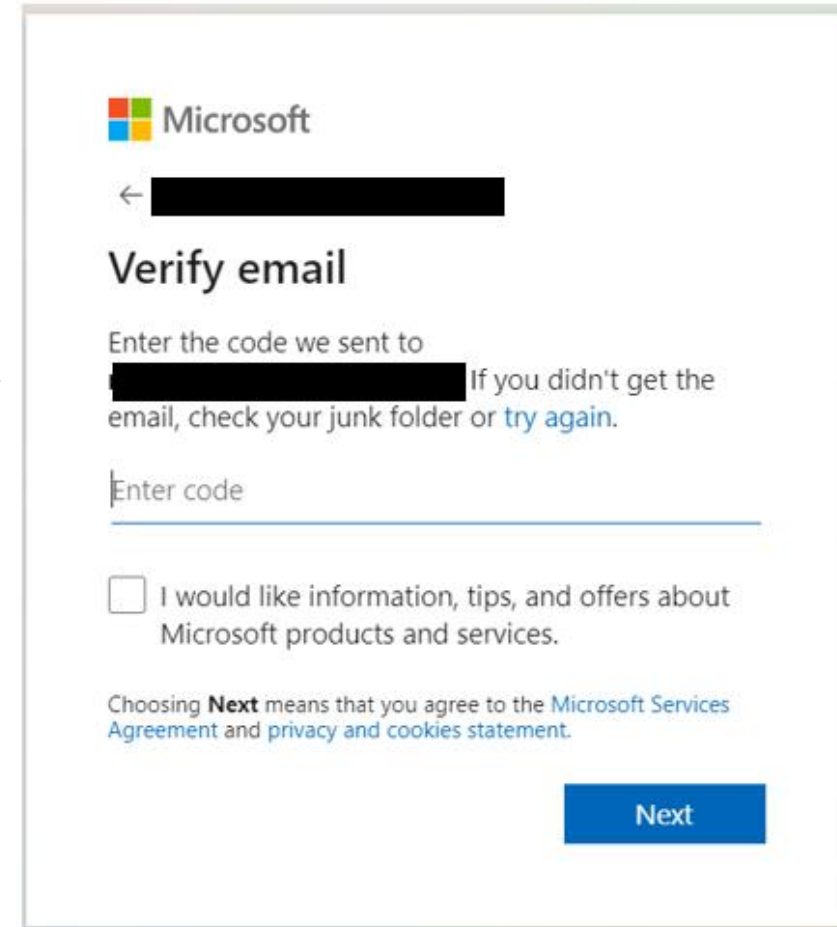
Birthdate

Day ▼ Month ▼ Year ▼

Next



Enter the code sent to your email



Microsoft

← [Redacted]

## Verify email

Enter the code we sent to [Redacted] If you didn't get the email, check your junk folder or [try again](#).

Enter code

☐ I would like information, tips, and offers about Microsoft products and services.


Choosing **Next** means that you agree to the [Microsoft Services Agreement](#) and [privacy and cookies statement](#).



Next



# Create Azure account


Enter CAPTCHA





Create account

Before proceeding, we need to make sure a real person is creating this account.




New


Audio


Enter the characters you see


Next


Account has beensuccessfully created

All Microsoft 


Search 

Cart 


aa 



Sign out



aa aa




My Microsoft account



# Azure Portal

Click on “Microsoft Azure”


[Microsoft 365](#)[Office](#)[Windows](#)[Surface](#)[Xbox](#)[Support](#)

All Microsoft ▾

Search 🔍

Cart 🛒

aa



Software	PCs & Devices	Entertainment	Business	Developer & IT	Other
<a href="#">Windows Apps</a>	<a href="#">Shop Xbox</a>	<a href="#">PC games</a>	<a href="#">Microsoft Azure</a>	<a href="#">.NET</a>	<a href="#">Free downloads &amp; security</a>
<a href="#">OneDrive</a>	<a href="#">PCs &amp; tablets</a>	<a href="#">Windows digital games</a>	<a href="#">Microsoft Dynamics 365</a>	<a href="#">Visual Studio</a>	<a href="#">Education</a>
<a href="#">Outlook</a>	<a href="#">Accessories</a>		<a href="#">Microsoft 365</a>	<a href="#">Windows Server</a>	
<a href="#">Skype</a>			<a href="#">Microsoft Industry</a>	<a href="#">Windows Dev Center</a>	
<a href="#">OneNote</a>			<a href="#">Data platform</a>	<a href="#">Docs</a>	
<a href="#">Microsoft Teams</a>			<a href="#">Microsoft Advertising</a>		
			<a href="#">Licensing</a>		

Surf

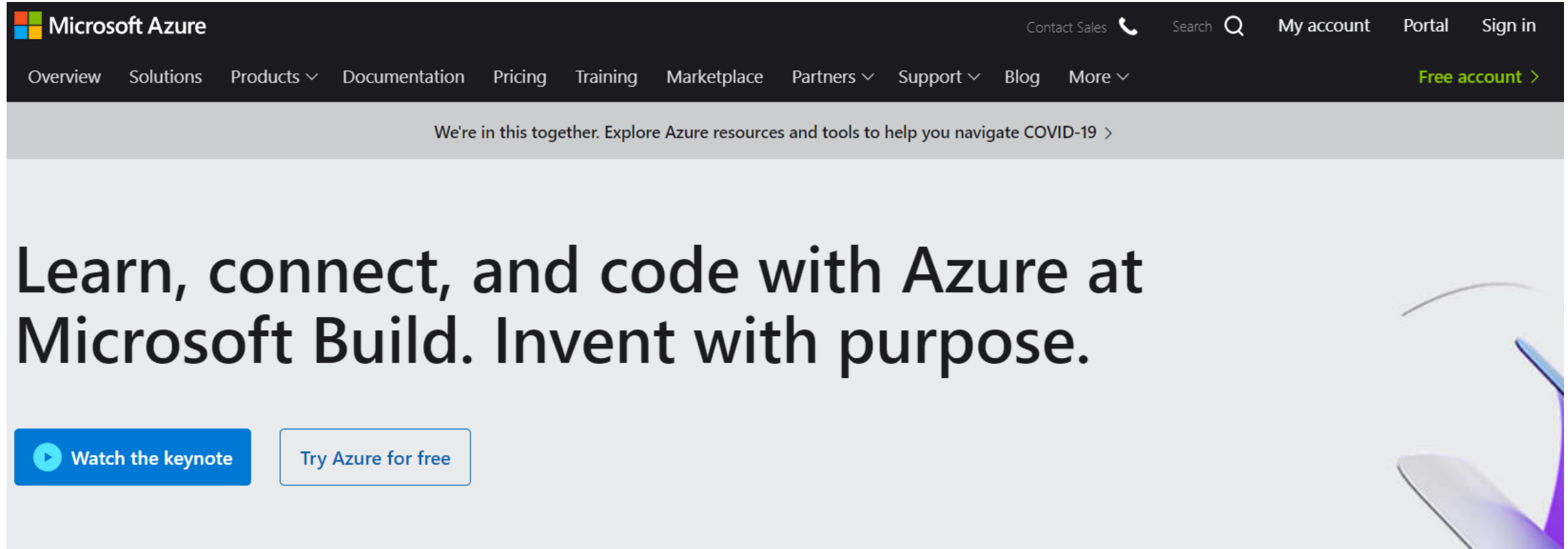
Ultra-light an

Shop now

[VIEW SITEMAP >](#)

# Azure Portal

Click on “Try Azure for free”



The screenshot shows the Microsoft Azure Portal homepage. At the top is a dark navigation bar with the Microsoft Azure logo on the left and links for Contact Sales, Search, My account, Portal, and Sign in on the right. Below this is a secondary navigation bar with links for Overview, Solutions, Products, Documentation, Pricing, Training, Marketplace, Partners, Support, Blog, and More. A green 'Free account' link is on the far right. A light gray banner below the navigation bar contains the text: 'We're in this together. Explore Azure resources and tools to help you navigate COVID-19'. The main content area features a large heading: 'Learn, connect, and code with Azure at Microsoft Build. Invent with purpose.' Below the heading are two buttons: a blue button with a play icon and the text 'Watch the keynote', and a white button with a blue border and the text 'Try Azure for free'. On the right side of the main content area, there is a partial view of a purple and blue abstract graphic.

Microsoft Azure

Contact Sales Search My account Portal Sign in

Overview Solutions Products Documentation Pricing Training Marketplace Partners Support Blog More

Free account >

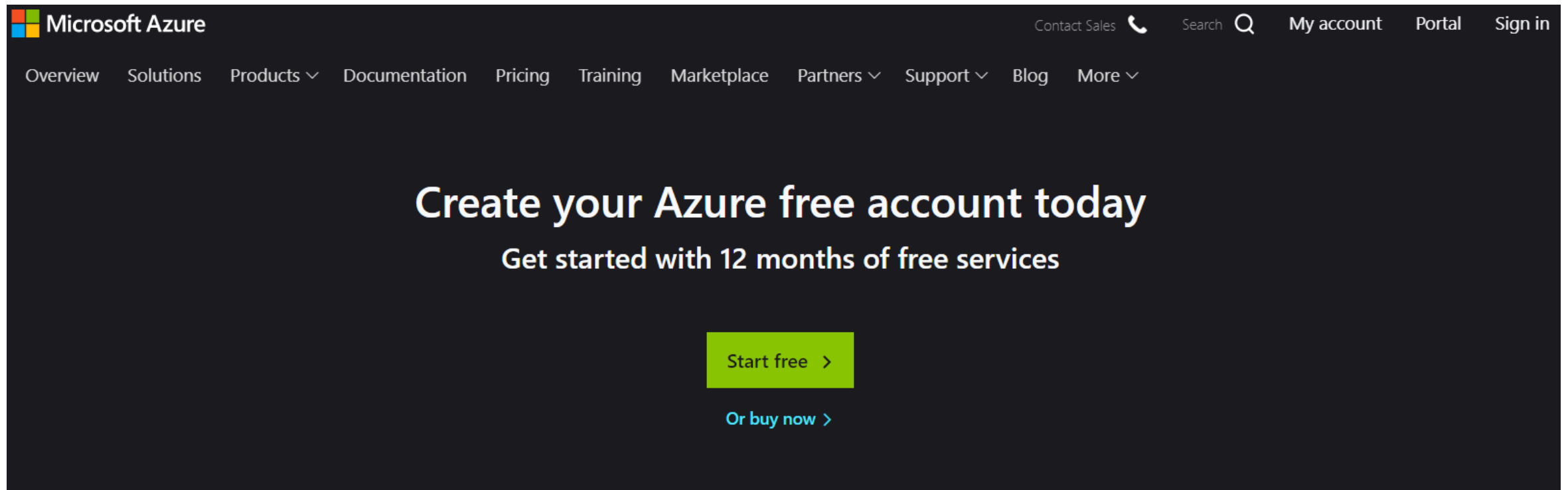
We're in this together. Explore Azure resources and tools to help you navigate COVID-19 >

## Learn, connect, and code with Azure at Microsoft Build. Invent with purpose.

Watch the keynote Try Azure for free

# Azure Portal

Click on “**Start free**”



The screenshot shows the Microsoft Azure website homepage. At the top, the Microsoft Azure logo is on the left, and navigation links for 'Contact Sales', 'Search', 'My account', 'Portal', and 'Sign in' are on the right. Below this is a horizontal menu with links for 'Overview', 'Solutions', 'Products', 'Documentation', 'Pricing', 'Training', 'Marketplace', 'Partners', 'Support', 'Blog', and 'More'. The main content area has a dark background with the text 'Create your Azure free account today' and 'Get started with 12 months of free services'. A prominent blue button labeled 'Start free >' is centered, with a link 'Or buy now >' below it.

Microsoft Azure

Contact Sales Search My account Portal Sign in

Overview Solutions Products Documentation Pricing Training Marketplace Partners Support Blog More

Create your Azure free account today

Get started with 12 months of free services

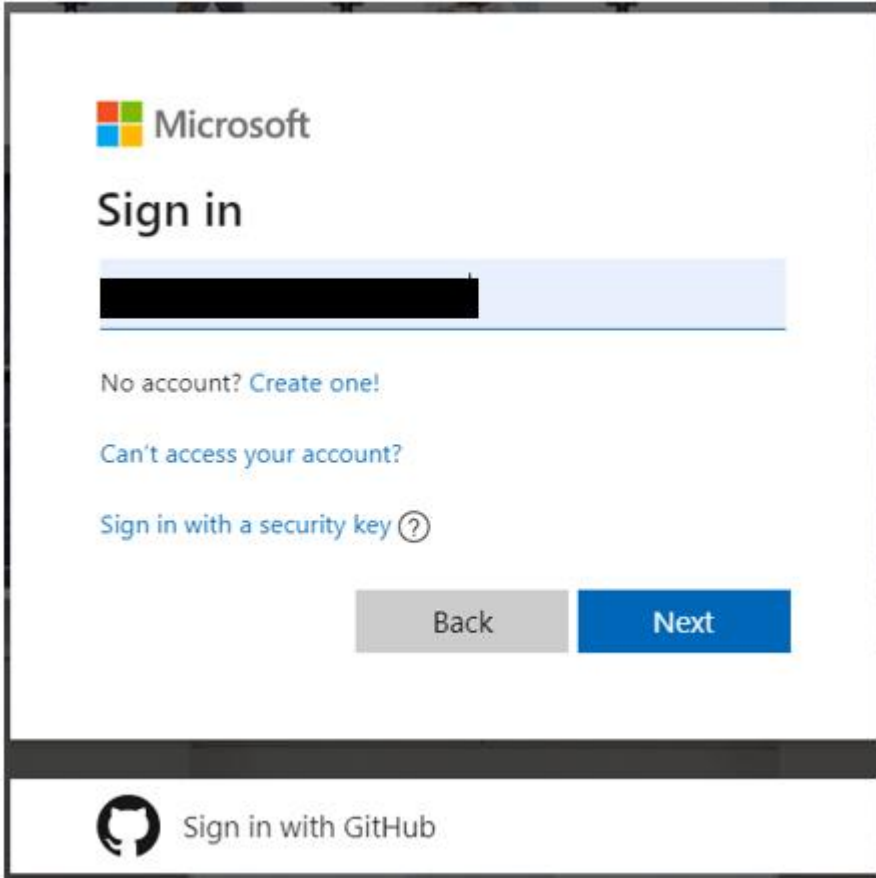
Start free >

Or buy now >



# Azure Portal

“Sign in” with newly created account



Microsoft


## Sign in

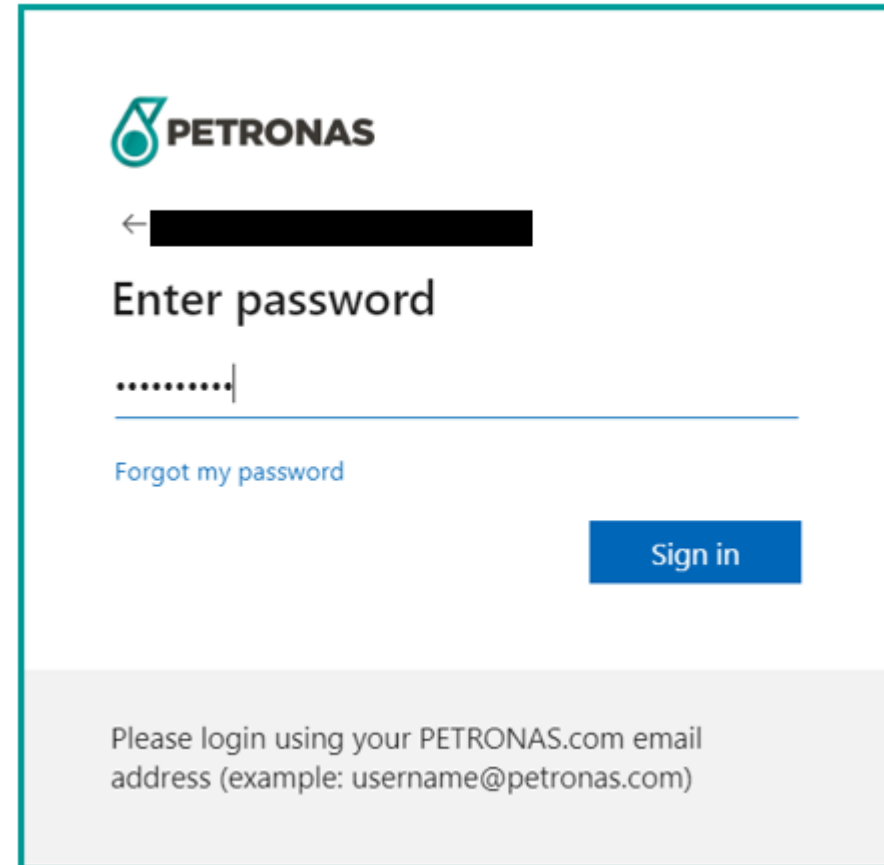
[No account? Create one!](#)


[Can't access your account?](#)

[Sign in with a security key ?](#)

[Back](#) [Next](#)

 Sign in with GitHub





## Enter password

[Forgot my password](#)

[Sign in](#)

Please login using your PETRONAS.com email address (example: username@petronas.com)

# Azure Portal


Provide the below details

Microsoft Azure

@petronas.com Sign out

Try Azure for free

Follow these steps to get started. We ask for these details to protect your account and information. There are no upfront charges or fees.



1 About you

Country/Region ⓘ  
Malaysia  
Choose the location that matches your billing address. **You cannot change this selection later.** If your country is not listed, the offer is not available in your region. [Learn More](#)

First name  
[Redacted]

Last name  
[Redacted]

Email address ⓘ  
[Redacted]

Phone  
[Redacted]

What's included

✓ 12 months of free products  
Get free access to popular products like *virtual machines*, *storage*, and *databases* in your first 30 days, and for 12 months after you upgrade your account to pay-as-you-go pricing.

✓ RM850 credit  
Use your RM850 credit to experiment with any Azure service in your first 30 days—beyond the free product amounts.


✓ 25+ always-free products  
Take advantage of more than 25 products, including *serverless*, *containers*, and *artificial intelligence*, that are always free. Get these in your first 30 days, and always—once you choose to upgrade.

# Azure Portal

Provide a confirmation for “**Agreement**”

Try Azure for free

Follow these steps to get started. We ask for these details to protect your account and information. There are no upfront charges or fees.



1 About you

2 **Agreement**

☐ I agree to the [subscription agreement](#), [offer details](#), and [privacy statement](#).

☐ I would like information, tips, and offers from Microsoft or selected partners about Azure, including Azure Newsletter, Pricing updates, and other Microsoft products and services.

Sign up

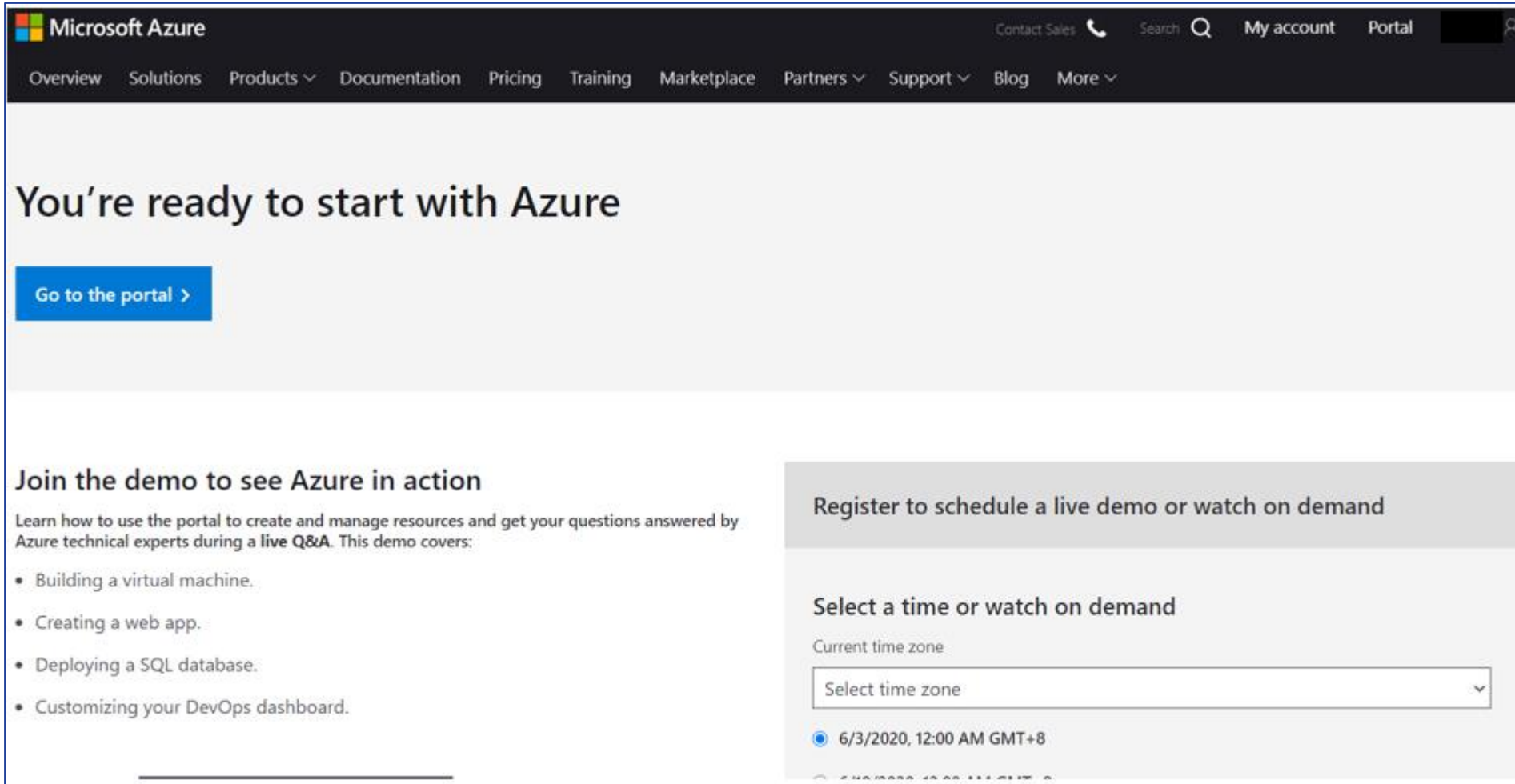
What's included

☒ **12 months of free products**  
Get free access to popular products like *virtual machines*, *storage*, and *databases* in your first 30 days, and for 12 months after you upgrade your account to pay-as-you-go pricing.

☒ **RM850 credit**  
Use your RM850 credit to experiment with any Azure service in your first 30 days—beyond the free product amounts.

# Azure Portal

All set. Click on “Go to the portal”



The screenshot shows the Microsoft Azure Portal landing page. At the top is a dark navigation bar with the Microsoft Azure logo on the left and links for Contact Sales, Search, My account, and Portal on the right. Below this is a secondary navigation bar with links for Overview, Solutions, Products, Documentation, Pricing, Training, Marketplace, Partners, Support, Blog, and More. The main content area has a large heading "You're ready to start with Azure" and a prominent blue button labeled "Go to the portal >". Below this, there's a section titled "Join the demo to see Azure in action" with a paragraph about a live Q&A session and a list of topics: Building a virtual machine, Creating a web app, Deploying a SQL database, and Customizing your DevOps dashboard. To the right of this is a grey box titled "Register to schedule a live demo or watch on demand" which contains a section "Select a time or watch on demand" with a "Current time zone" dropdown menu set to "Select time zone" and a radio button selected for "6/3/2020, 12:00 AM GMT+8".

Microsoft Azure

Contact Sales Search My account Portal

Overview Solutions Products Documentation Pricing Training Marketplace Partners Support Blog More

## You're ready to start with Azure

Go to the portal >

### Join the demo to see Azure in action

Learn how to use the portal to create and manage resources and get your questions answered by Azure technical experts during a **live Q&A**. This demo covers:

- Building a virtual machine.
- Creating a web app.
- Deploying a SQL database.
- Customizing your DevOps dashboard.

### Register to schedule a live demo or watch on demand

#### Select a time or watch on demand

Current time zone

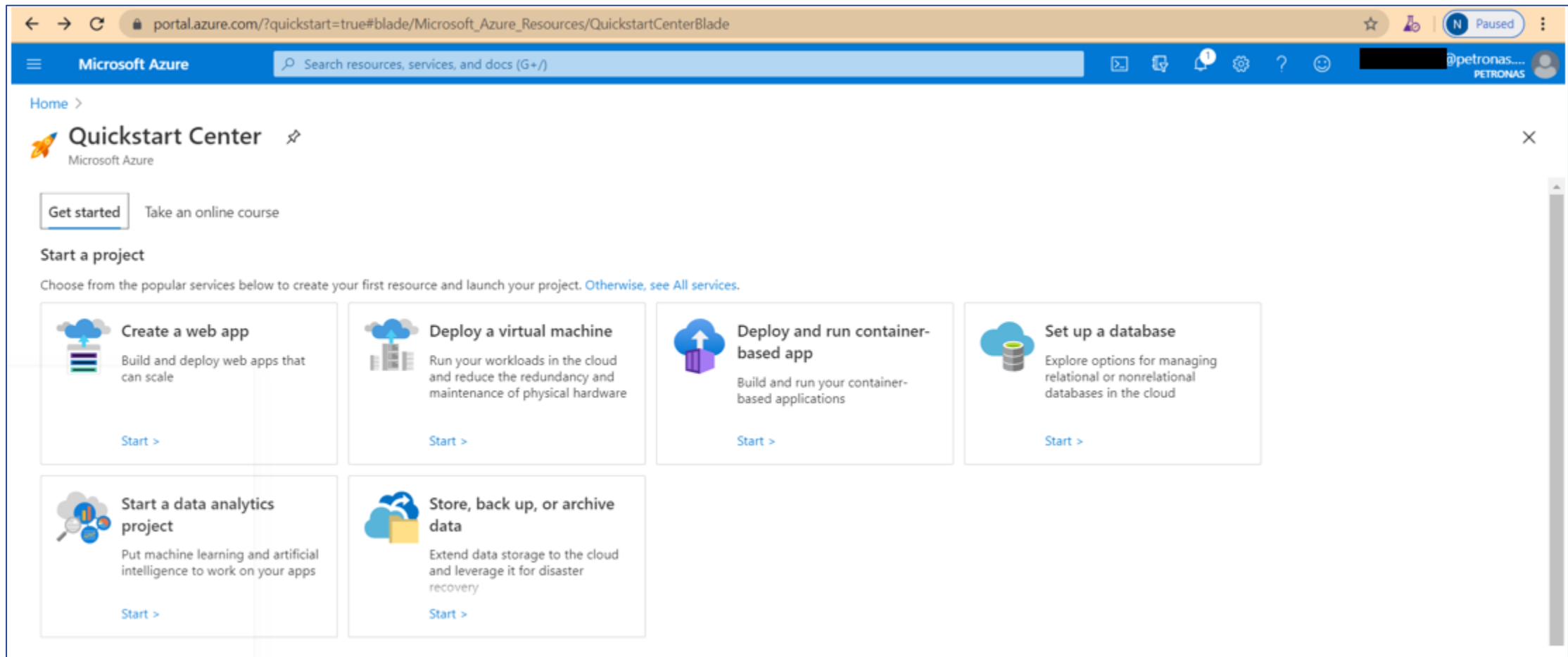
Select time zone

6/3/2020, 12:00 AM GMT+8



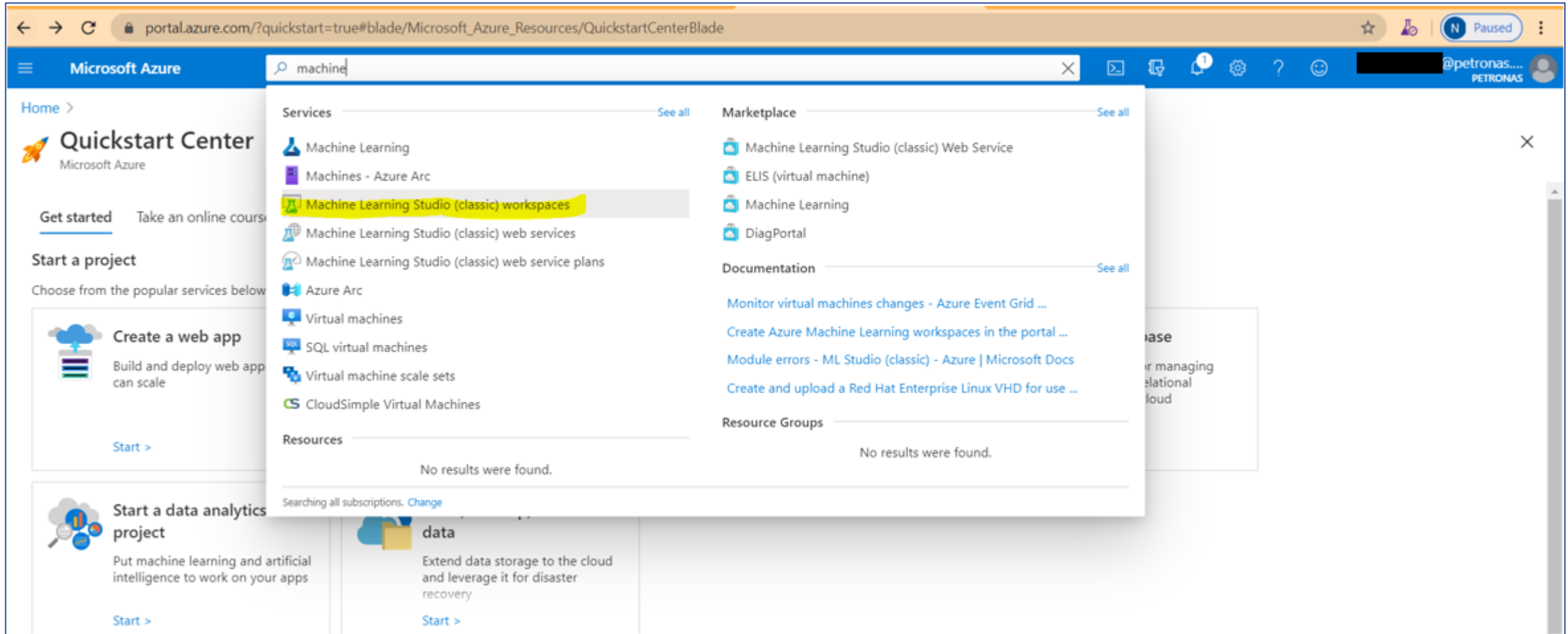
# Azure Portal

Portal.Azure.com will open up



# Azure ML Studio (Classic) - Workspace

Search for “Machine Learning studio (classic) workspaces”



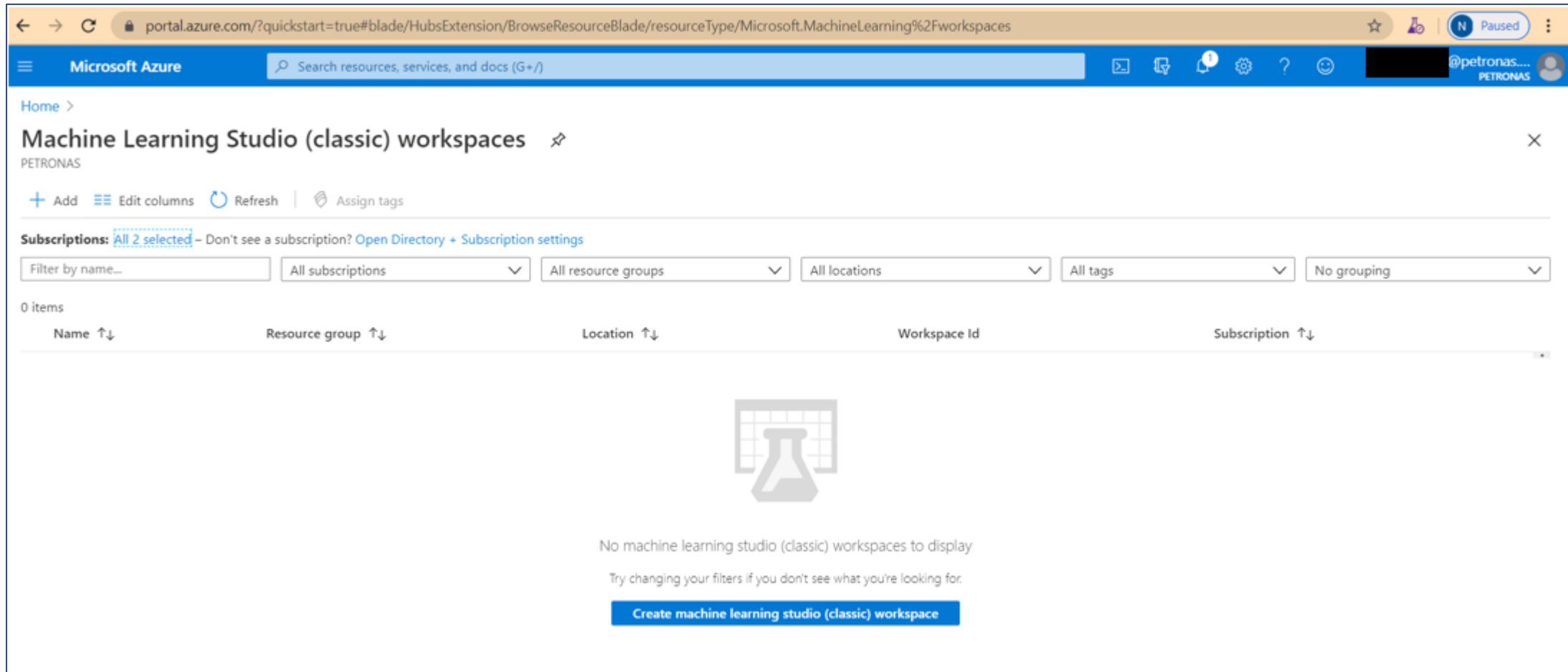
The screenshot shows the Microsoft Azure portal interface. The search bar at the top contains the text "machine". The search results are displayed in a dropdown menu with the following sections:

- Services** (See all)
  - Machine Learning
  - Machines - Azure Arc
  - Machine Learning Studio (classic) workspaces** (highlighted)
  - Machine Learning Studio (classic) web services
  - Machine Learning Studio (classic) web service plans
  - Azure Arc
  - Virtual machines
  - SQL virtual machines
  - Virtual machine scale sets
  - CloudSimple Virtual Machines
- Marketplace** (See all)
  - Machine Learning Studio (classic) Web Service
  - ELIS (virtual machine)
  - Machine Learning
  - DiagPortal
- Documentation** (See all)
  - Monitor virtual machines changes - Azure Event Grid ...
  - Create Azure Machine Learning workspaces in the portal ...
  - Module errors - ML Studio (classic) - Azure | Microsoft Docs
  - Create and upload a Red Hat Enterprise Linux VHD for use ...
- Resource Groups**
  - No results were found.

At the bottom of the search results, it says "Searching all subscriptions. Change".

# Azure ML Studio (Classic) - Workspace

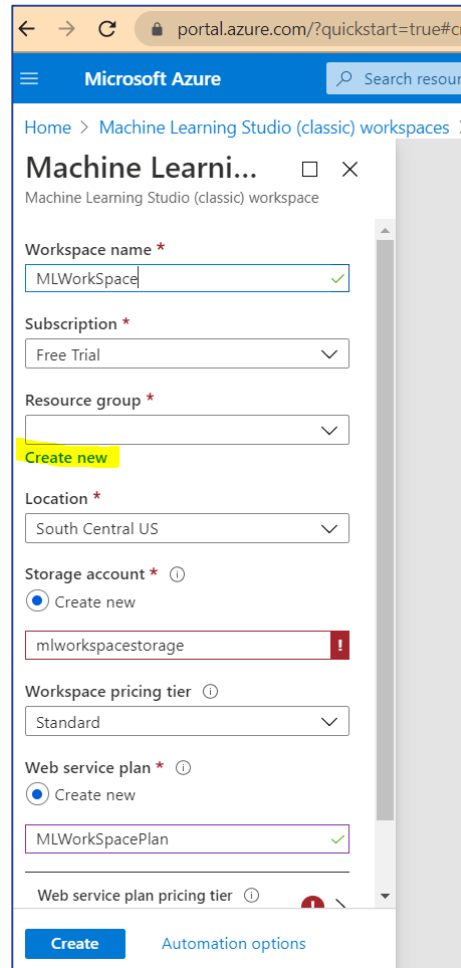
Click on “**Create machine learning studio (classic) workspace**”



The screenshot shows the Azure ML Studio (Classic) workspace page. The browser address bar displays the URL: `portal.azure.com/?quickstart=true#blade/HubsExtension/BrowseResourceBlade/resourceType/Microsoft.MachineLearning%2Fworkspaces`. The page header includes the Microsoft Azure logo and a search bar. The main heading is "Machine Learning Studio (classic) workspaces" with a close button (X). Below the heading, there are options to "Add", "Edit columns", "Refresh", and "Assign tags". A "Subscriptions" section shows "All 2 selected" with a link to "Open Directory + Subscription settings". Below this are several filter dropdowns: "Filter by name...", "All subscriptions", "All resource groups", "All locations", "All tags", and "No grouping". The table below shows 0 items with columns: Name ↑↓, Resource group ↑↓, Location ↑↓, Workspace Id, and Subscription ↑↓. A large blue button at the bottom says "Create machine learning studio (classic) workspace".

# Azure ML Studio (Classic) - Workspace

## Resource Group creation



Microsoft Azure

Home > Machine Learning Studio (classic) workspaces >

### Machine Learning Studio (classic) workspace

Machine Learning Studio (classic) workspace

Workspace name \*  
MLWorkspace ✓

Subscription \*  
Free Trial

Resource group \*  
Create new

Location \*  
South Central US

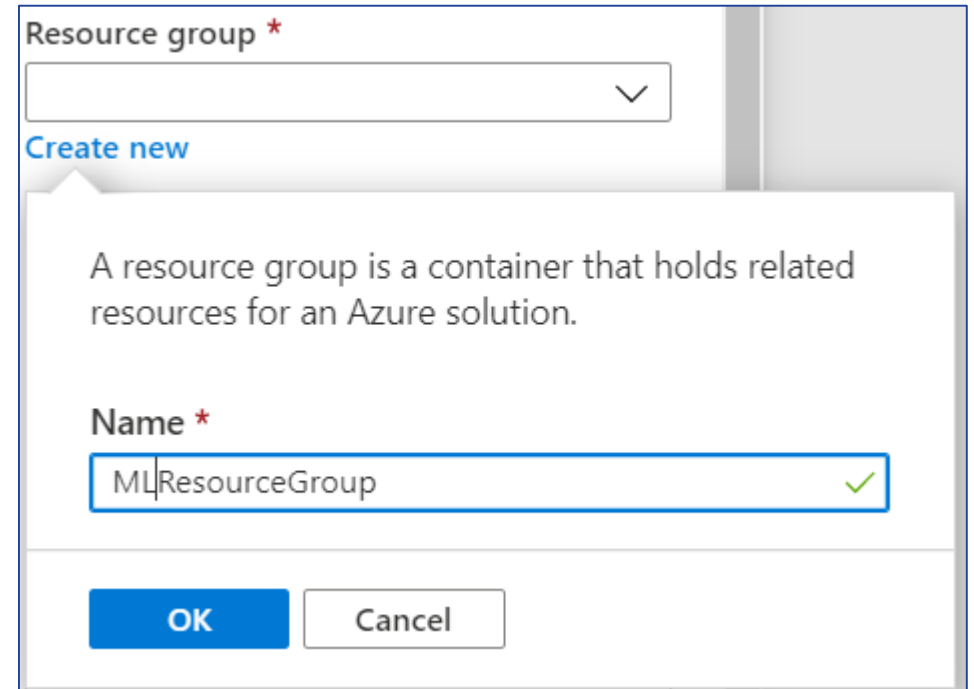
Storage account \* ⓘ  
Create new  
mlworkspacestorage !

Workspace pricing tier ⓘ  
Standard

Web service plan \* ⓘ  
Create new  
MLWorkspacePlan ✓

Web service plan pricing tier ⓘ

Create Automation options



Resource group \*

Create new

A resource group is a container that holds related resources for an Azure solution.

Name \*  
MLResourceGroup ✓

OK Cancel

# Azure ML Studio (Classic) - Workspace

## Choosing the pricing tier

The screenshot shows the 'Choose your pricing tier' modal in the Azure ML Studio (Classic) workspace creation process. The modal displays four pricing tiers: DEVTEST Standard (0.00 MYR/DAY), S1 Standard (13.57 MYR/DAY), S2 Standard (135.49 MYR/DAY), and S3 Standard (12,500 Compute Hours, 50,000,000 Transactions, Manual Scaling). The DEVTEST Standard tier is highlighted with a dashed blue border. The left sidebar shows the subscription (Free Trial), resource group ((New) MLResourceGroup), location (South Central US), storage account (mlworkspacestorage), workspace pricing tier (Standard), and web service plan (MLWorkSpacePlan). The 'Web service plan pricing tier' is currently set to 'No pricing tier selected'.

Pricing Tier	Compute Hours	Transactions	Manual Scaling	Estimated Price (MYR/DAY)
DEVTEST Standard	2	1,000	Manual Scaling	0.00
S1 Standard	25	100,000	Manual Scaling	13.57
S2 Standard	500	2,000,000	Manual Scaling	135.49
S3 Standard	12,500	50,000,000	Manual Scaling	-



The screenshot shows the 'Web service plan pricing tier' dropdown menu in the Azure ML Studio (Classic) workspace creation process. The dropdown is open, showing the 'DevTest Standard' option. The left sidebar shows the subscription (Free Trial), resource group ((New) MLResourceGroup), location (Southeast Asia), storage account (mlstoragepetronas), workspace pricing tier (Standard), and web service plan (MLWorkSpacePlan). The 'Web service plan pricing tier' is currently set to 'No pricing tier selected'.

# Azure ML Studio (Classic) - Workspace

Workspace has been created. Click on the workspace.

Microsoft Azure

Search resources, services, and docs (G+/)

@petronas...  
PETRONAS

Home >

Machine Learning Studio (classic) workspaces

PETRONAS

+ Add

≡ Edit columns

🔄 Refresh

|

🏷️ Assign tags

Subscriptions: All 2 selected – Don't see a subscription? [Open Directory](#) + [Subscription settings](#)

Filter by name...

All subscriptions

All resource groups

All locations

All tags

No grouping

1 items

<input type="checkbox"/> Name ↑↓	Resource group ↑↓	Location ↑↓	Workspace Id	Subscription ↑↓	
<input checked="" type="checkbox"/> MLWorkSpace	MLResourceGroup	Southeast Asia	cac28f06817d493d88127f1b12f22cf8	Free Trial	...



# Azure ML Studio (Classic)

Click on “**Launch Machine Learning Studio (Classic)**”

The screenshot displays the Microsoft Azure ML Workspace (Classic) interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and user profile information. The main content area is divided into a left sidebar, a central workspace, and a right-hand details pane.

**Left Sidebar:** Contains a search bar, a filter by name input, and a list of resources. The 'MLWorkspace' resource is selected.

**Central Workspace:** Displays the 'MLWorkspace' details. The 'Overview' tab is active, showing a search bar, settings, and delete options. The 'Essentials' section lists key information:

- Resource group: [MLResourceGroup](#)
- Status: Enabled
- Location: Southeast Asia
- Subscription name: [Free Trial](#)
- Subscription ID: 05358a25-3322-4423-a7f3-80fd85cf145b

**Right-Hand Details Pane:** Contains a section titled 'Additional Links' with three links:

- [Launch Machine Learning Studio \(classic\)](#)
- [Launch Machine Learning Gallery](#)
- [Launch Machine Learning Studio \(classic\) Web Service Management](#)

# Azure ML Studio (Classic)

Click on “Sign In”

← → ↻ studio.azureml.net

Microsoft Azure Machine Learning Studio (classic)

?

Sign In

New!

Azure Machine Learning service

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Welcome to Azure Machine Learning Studio (classic)

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By using this free version, you agree to be bound by the Microsoft Azure Website Terms of Use.

Announcements **NEW!**

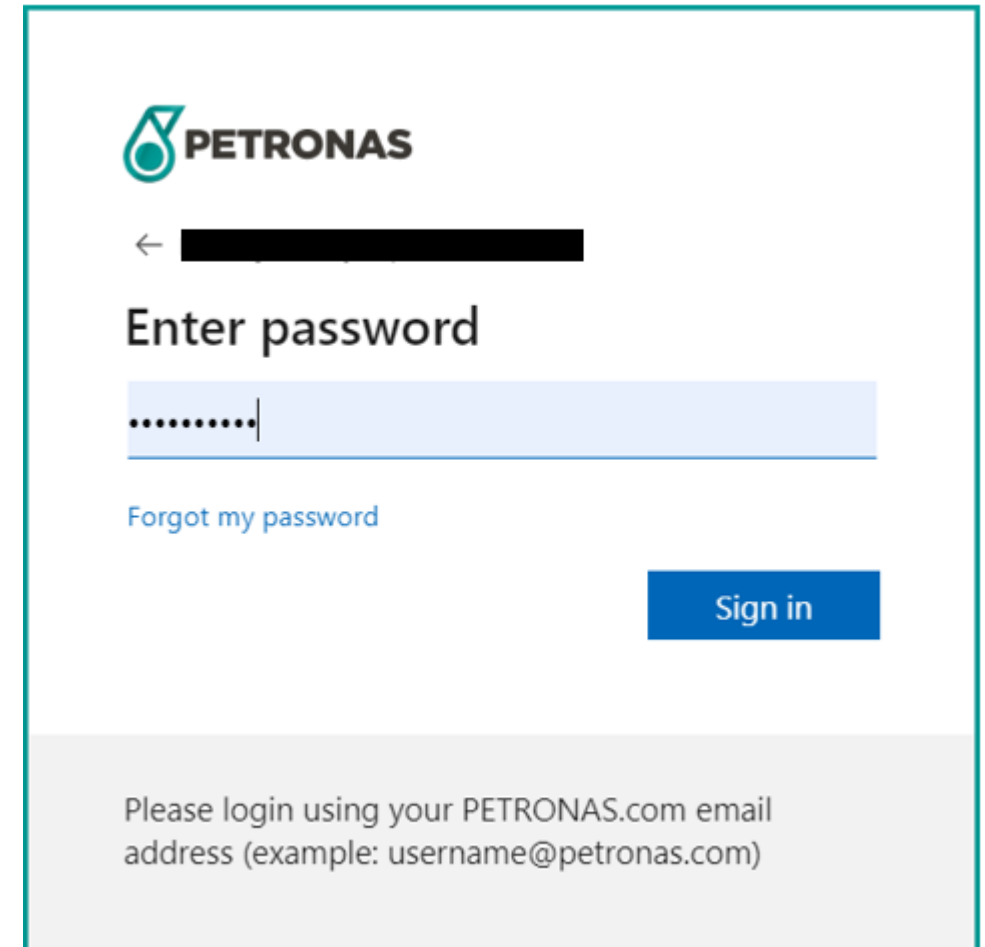
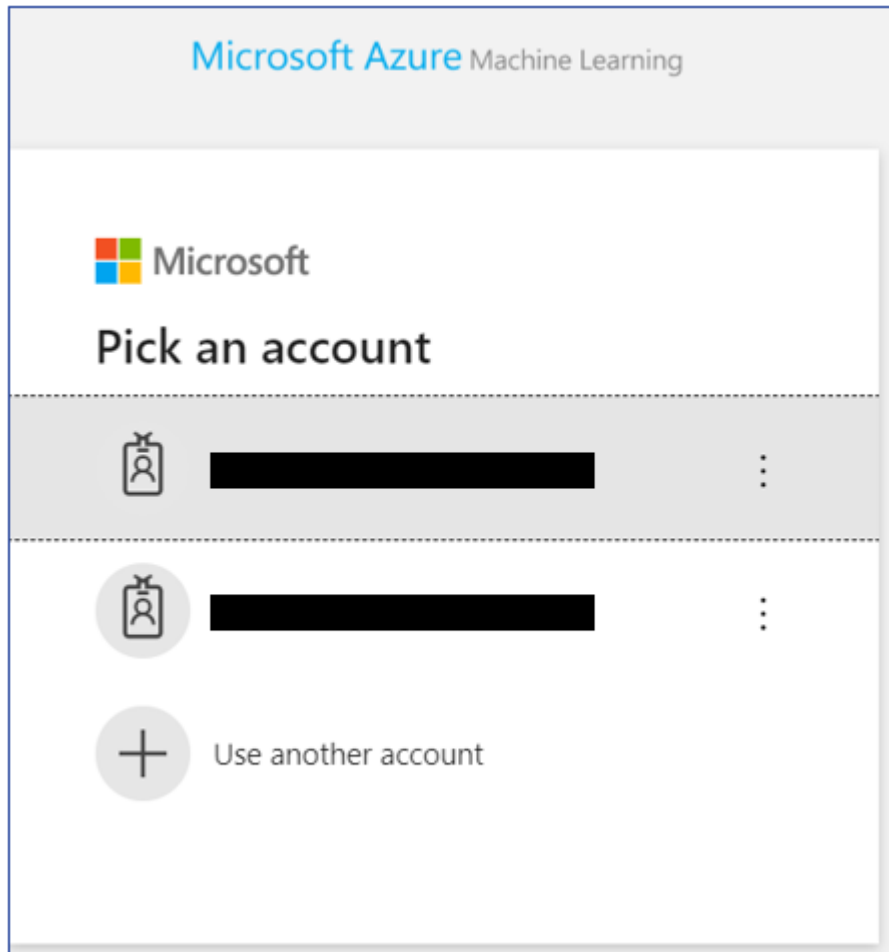
**Azure Machine Learning Studio R Runtime Upgrade**  
Aired on October 31, 2018  
The R language engine in the Execute R Script module of Azure Machine Learning Studio has

**Mining Campaign Funds**  
Aired on August 03, 2017  
Play with 2016 Presidential Campaign finance data while learning how to prepare a large dataset for machine learning by processing and

**Inside the Data Science VM**  
Aired on June 21, 2016  
DSVM is a custom Azure Virtual Machine image that is published on the Azure marketplace and available on both Windows and Linux. It

# Azure ML Studio (Classic)

Provide your authentication



# Azure ML Studio (Classic)

## Azure ML Studio – Classic version

Microsoft Azure Machine Learning Studio (classic)

MLWorkSpace

PROJECTS

EXPERIMENTS

WEB SERVICES

DATASETS

TRAINED MODELS

SETTINGS

experiments

MY EXPERIMENTS   SAMPLES

NAME

AUTHOR

STATUS

LAST EDITED

PROJECT

No experiments found

0 items selected

+ NEW

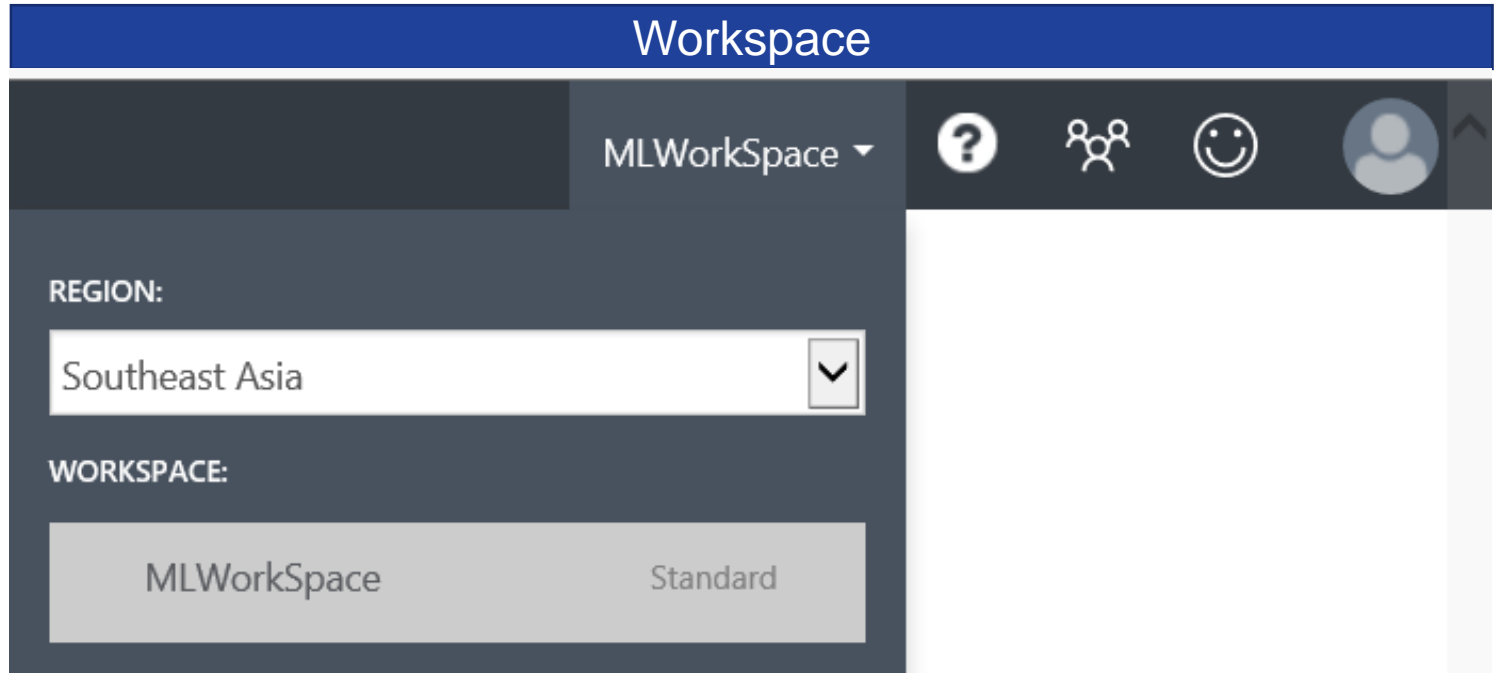
DELETE

ADD TO PROJECT

# Components

# Azure ML Studio - Workspace

- This area consists of all the workspaces available against the user logins.
- A workspace is associated with certain region:
  - Southeast Asia
  - South Central US
  - West Europe
  - Japan East
  - West Central US
  - Central US EUAP





# Azure ML Studio - Projects

- This area consists of all the projects available against the user logins.
- A project is a collection of scripts, notebooks, and/or data designed to support the everyday work of data scientists.
- Inside the project, one can have the related datasets, experiments and other artefacts.

The screenshot displays the Microsoft Azure Machine Learning Studio (classic) interface. The top navigation bar is dark blue with the title "Projects". Below it, a dark grey bar shows "Microsoft Azure Machine Learning Studio (classic)". The left sidebar contains a vertical menu with icons and labels: PROJECTS (selected), EXPERIMENTS, WEB SERVICES, DATASETS, TRAINED MODELS, and SETTINGS. The main content area shows a "projects preview" section with a table header: NAME, AUTHOR, CONTENTS, and LAST USED. Below the header is a "Create project" button with a right arrow icon. A "Change Project Configuration" dialog box is open in the foreground. It has a "NAME" field with the value "TestProject" and a "DESCRIPTION" field with the placeholder text "Enter the project description here...". The "ALL ASSETS" section lists various asset types with checkboxes: Datasets, Experiments, Modules, Notebooks, Trained Models, Transforms, and Web Services. A right arrow button is located between the "ALL ASSETS" and "PROJECT ASSETS" sections. The "PROJECT ASSETS" section is currently empty.

# Azure ML Studio - Experiments

- This area consists of all the experiments available against the user logins in a project.
- “**Experiment**” is the name that **ML studio** uses to identify a visual workflow.

Microsoft Azure Machine Learning Studio (classic)

TEST user 5-Free-Workspa...

## Experiments

experiments

MY EXPERIMENTS SAMPLES

	NAME	AUTHOR	STATUS	LAST EDITED	PROJECT
<input checked="" type="checkbox"/>	Logistic Regression 2 cl...	TEST.USER5	Finished	5/4/2020 9:49:13 PM	None
<input type="checkbox"/>	Two class logistic regre...	TEST.USER5	Draft	4/28/2020 9:15:15 AM	None
<input type="checkbox"/>	Comparison of feature ...	TEST.USER5	Draft	4/23/2020 7:02:16 PM	None
<input type="checkbox"/>	NLP Customer complai...	TEST.USER5	Finished	4/19/2020 8:42:59 PM	None
<input type="checkbox"/>	Recommendation - Res...	TEST.USER5	Draft	4/19/2020 6:03:02 PM	None
<input type="checkbox"/>	Fisher based feature se...	TEST.USER5	Draft	4/19/2020 4:04:02 PM	None
<input type="checkbox"/>	Wine quality - Feature ...	TEST.USER5	Draft	4/19/2020 3:48:04 PM	None
<input type="checkbox"/>	Join Data	TEST.USER5	Draft	4/19/2020 1:17:35 PM	None
<input type="checkbox"/>	Principal component a...	TEST.USER5	Draft	4/19/2020 1:08:20 PM	None
<input type="checkbox"/>	Normalize data	TEST.USER5	Draft	4/19/2020 12:56:37 PM	None
<input type="checkbox"/>	SMOTE - Loan	TEST.USER5	Draft	4/19/2020 12:45:22 PM	None
<input type="checkbox"/>	Missing value imputati...	TEST.USER5	Draft	4/19/2020 12:17:21 PM	None
<input type="checkbox"/>	Data Processing	TEST.USER5	Finished	4/19/2020 9:37:46 AM	None
<input type="checkbox"/>	K Means clustering -As...	TEST.USER5	Finished	4/18/2020 10:39:51 PM	None
<input type="checkbox"/>	K Means clustering -Ca...	TEST.USER5	Draft	4/18/2020 10:32:49 PM	None
<input type="checkbox"/>	Decision Tree Regressi...	TEST.USER5	Draft	4/18/2020 8:19:14 PM	None

Visual workflow diagram showing steps: Unpack & Zip, Execute R Script, Clean Missing Data, Apply Math Operation, Split Data, Train Model, Score Model, Evaluate Model, and Convert to Indicator Values.

# Azure ML Studio – Web Services

- This area consists of all the deployed experiments available against the user logins in a project.
- “**Web Services**” are the REST API calls that can be called from any application.

Web Services

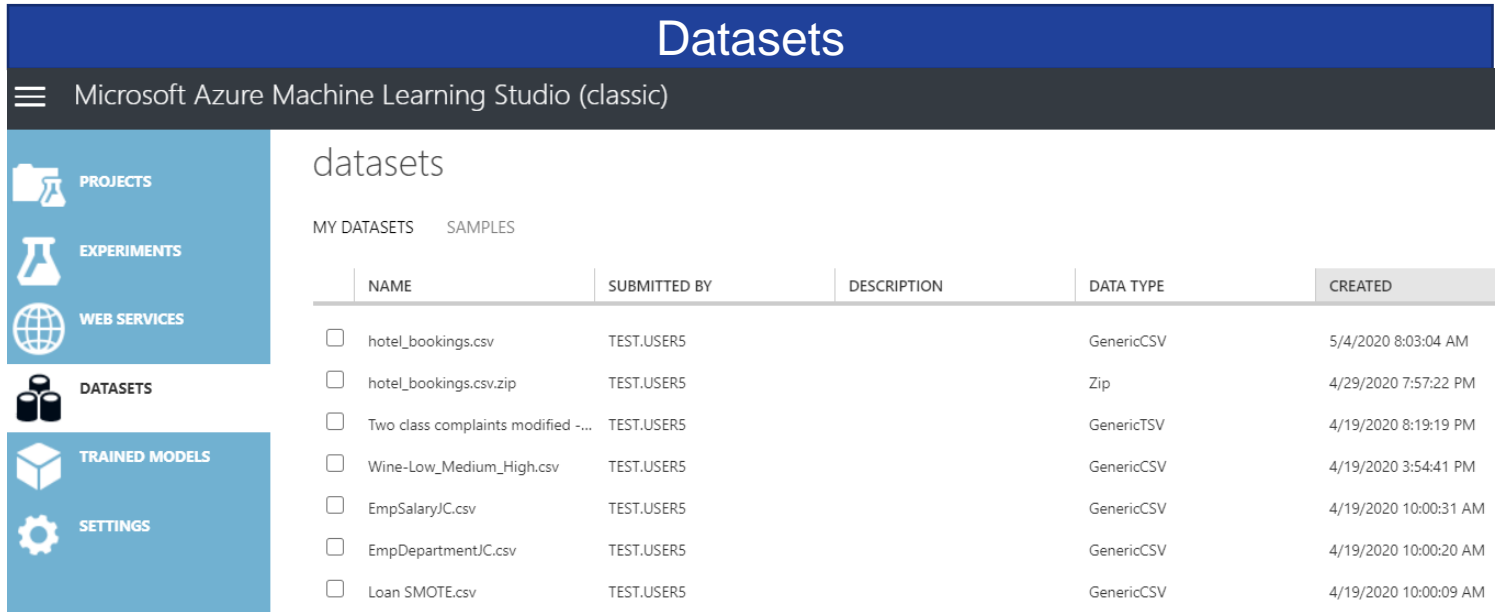
Microsoft Azure Machine Learning Studio (classic)

web services

NAME	CREATED ON
<input type="checkbox"/> Tune - Adult census [Predictive Exp.]	4/18/2020 4:22:01 PM

# Azure ML Studio - Datasets

- This area consists of all the datasets available against the user logins in a project.



The screenshot displays the 'Datasets' page in the Microsoft Azure Machine Learning Studio (classic) interface. The left sidebar contains navigation links: PROJECTS, EXPERIMENTS, WEB SERVICES, DATASETS (highlighted), TRAINED MODELS, and SETTINGS. The main content area is titled 'datasets' and shows a table of 'MY DATASETS'.

	NAME	SUBMITTED BY	DESCRIPTION	DATA TYPE	CREATED
<input type="checkbox"/>	hotel_bookings.csv	TEST.USER5		GenericCSV	5/4/2020 8:03:04 AM
<input type="checkbox"/>	hotel_bookings.csv.zip	TEST.USER5		Zip	4/29/2020 7:57:22 PM
<input type="checkbox"/>	Two class complaints modified -...	TEST.USER5		GenericTSV	4/19/2020 8:19:19 PM
<input type="checkbox"/>	Wine-Low_Medium_High.csv	TEST.USER5		GenericCSV	4/19/2020 3:54:41 PM
<input type="checkbox"/>	EmpSalaryJC.csv	TEST.USER5		GenericCSV	4/19/2020 10:00:31 AM
<input type="checkbox"/>	EmpDepartmentJC.csv	TEST.USER5		GenericCSV	4/19/2020 10:00:20 AM
<input type="checkbox"/>	Loan SMOTE.csv	TEST.USER5		GenericCSV	4/19/2020 10:00:09 AM

# Azure ML Studio – Trained Models

- This area consists of all the trained models available against the user logins in a project.

Trained Models

Microsoft Azure Machine Learning Studio (classic)

PROJECTS

EXPERIMENTS

WEB SERVICES

DATASETS

TRAINED MODELS

SETTINGS

trained models

	NAME	SUBMITTED BY	DESCRIPTION
<input type="checkbox"/>	Tune - Adult census [trained model]	TEST.USER5	

# Azure ML Studio – Settings

- This area consists of settings related to user login.

Settings

Microsoft Azure Machine Learning Studio (classic)

PROJECTS

EXPERIMENTS

WEB SERVICES

DATASETS

TRAINED MODELS

SETTINGS

settings

NAME

AUTHORIZATION TOKENS

USERS

DATA GATEWAYS

WORKSPACE NAME

MLWorkSpace

WORKSPACE DESCRIPTION

WORKSPACE TYPE

Standard

[Learn More](#)

WORKSPACE ID

cac28f06817d493d88127f1b12f22cf8

CREATION TIME

31/5/2020 8:20:25 AM

OWNER'S EMAIL

neeraj.tiwar@petronas.com

SUBSCRIPTION ID

05358a25-3322-4423-a7f3-80fd85cf145b

STORAGE ACCOUNT

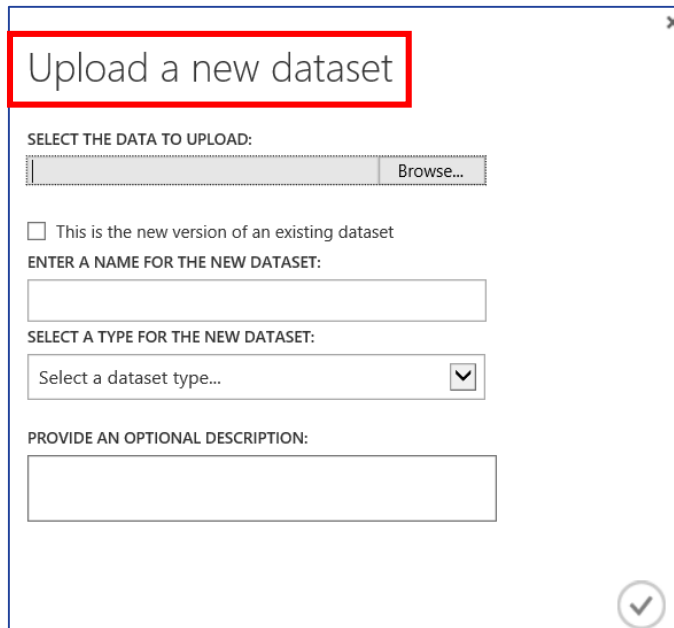
mlstoragepetronas



# Azure ML Studio – Create new Datasets

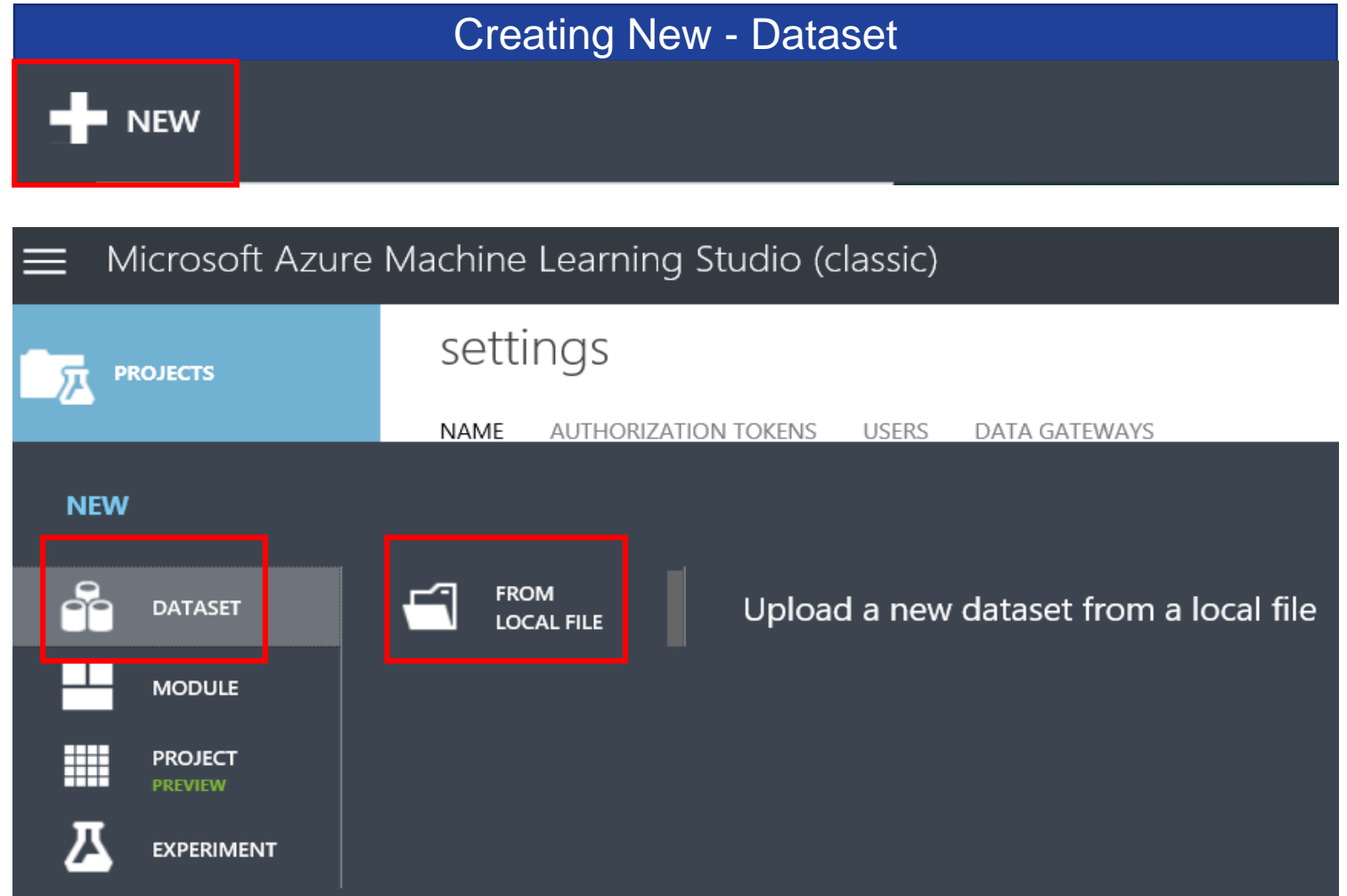
- This area consists of creating new datasets:

1. Click on the (+) sign
2. Click on “**DATASET**”
3. Click on “**FROM LOCAL FILE**”
4. “**Upload a new dataset**”



The dialog box titled 'Upload a new dataset' contains the following fields and options:

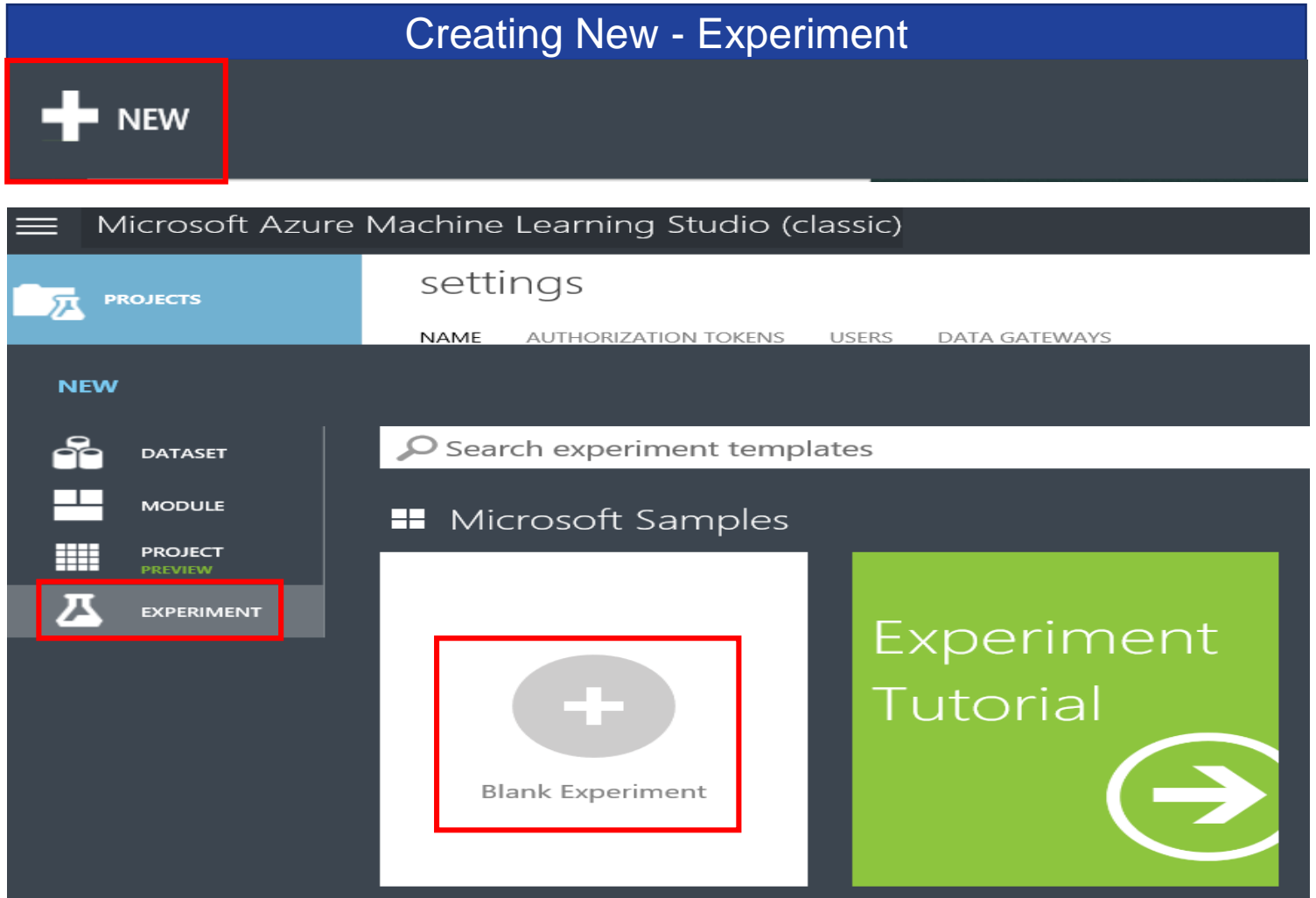
- SELECT THE DATA TO UPLOAD:** A text input field with a 'Browse...' button.
- ☐ This is the new version of an existing dataset
- ENTER A NAME FOR THE NEW DATASET:** A text input field.
- SELECT A TYPE FOR THE NEW DATASET:** A dropdown menu with 'Select a dataset type...' and a checkmark icon.
- PROVIDE AN OPTIONAL DESCRIPTION:** A text input field.
- A checkmark icon in the bottom right corner.



# Azure ML Studio – Create new Experiments

- This area consists of creating new experiments

1. Click on the (+) sign
2. Go to “**Experiment**”
3. Click on “**Blank Experiment**”



# Summary and References

# Summary

1

Azure ML is an auto ML Framework to develop experiments through drag and drop modules. Its quite easy, and intuitive for any novice person to develop any kind of visual workflows.

2

The deployed model can be accessed via REST APIs through any kind of applications like Power BI or Excel.

3

This is for all kind of users i.e. Citizen Data Scientists, or a person with just having a novice idea of machine learning.

# References

**Getting Started with  
Machine Learning Using  
Microsoft Azure ML Studio**

<https://www.codemag.com/article/1709071/Getting-Started-with-Machine-Learning-Using-Microsoft-Azure-ML-Studio>

**Documentation: Azure  
Machine Learning vs  
Machine Learning Studio  
(classic)**

<https://docs.microsoft.com/en-us/azure/machine-learning/compare-azure-ml-to-studio-classic>

**Documentation: Machine  
Learning Studio (classic)**

<https://docs.microsoft.com/en-us/azure/machine-learning/studio/what-is-ml-studio>

**Documentation: Machine  
learning products at  
Microsoft**

<https://docs.microsoft.com/en-us/azure/architecture/data-guide/technology-choices/data-science-and-machine-learning?context=azure/machine-learning/studio/context/ml-context>

**Thank you for your passion!**

