How I started in AI/ML and how you can too!!!

Umang Nahata

Session Goals
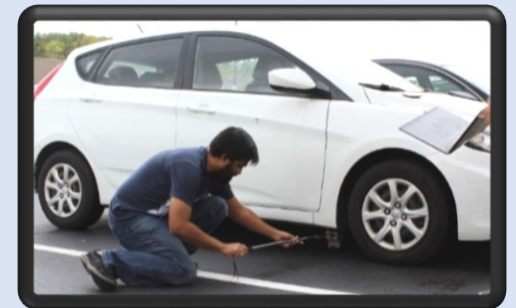
- About Me
- AI/ML Introduction
- Azure ML Studio
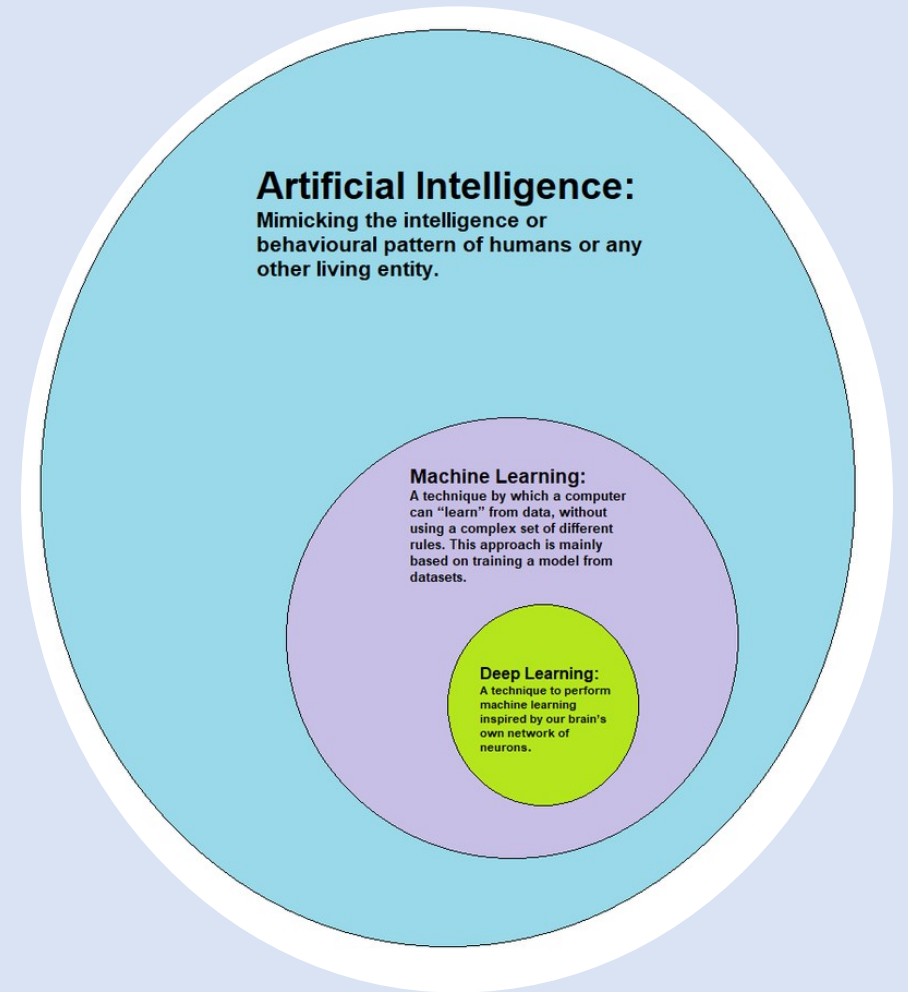- Play N Learn
- Closing

About Me – Umang Nahata

- LinkedIn
- Curious | Thinker | Voracious Reader
- Learn | Experiment | Sharing is Caring*
- Generalist | Varied experience/skills
  - 10+ years in IT
  - STE (Dev + Tester)
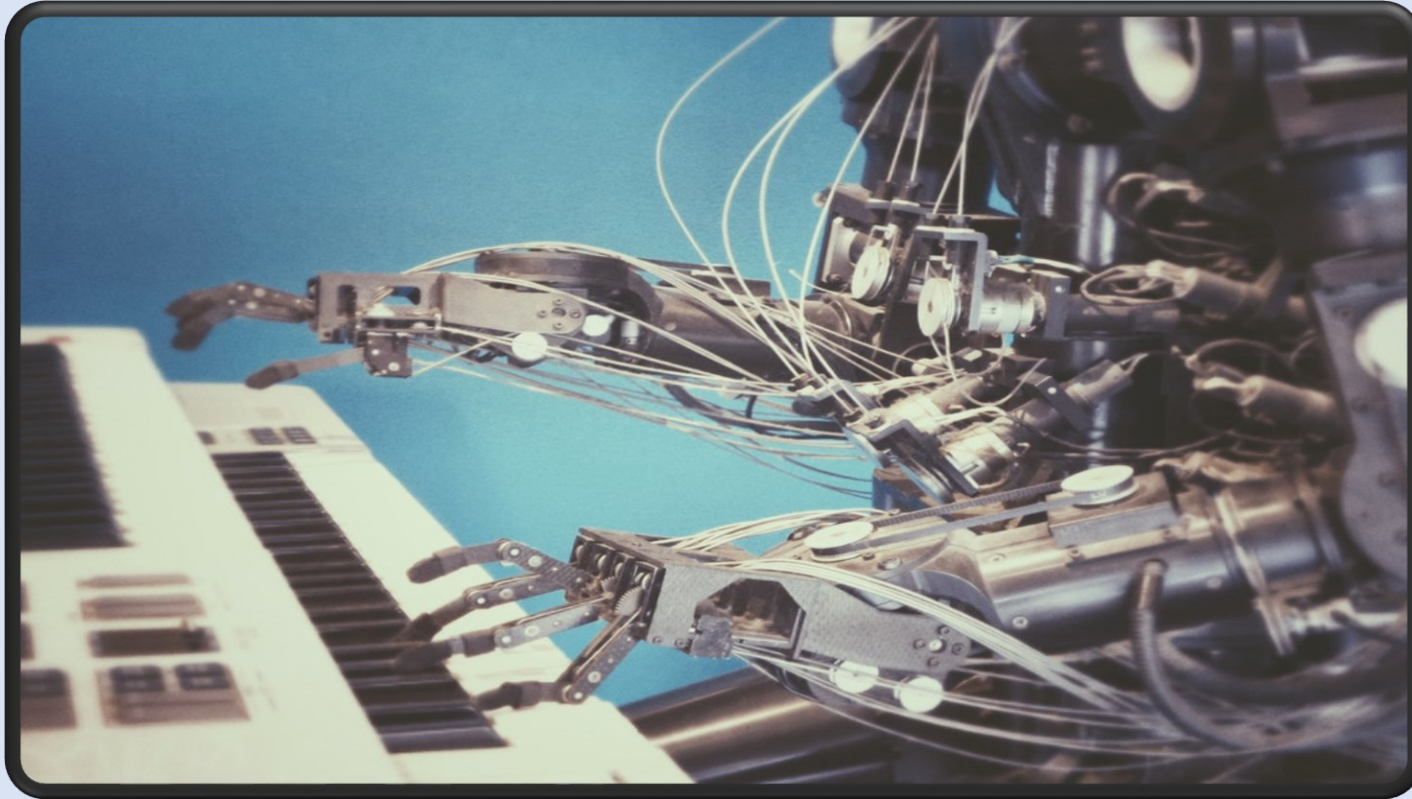 - Progressive, Cleveland

*Not a "Data Scientist" or "AI/ML Expert"

AI/ML Introduction

- Being around 1960s
- Recently enabled
  - Tech. advancements
- ML, DL are means to AI…
  - Think of AI as the goal…
  - Not the only means

Artificial Intelligence:
Mimicking the intelligence or behavioural pattern of humans or any other living entity.

Machine Learning:
A technique by which a computer can "learn" from data, without using a complex set of different rules. This approach is mainly based on training a model from datasets.

Deep Learning:
A technique to perform machine learning inspired by our brain's own network of neurons.

Source: Wikipedia

With AI, we're trying to mimic human behaviors…
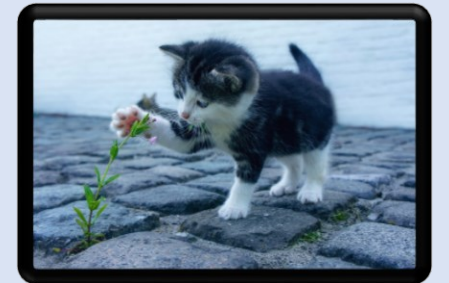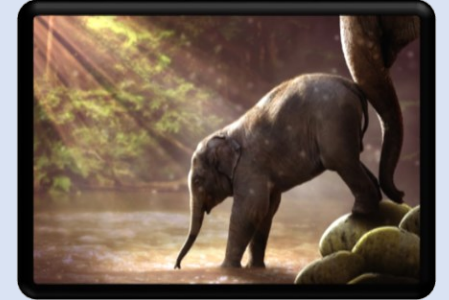

- Sense
- Learn
- Respond
- And more…

Why you should care!!!

- Beyond critical mass
- Getting into H/W
- Interoperability
  - ONNX – Portability std. DL
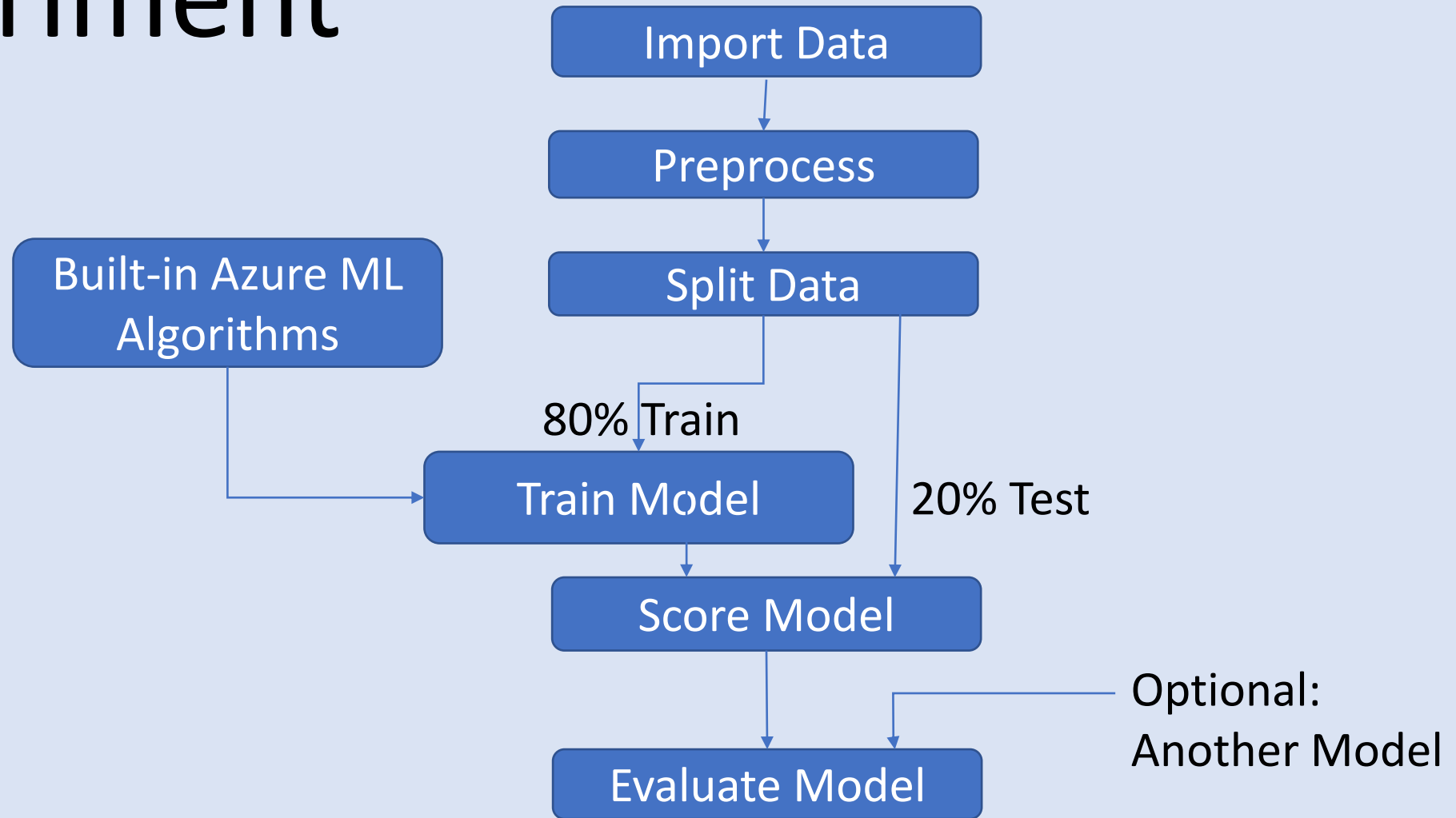- Data the new algorithm?
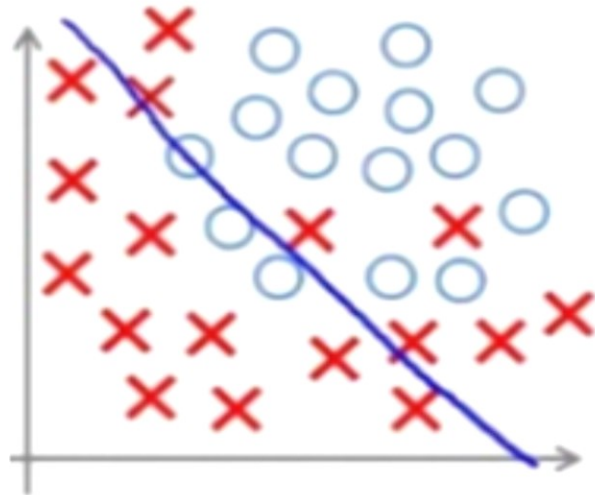
ML Learning Types

- Supervised
  - Labelled ~ Home Prices Prediction
- Unsupervised
  - Finding Patterns ~ Movie Prediction
- Reinforcement
  - Trial and Error when given a goal

Outline for Supervised ML experiment

Import Data

↓

Preprocess

↓

Split Data

Built-in Azure ML Algorithms

80% Train

Train Model

20% Test

Score Model

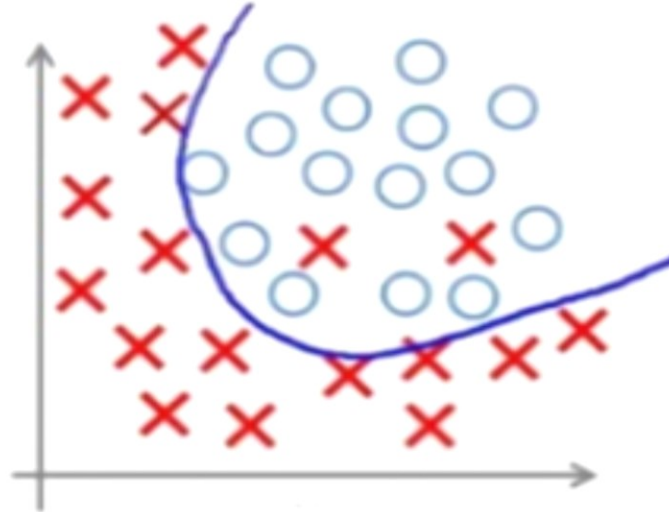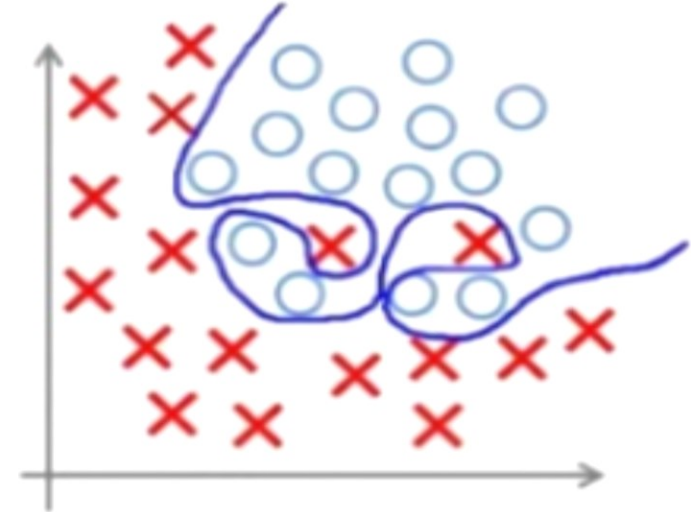Optional: Another Model

Evaluate Model

Over/Under fitting

Under-fitting

(too simple to explain the variance)

Appropriate-fitting

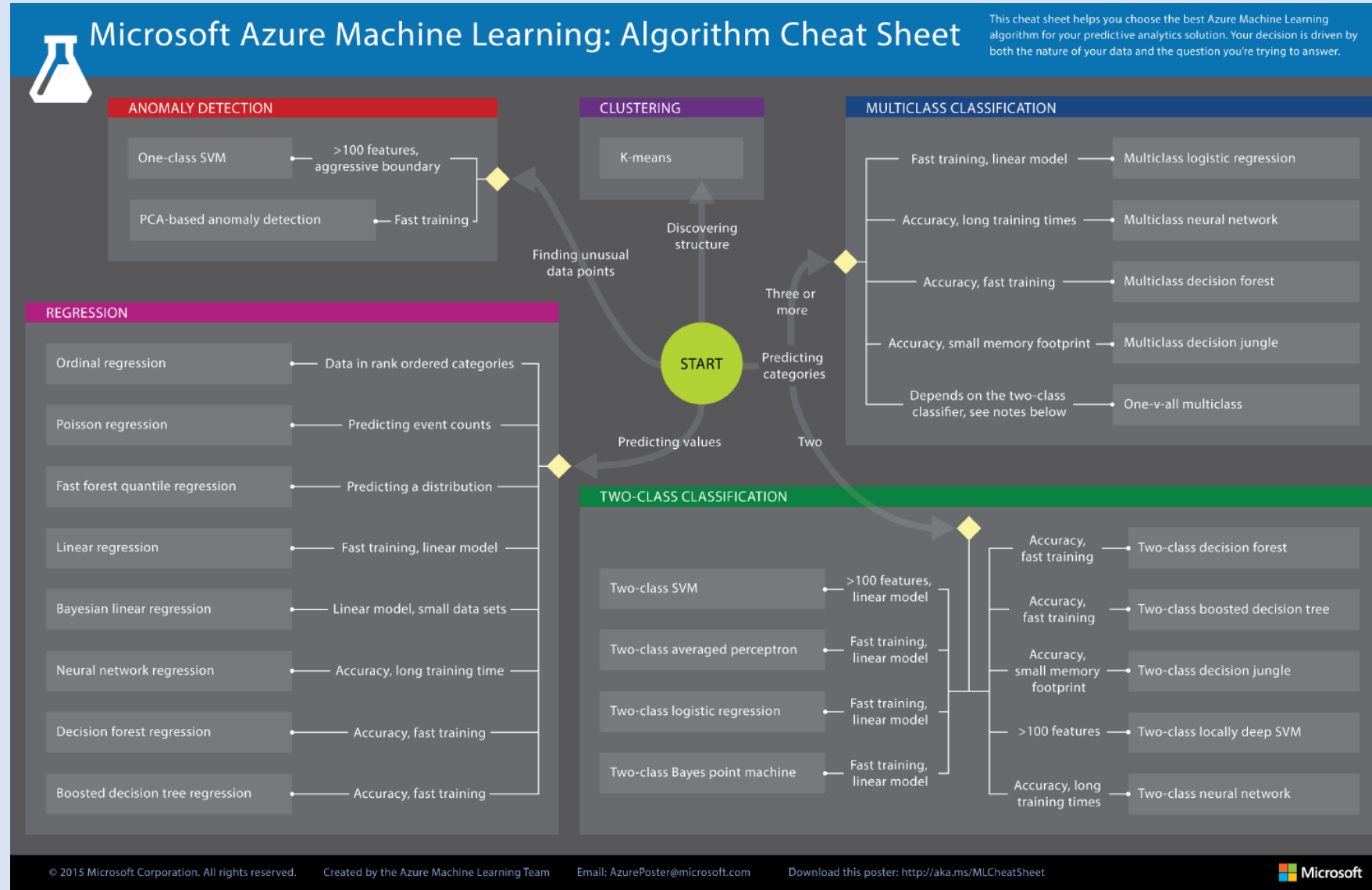Over-fitting

(forcefitting -- too good to be true)

https://medium.com/greyatom/what-is-underfitting-and-overfitting-in-machine-learning-and-how-to-deal-with-it-6803a989c76

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Built-in Azure ML Algorithms
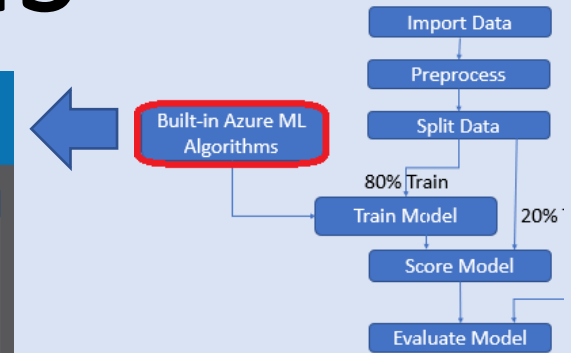
Jump-Starting into Azure ML Studio

1. Create an Azure subscription – Free Tier
2. Setup ML workspace
3. Start using ML studio

https://studio.azureml.net/

https://azure.microsoft.com/en-us/trial/get-started-machine-learning/

Play N Learn - Demo

- Income predictor based on Census data
  - Scenario: Let's think like a BANK/VC/Dating...
- Build an API out of our model
- Discuss some dummy use cases
  - Run 3 profiles and predict income

Profile 1

- AGE = 25
- EDUCATION = Masters
- MARITAL-STATUS = Single
- SEX = Male
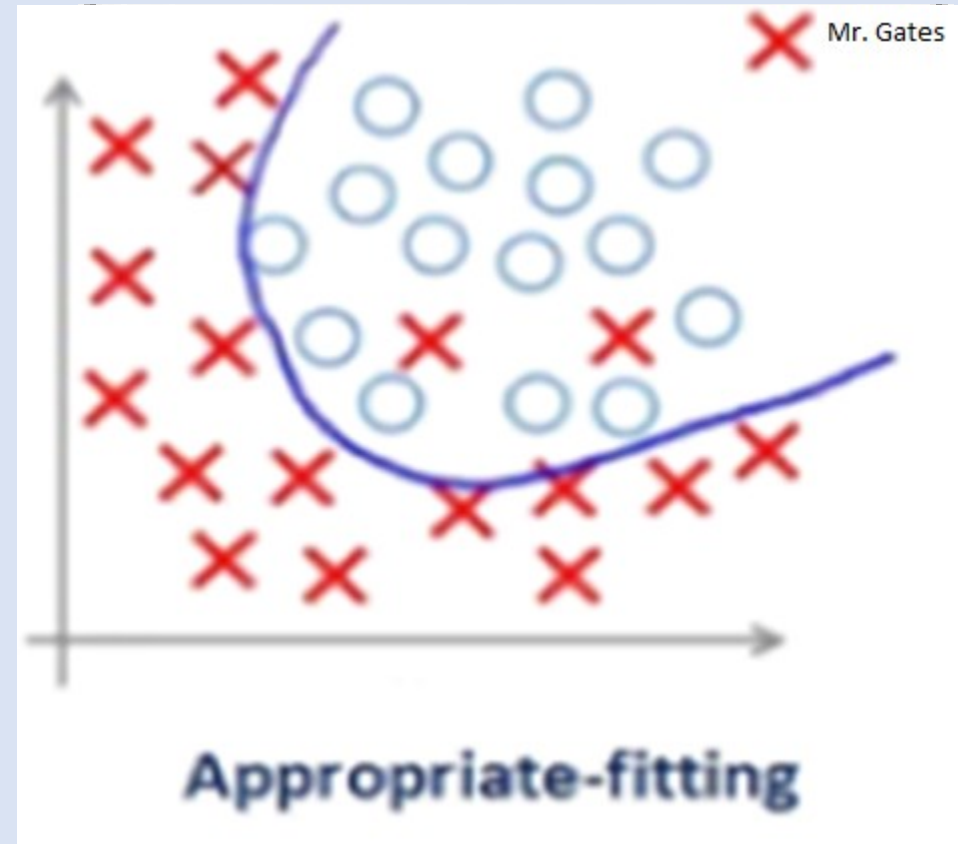- HOURS-PER-WEEK = 40
- **ML Prediction <=50K**

Profile 2

- AGE = 35
- EDUCATION = Doctorate
- MARITAL-STATUS = Single
- SEX = Male
- HOURS-PER-WEEK = 40
- **ML Prediction >50K**

Profile 3

- AGE = 63 or 39
- EDUCATION = HS-grad OR Some-college
- MARITAL-STATUS = Married
- SEX = Male
- HOURS-PER-WEEK = 80
- **ML Prediction <=50K**

Appropriate-fitting

Appendix – Links

- [Becoming Human – What's AI](#)
- [ML 101](#)
- [Intelligence Infographic](#)
- [ML for Humans](#)
- [Azure ML Studio Algorithm Cheat Sheet](#)
- [More detail on Azure ML Studio](#)
- [AI ML Comic](#)

Closing...

- Objective – What are you trying to do?
- Data – New gold ~ GIGO, <u>Bias</u>, Outliers, Testing?
- ML is changing and evolving...Stay curious...
- How will you use this for?
- **Machines are learning....Will you?**