

A-Z Machine Learning using Azure Machine Learning (AzureML)

Hands on AzureML: From Azure Machine Learning Introduction to Advance Machine Learning Algorithms. No Coding Required.

BEST SELLER ★★★★★ 4.3 (215 ratings) 1,597 students enrolled

Created by Jitesh Khurkhuriya Last updated 3/2018 English English

Gift This Course

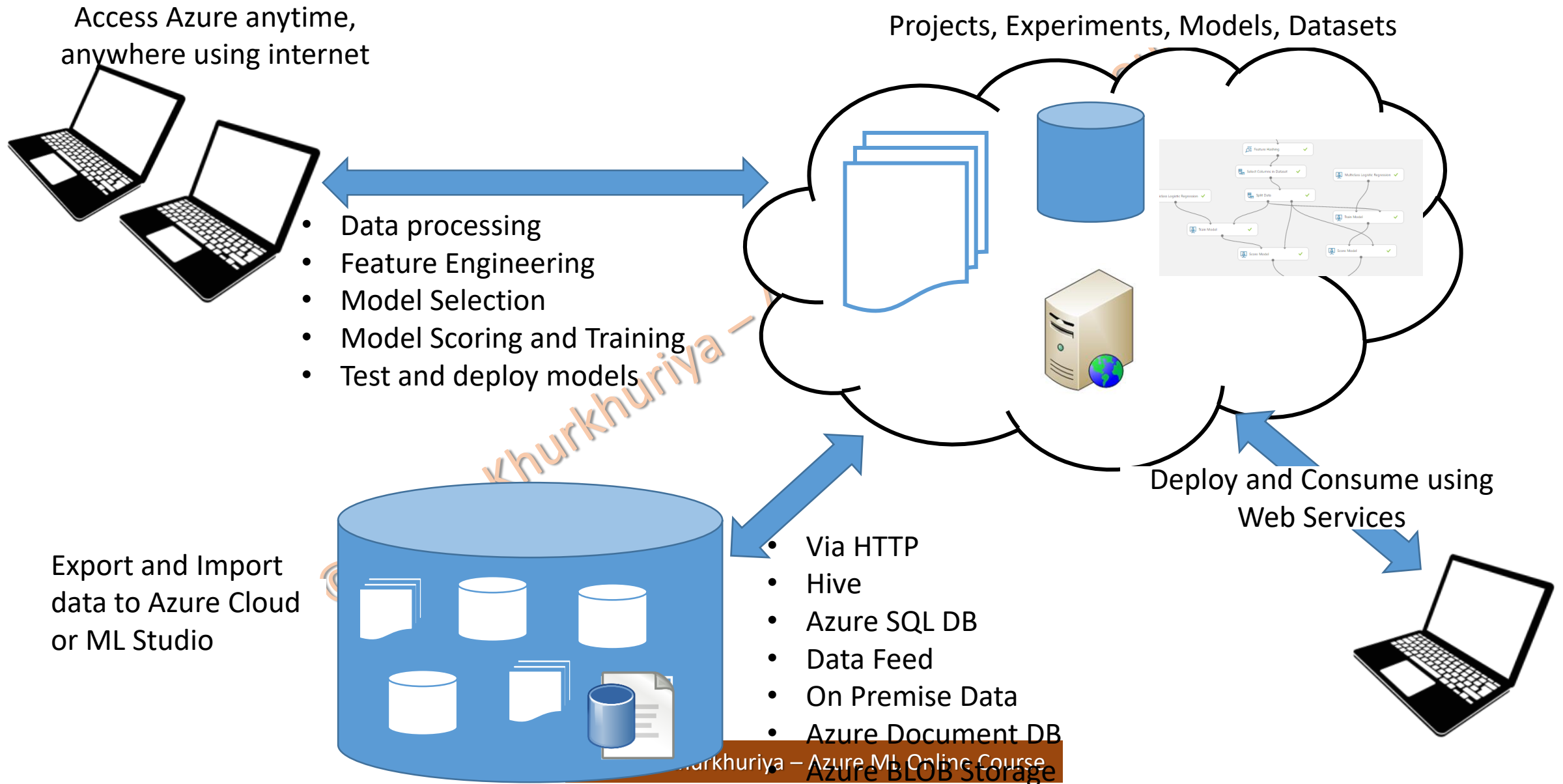


What is Microsoft Azure ML?

Azure Machine Learning

- Cloud based predictive analytics service
- Provides tools to create complete machine learning solution in the cloud
- Quick model creation and deployment using Azure ML Studio
- Allows Models to be deployed as web services
- Provides a large library of Pre-Built Machine learning algorithms and Modules
- Allows for extending your models with custom built R and Python code

Azure ML Studio Overview



Create Your Azure ML Account

Disclaimer: Some Screens may have changed as Microsoft keeps updating the portal and user experience.

Meet the new Surface Pro

The most versatile laptop.

LEARN MORE >



Xbox One S

The ultimate games and 4K



Windows 10

Learn more about 3D, Windows Mixed



Outlook

The free email app for iOS, Android



OneNote

Organise your notes and your life.



Sign in

Next

No account? [Create one!](#)

©2018 Microsoft Terms of use Privacy & cookies



Create account

Microsoft account opens a world of benefits.

☒ Send me promotional emails from Microsoft


Next

[Use a phone number instead](#)

[Get a new email address](#)

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


© 2018 Microsoft [Terms of Use](#) [Privacy & Cookies](#)

 Microsoft

Add details

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


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

 Microsoft

Enter code


We just sent a code to

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

 Microsoft

Create account

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



[New](#)
[Audio](#)

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

[Office](#)[Windows](#)[Surface](#)[Xbox](#)[Deals](#)[Support](#)[More](#)

Software

[Windows apps](#)[OneDrive](#)[Outlook](#)[Skype](#)[OneNote](#)

PCs & Devices

[PCs & tablets](#)[Accessories](#)[VR & mixed reality](#)[Microsoft HoloLens](#)

Entertainment

[Xbox games](#)[PC games](#)[Windows digital games](#)[Movies & TV](#)

Business

[Microsoft Azure](#)[Microsoft Dynamics 365](#)[Microsoft 365](#)[Cloud platform](#)[Enterprise solutions](#)[Data platform](#)

Developer & IT

[.NET](#)[Visual Studio](#)[Windows Dev Center](#)[Docs](#)

Other

[Microsoft Store](#)[Free downloads & security](#)[Education](#)[Gift cards](#)[VIEW ALL](#)

Xbox One S

<https://azure.microsoft.com/en-in/>

Windows 10

[Learn more about 3D, Windows Mixed](#)

Outlook

[The free email app for iOS, Android](#)

OneNote

[Organise your notes and your life.](#)



Your vision, your results, your cloud

Turn your idea into a new app, reimagine an existing system or create a hybrid cloud application with confidence, no matter the platform or where you are on the journey to the cloud.

Azure. Cloud for all.

[Continue free account sign up](#) >

[Free Account FAQ](#) >



Productive

Azure has more than 100 services with great end-to-end tools to make you

Hybrid

Develop and deploy where you want, with the only consistent hybrid cloud on

Intelligent

Create intelligent apps using powerful data and artificial intelligence services.





Trusted

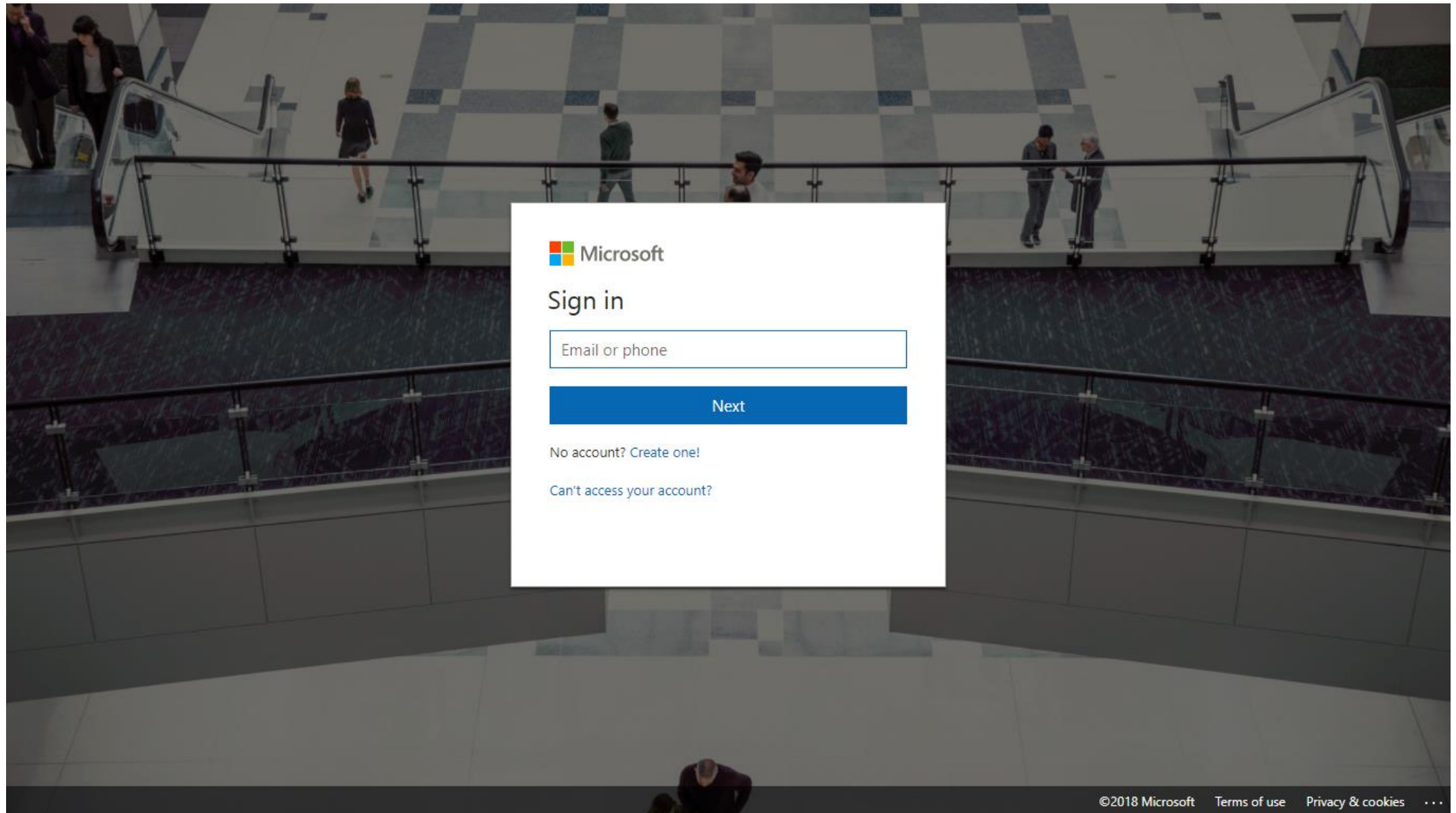
Join startups, governments and 90% of Fortune 500 businesses who run on the

Azure free account sign up

Start with a ₹13,300 credit for 30 days, and keep going for free



- 1 **About you** 
- 2 Identity verification by phone 
- 3 Identity verification by card 
- 4 Agreement 



Microsoft Azure

SALES 000-800-100-3928

MY ACCOUNT

PORTAL

Search

Why Azure

Solutions

Products

Documentation

Pricing

Training

Partners

Blog

Resources

Support

FREE ACCOUNT

Compute

Networking

Storage

Web + Mobile

Containers

Databases

Data + Analytics

AI + Cognitive Services

Internet of Things

Enterprise Integration

Security + Identity

Developer Tools

Monitoring + Management

Microsoft Azure Stack

See all products

Data + Analytics

Machine Learning

Stream Analytics

Azure Bot Service

Data Lake Analytics

Data Lake Store

Power BI Embedded

Data Catalog

See all data + analytics

HDInsight

Provision cloud Hadoop, Spark, R Server, HDInsight, and Storm clusters

Machine Learning

Easily build, deploy and manage predictive analytics solutions

Stream Analytics

Real-time data stream processing from millions of IoT devices

Azure Bot Service

Intelligent, serverless bot service that scales on demand

Data Lake Analytics

Distributed analytics service which makes big data easy

Data Lake Store

Hyperscale repository for big data analytics workloads

Power BI Embedded

Embed fully interactive, stunning data visualisations in your applications

Data Catalog

Get more value from your enterprise data assets

Cortana Intelligence

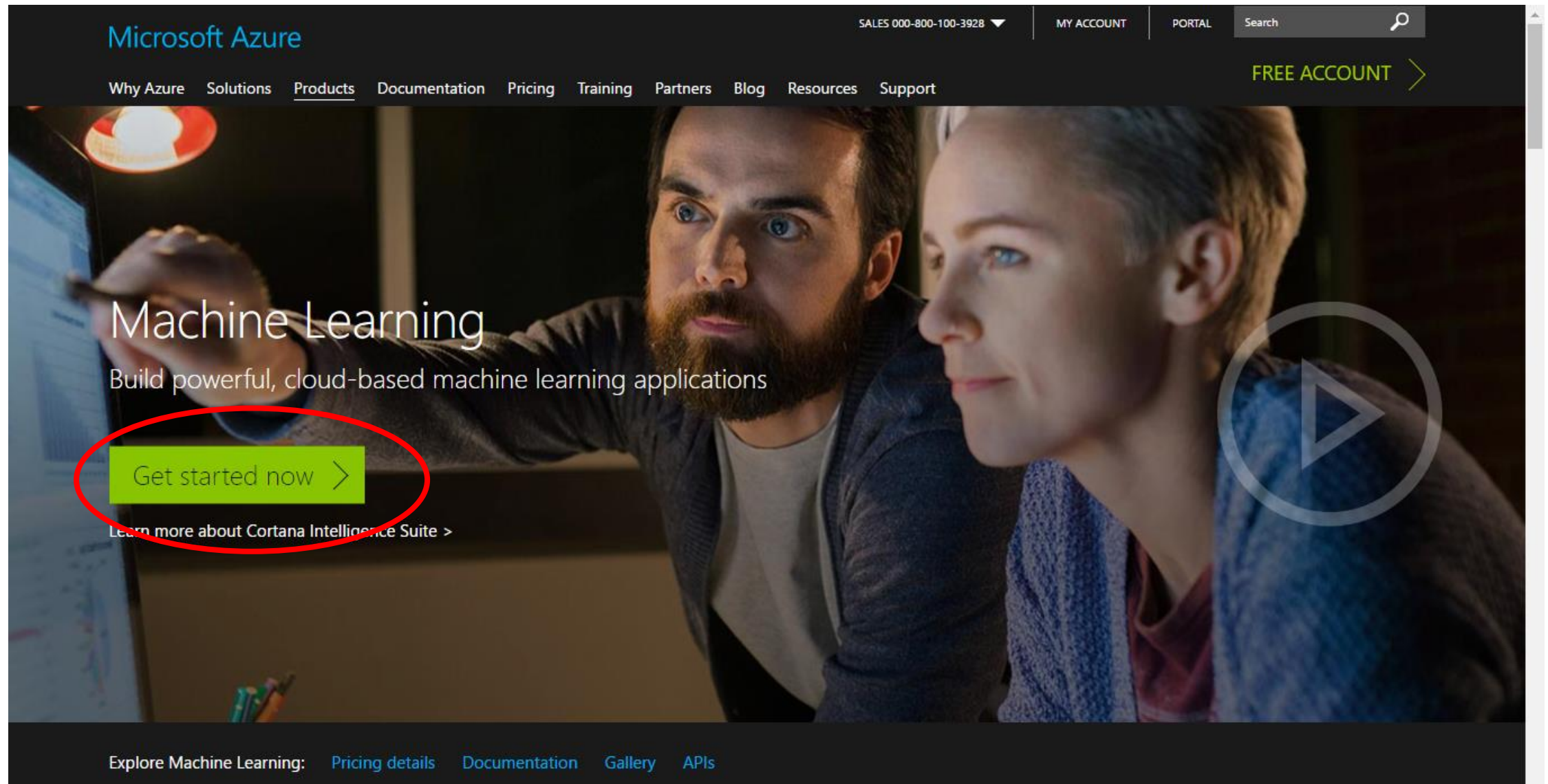
Learn how to transform your business with big data and advanced analytics

Learn more

Watch the highlights

https://azure.microsoft.com/en-in/services/machine-learning/

Welcome to Machine Learning



Microsoft Azure

SALES 000-800-100-3928 ▼ MY ACCOUNT PORTAL Search

Why Azure Solutions Products Documentation Pricing Training Partners Blog Resources Support

FREE ACCOUNT >

Machine Learning

Build powerful, cloud-based machine learning applications

Get started now >

Learn more about Cortana Intelligence Suite >

Explore Machine Learning: [Pricing details](#) [Documentation](#) [Gallery](#) [APIs](#)

Simple, scalable, cutting edge

studio.azureml.net

© Jitesh Khurkhuriya

Course

Welcome to Azure ML Studio

Microsoft Azure Machine Learning Studio

kkjitesh-Free-Workspace

?

PROJECTS

EXPERIMENTS

WEB SERVICES

NOTEBOOKS

DATASETS

TRAINED MODELS

SETTINGS

experiments

MY EXPERIMENTS SAMPLES

NAME

AUTHOR

STATUS

LAST EDITED

PROJECT

No experiments found

0 items selected

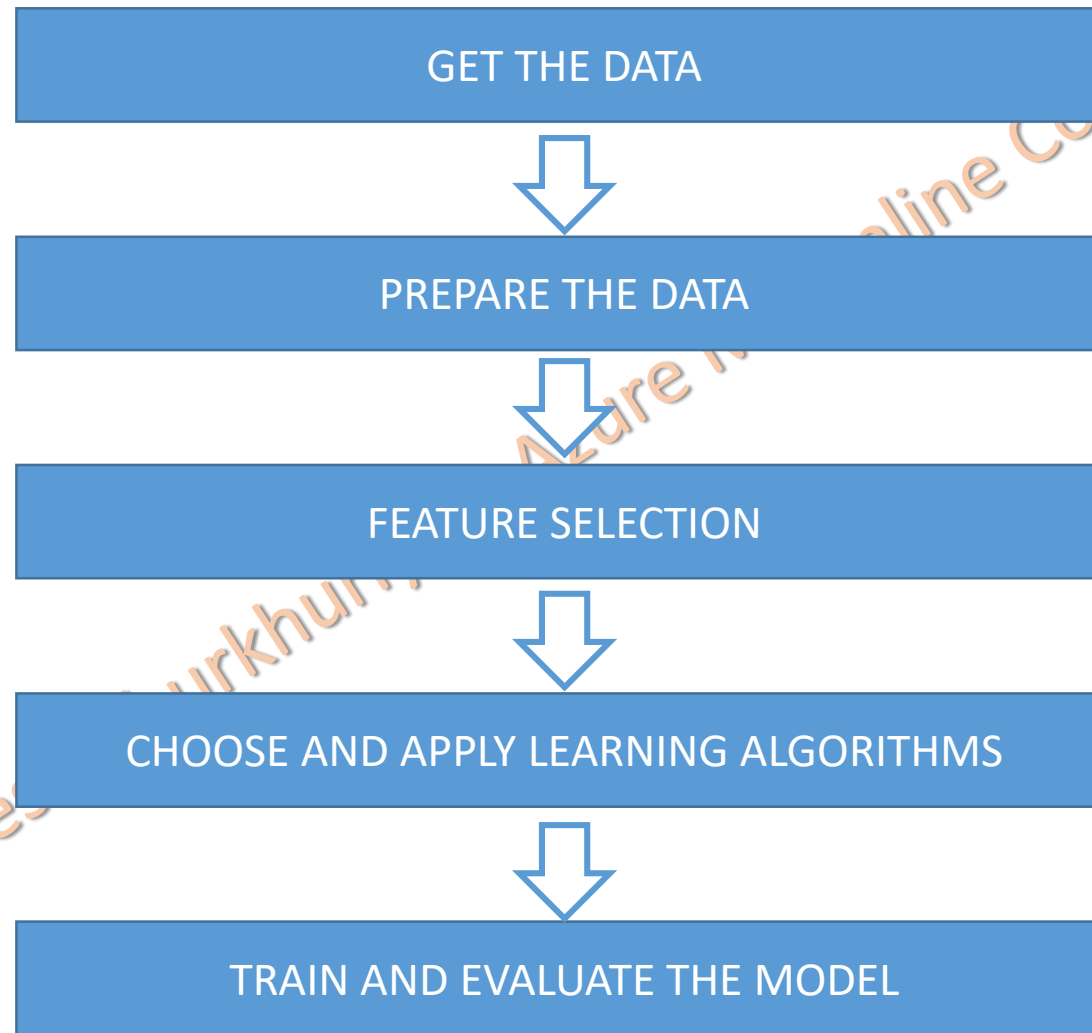
+ NEW

DELETE

ADD TO PROJECT

Workflow of Azure ML project/experiment

Workflow of Azure ML



Workflow of Azure ML

GET THE DATA

PREPARE THE DATA



Feature Selection

CHOOSE AND APPLY LEARNING
ALGORITHMS



TRAIN AND EVALUATE THE MODEL



Loan_ID	Gender	Married	Dependents	Self_Employed	Income
LP001002	Male	No	0	No	\$5,849.00

Draft saved at 8:06:09 AM

 Enter Data Manually 

1

 Import Data 

 Unpack Zipped Datasets 

1

Draft saved at 8:06:09 AM

Enter Data Manually

DataFormat
CSV

☒ HasHeader

Data
1

Web URL via HTTP

Hive Query
Azure SQL Database

Unpack Zipped Datasets

Dataset to Unpack

Dataset file format
CSV

☐ File has header row

Compression file format
Zip

Workflow of Azure ML

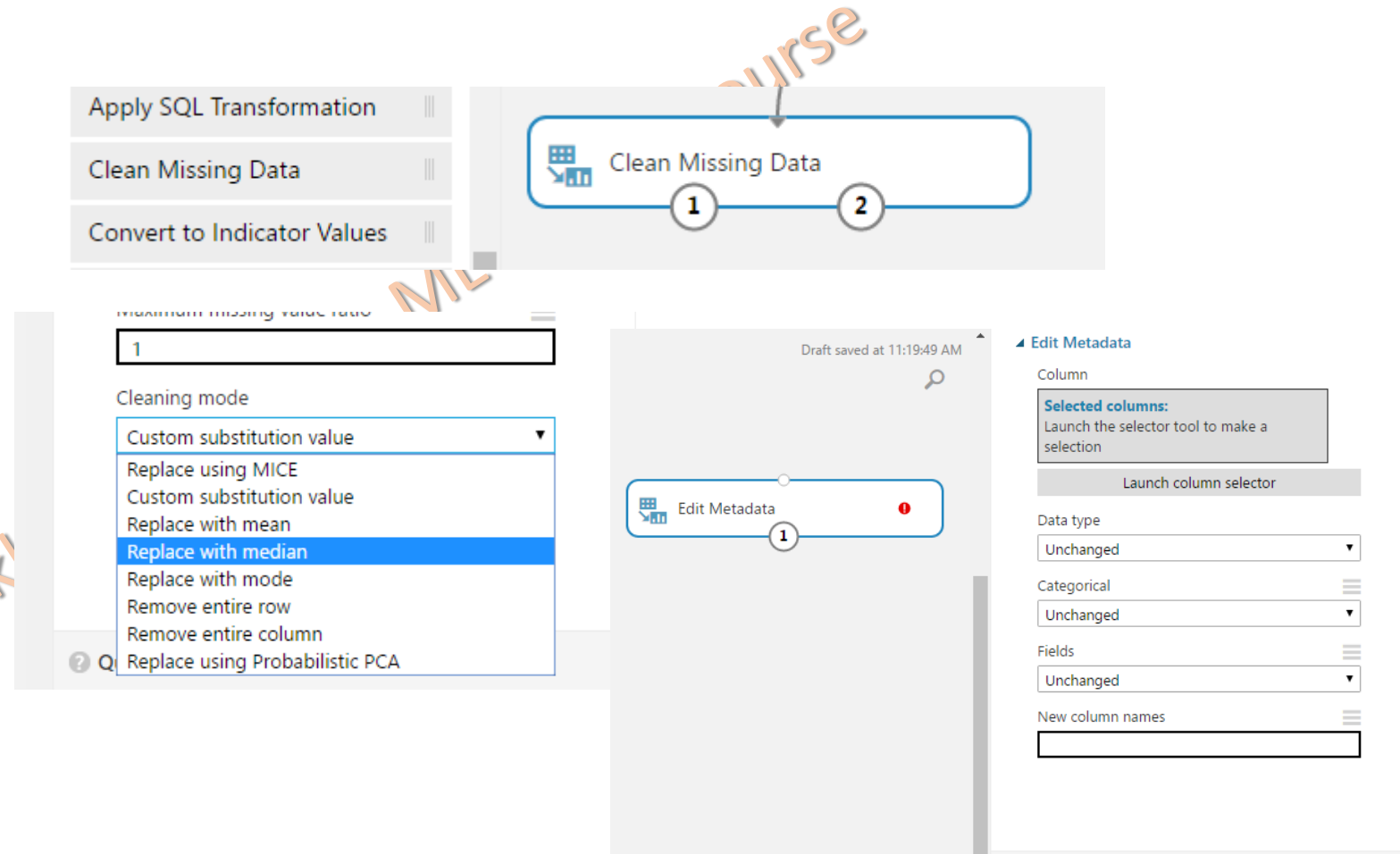
GET THE DATA

PREPARE THE DATA

Feature Selection

CHOOSE AND APPLY LEARNING
ALGORITHMS

TRAIN AND EVALUATE THE MODEL



Workflow of Azure ML

GET THE DATA

PREPARE THE DATA

Feature Selection

CHOOSE AND APPLY LEARNING
ALGORITHMS

TRAIN AND EVALUATE THE MODEL

The screenshot displays the Azure ML web interface. At the top, there is a search bar labeled "Search experiment items" with a magnifying glass icon. Below the search bar, a list of modules is shown, including "Principal Component Analysis", "Feature Selection" (highlighted with a magnifying glass icon), "Filter Based Feature Selection", "Fisher Linear Discriminant Analysis", and "Permutation Feature Importance". To the right of the module list, the "Properties" pane is open, showing the configuration for the "Filter Based Feature Selection" module. It includes a "Feature scoring method" dropdown menu with options: "Pearson Correlation" (selected), "Mutual Information", "Kendall Correlation", "Spearman Correlation", "Chi Squared", "Fisher Score", and "Count Based". Below the dropdown is a "Launch column selector" button. At the bottom of the properties pane, there is a "Number of desired features" input field with the value "1".

Workflow of Azure ML

GET THE DATA

PREPARE THE DATA

Feature Selection

CHOOSE AND APPLY LEARNING
ALGORITHMS

TRAIN AND EVALUATE THE MODEL

Machine Learning

▶ Evaluate

▶ Initialize Model

▶ Anomaly Detection

▶ Classification

Multiclass Decision Forest

Multiclass Decision Jungle

Multiclass Logistic Regression

Multiclass Neural Network

One-vs-All Multiclass

Two-Class Averaged Perceptron

Two-Class Bayes Point Machine

Multiclass Logistic Regression

Create trainer mode

Single Parameter

Optimization tolerance

1E-07

L1 regularization weight

1

L2 regularization weight

1

Memory size for L-BFGS

20

Random number seed

Workflow of Azure ML

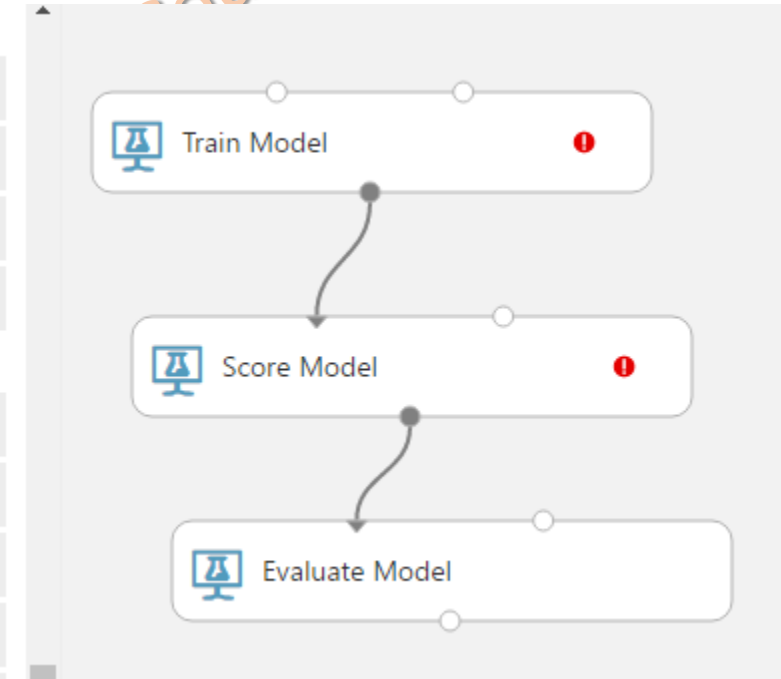
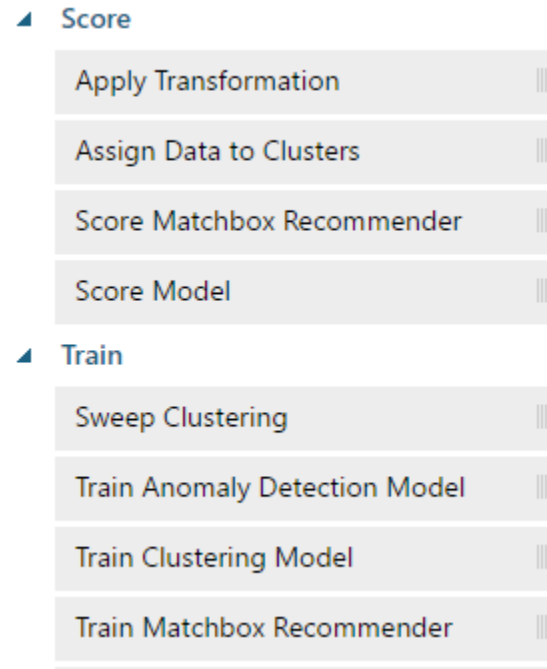
GET THE DATA

PREPARE THE DATA

Feature Selection

CHOOSE AND APPLY LEARNING
ALGORITHMS

TRAIN AND EVALUATE THE MODEL



Azure ML Algorithm CheatSheet

Predicting Categories

Outcome is Binary? Yes or No,
Pass or Fail, Success or failure?

MULTI-CLASS CLASSIFICATION

Start

TWO-CLASS CLASSIFICATION

Two Class SVM

>100 Features,
Linear Model

Two-Class Averaged
Perceptron

Fast Training,
Linear Model

Two Class Logistic
Regression

Fast Training,
Linear model

Two Class Bayes
Point Machine

Fast Training,
Linear Model

Accuracy, Fast
Training

Two-Class Decision
Forest

Accuracy, Fast
Training, LargeM

Two-Class Boosted
Decision Tree

Accuracy, SmallM

Two Class Decision
Jungle

>100 Features

Two Class Locally Deep
SVM

Accuracy, Long
Training Times

Two Class Neural
Network

Predicting Categories

Outcome has multiple possibilities? Customer categories etc?

Start

MULTI-CLASS CLASSIFICATION

- | | |
|----------------------------------|---------------------------------|
| Fast Training, Linear Model | Multi-Class Logistic Regression |
| Accuracy, Long Training Times | Multi-Class Neural Network |
| Accuracy, Fast Training | Multi-Class Decision Forest |
| Accuracy, Small Memory Footprint | Multi-Class Decision Jungle |
| Depends on Two-Class | One-V-All Multiclass |

TWO-CLASS CLASSIFICATION

REGRESSION

Ordinal Regression	—	Data in Rank Order categories	—
Poisson Regression	—	Predicting Event Counts	—
Fast Forest Quantile Regression	—	Predicting a Distribution	—
Linear Regression	—	Fast Training, Linear Model	—
Bayesian Linear Regression	—	Linear Model, Small datasets	—
Neural Network Regression	—	Accuracy, Long Training Time	—
Decision Forest Regression	—	Accuracy, Fast Training	—
Boosted Decision Tree Regression	—	Accuracy, Fast Training, large Memory	—

Start

Predicting Continuous Value

Such as Sales or revenue forecast, stock price, Loyalty score etc

ANOMALY DETECTION

One Class SVM

> 100 Features

PCA Based Anomaly Detection

Fast Training

Start

Finding Unusual Data Points

Such as Fraudulent
Transactions, abnormal reading
from machines etc

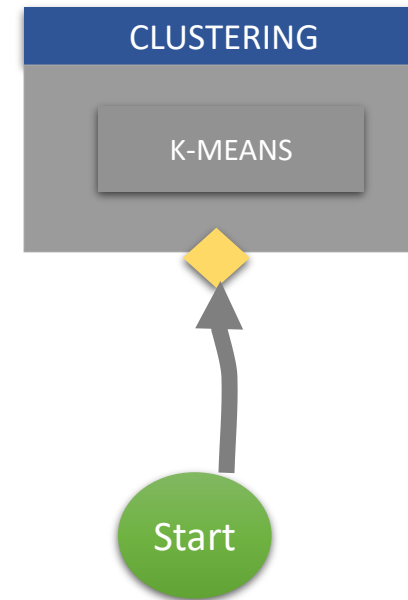
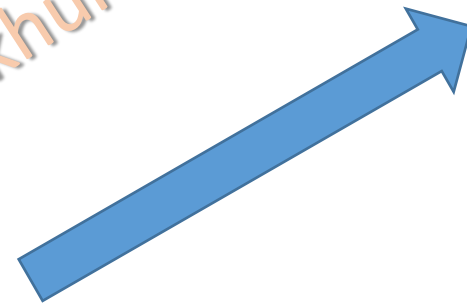
What to consider while choosing an algorithm?

Predicting Categories

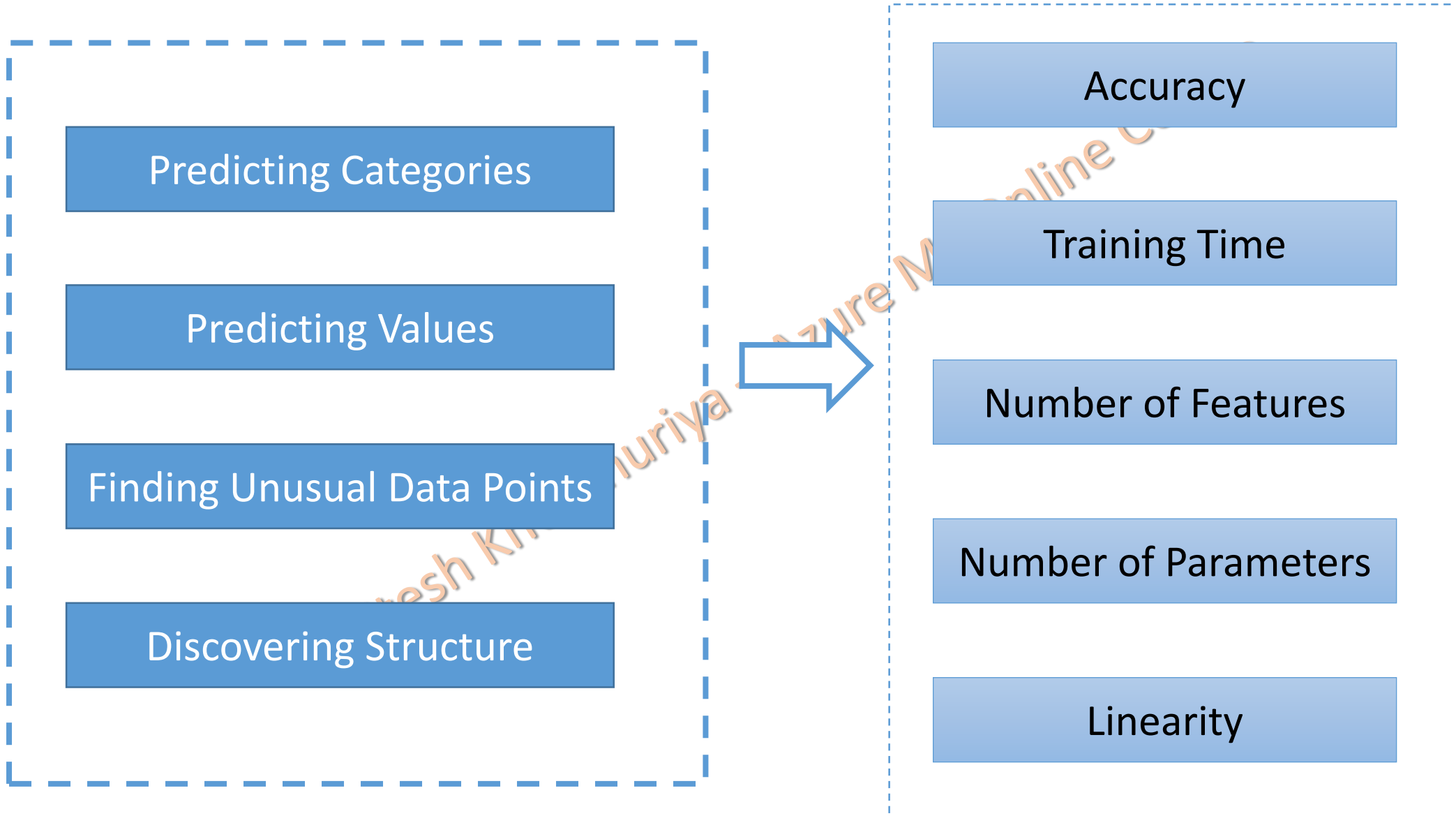
Predicting Continuous Value

Finding Unusual Data Points

Discovering Structure



What to consider while choosing an algorithm?



ANOMALY DETECTION

One Class SVM

> 100 Features

PCA Based Anomaly Detection

Fast Training

CLUSTERING

K-MEANS

MULTI-CLASS CLASSIFICATION

Fast Training, Linear Model

Multi-Class Logistic Regression

Accuracy, Long Training Times

Multi-Class Neural Network

Accuracy, Fast Training

Multi-Class Decision Forest

Accuracy, Small Memory Footprint

Multi-Class Decision Jungle

Depends on Two-Class

One-V-All Multiclass

Start

REGRESSION

Ordinal Regression

Data in Rank Order
categories

Poisson Regression

Predicting Event Counts

Fast Forest Quantile Regression

Predicting a
Distribution

Linear Regression

Fast Training, Linear
Model

Bayesian Linear Regression

Linear Model, Small
datasets

Neural Network Regression

Accuracy, Long Training
Time

Decision Forest Regression

Accuracy, Fast Training

Boosted Decision Tree Regression

Accuracy, Fast Training,
large Memory

TWO-CLASS CLASSIFICATION

Two Class SVM

>100 Features,
Linear Model

Two-Class Averaged
Perceptron

Fast Training,
Linear Model

Two Class Logistic
Regression

Fast Training,
Linear model

Two Class Bayes
Point Machine

Fast Training,
Linear Model

Accuracy, Fast
Training

Two-Class Decision
Forest

Accuracy, Fast
Training, LargeM

Two-Class Boosted
Decision Tree

Accuracy, SmallM

Two Class Decision
Jungle

>100 Features

Two Class Locally Deep
SVM

Accuracy, Long
Training Times

Two Class Neural
Network

Thank You and Have a Great Time !