

Introduction to Machine Learning & How to get started ??

Date : 16th February , 2019 | Event : PyDelhi Meetup | Speaker : Ayon Roy

Today's Agenda (16-02-2019)

Part - I

Introduction to Machine Learning

This part of the session will answer the following queries :

- ❑ What actually Machine Learning is ?
- ❑ Why ML is booming today ?
- ❑ How organizations are using Machine Learning ?
- ❑ What are the recent advancements in the field of Machine Learning ?
- ❑ Which tools are being used in the industry for Machine Learning ?

Today's Agenda (16-02-2019)

Part - II

How to get started in Machine Learning ?

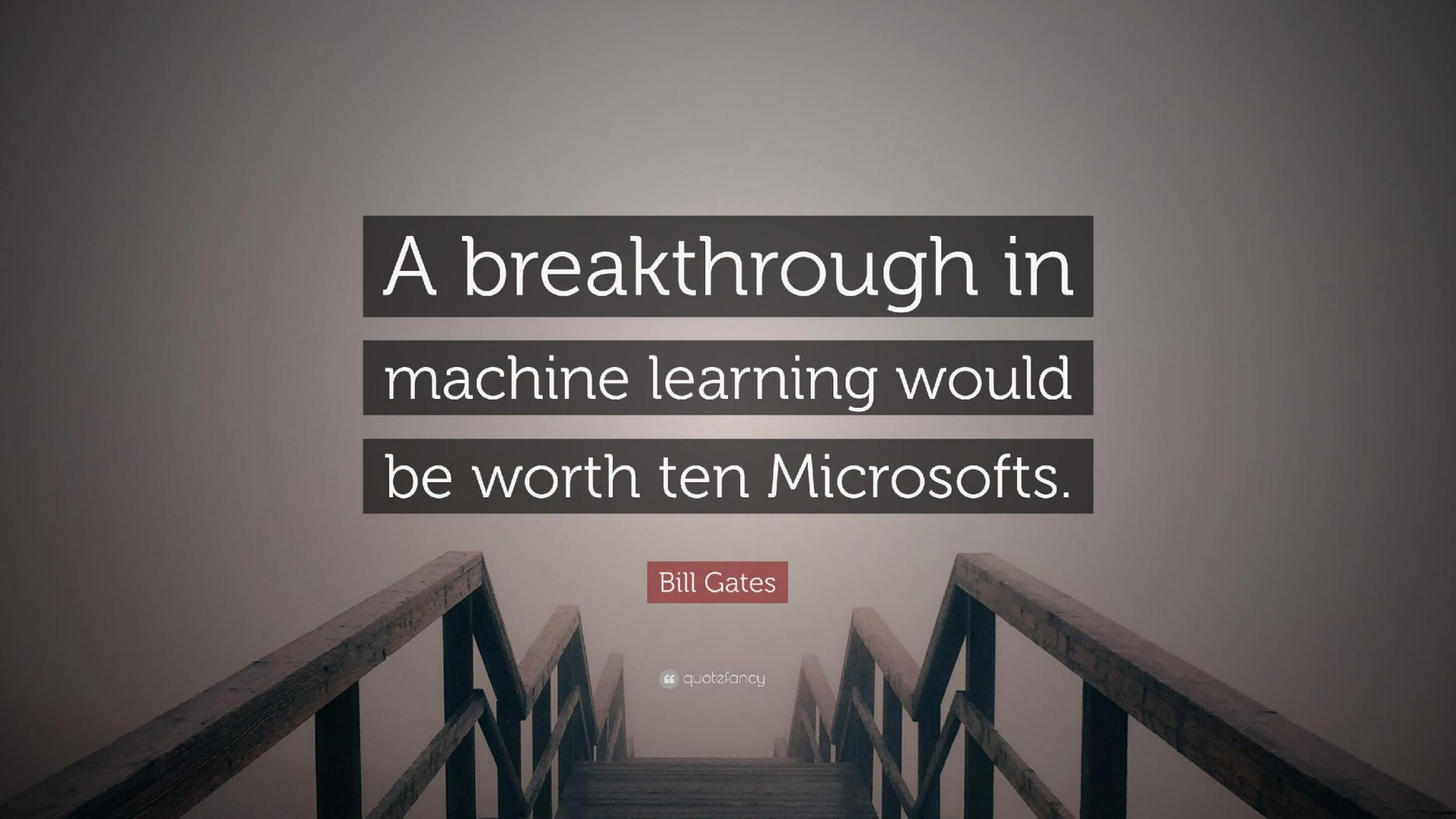
This session will guide you regarding the path that you can take in order to get started in the field of Machine Learning .

But most importantly follow these golden tips to start exploring Machine Learning –

- Be Passionate
- Be Innovative
- Be Eager to learn & break new things
- Be Open minded
- Don't build a machine that can replace human intellect



So let's
get
started !!



A breakthrough in
machine learning would
be worth ten Microsofts.

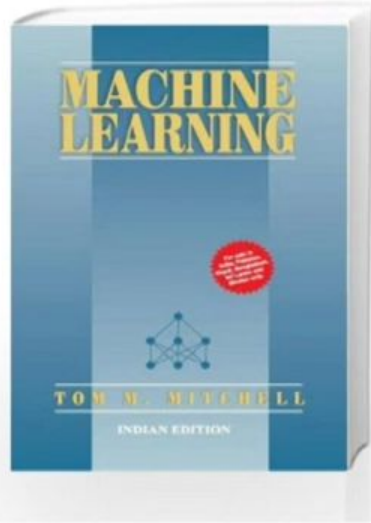
Bill Gates

 quotefancy

What is Machine Learning ?



What is ML ; the hard definition ?



Tom Mitchell

“A computer program is said to learn from experience E with respect to some class of tasks T and performance measure P , if its performance at tasks in T , as measured by P , improves with experience E .”

Is this you ??? ----□
after reading the
lines above ?



What is ML ; the easy definition ?



Andrew Ng

“ It is a technique for programs which
you can not code ”

Is this you , now ??? ----□
after reading the
lines above ?



Still feeling



Chill , No worries !!!
Let`s dive into explanation mode !!!

What is Machine Learning ?

Traditional Programming



- An Algorithm that learns from data , Identifies the pattern in the data & Stores the learning in the form of a Model

- Apply the model to predict on new data

Machine Learning



- Ability to Quickly change, Refresh & Enhance the model with changing dataset and newer data sets

Types of Machine Learning

Supervised Learning

- > Output Labels are known in advance
- > Machine is trained on past data and its output to learn the hidden pattern. Hence the name Supervised
- > Used for predictive analysis

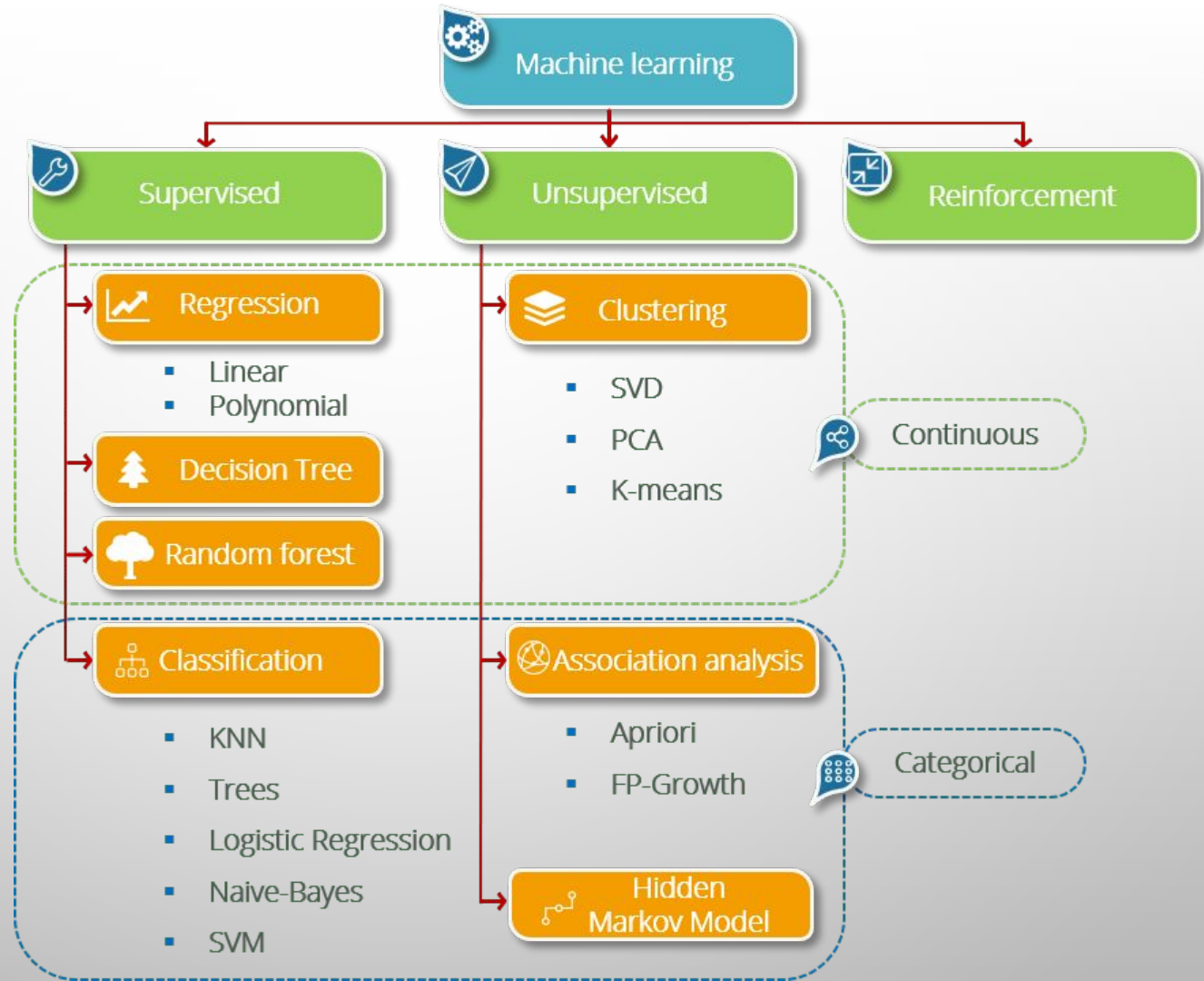
Unsupervised Learning

- > Output labels are not known
- > Machine is not trained on any data. Hence the name Unsupervised
- > Used mainly for clustering

Reinforcement Learning

- > Machine Agent explores its environment for decision making
- > Learning is based on reward & punishment policy
- > Used for making decisions in problems to maximise reward

Some Common Machine Learning Algorithms



How
Organizations
are using
Machine
Learning
in 2019 ?



Top 10 Use Cases for Data Science & Machine Learning



HEALTHCARE:
Patient Diagnosis



FINANCE:
Fraud Detection



MANUFACTURING:
Anomaly Detection



RETAIL:
Inventory Optimization



GOVERNMENT:
Smarter Services



TRANSPORTATION:
Demand Forecasting



NETWORKS:
Intrusion Detection



E-COMMERCE:
Recommender Systems



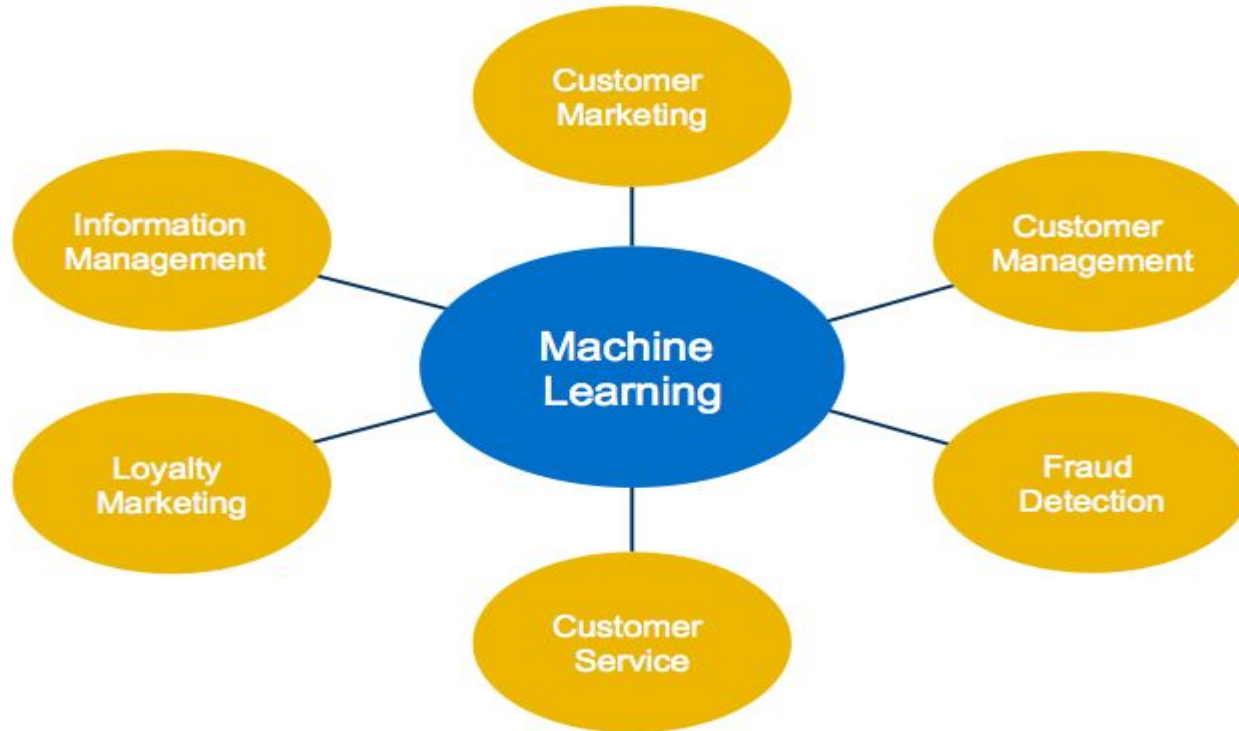
MEDIA:
Interaction & Speed



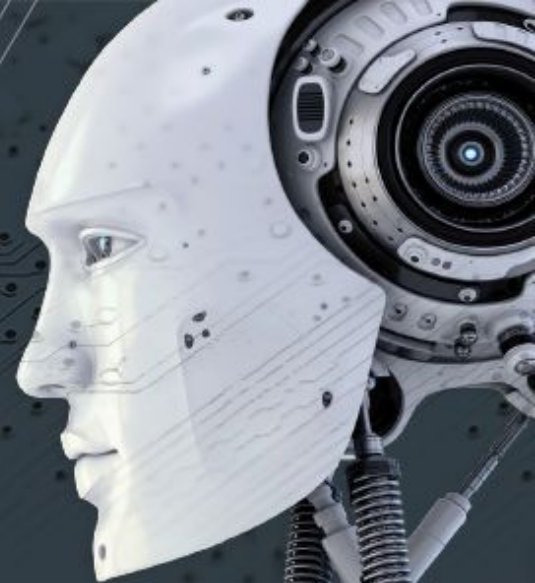
EDUCATION:
Research Insight

For Example

Machine Learning at American Express



WHY MACHINE LEARNING AND WHY NOW?



Computer Science (CS)

Artificial Intelligence (AI)

Machine Learning (ML)

Deep Learning (DL)

HOT !



Feeling the same

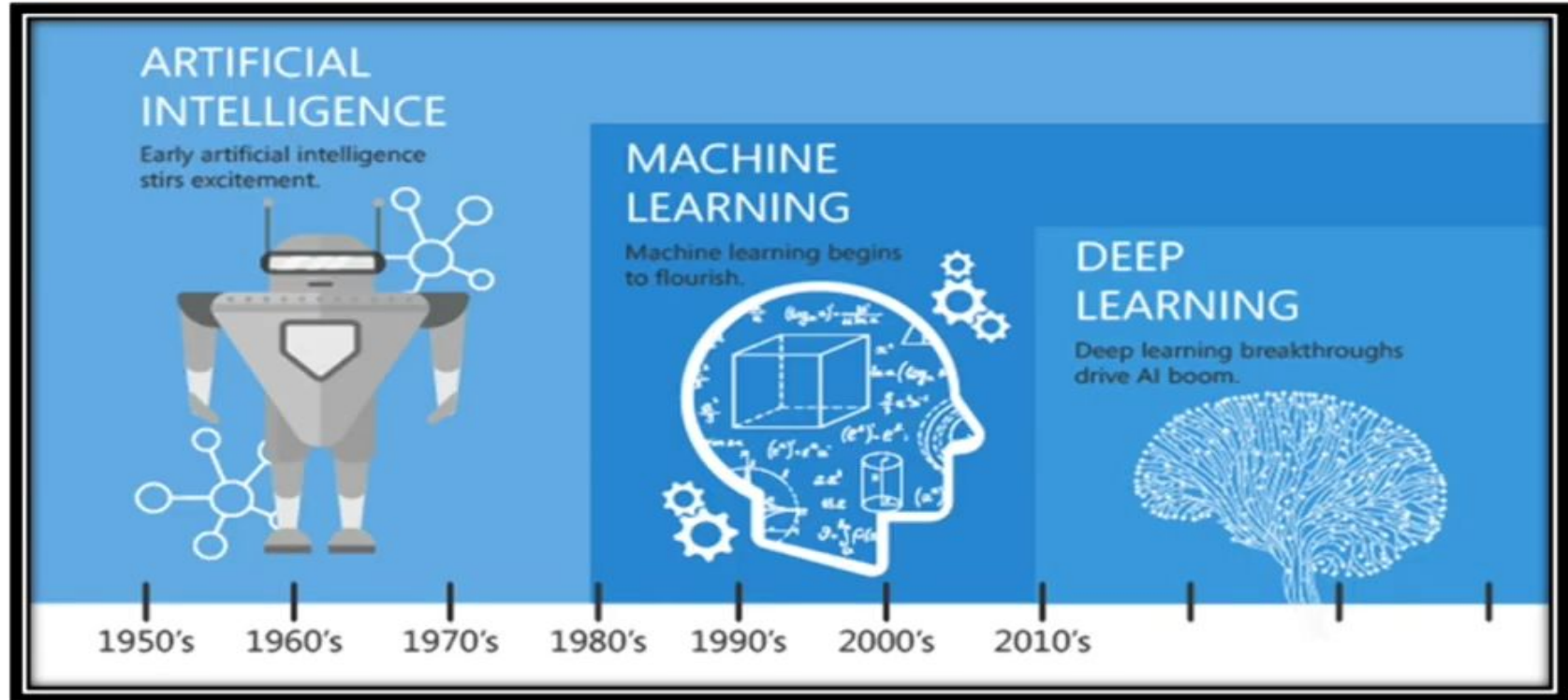
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How would we do this without ML?

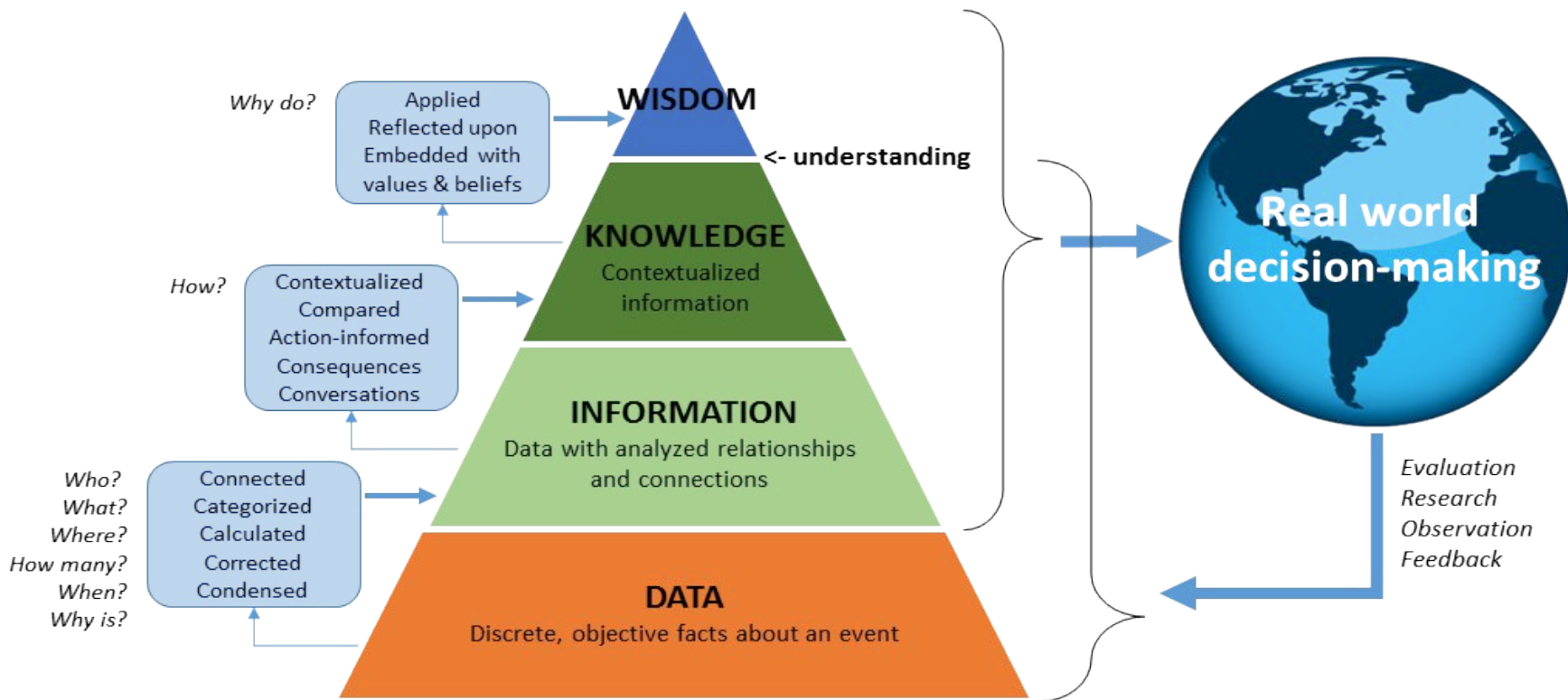


Answer to why Machine Learning ?

How things changed; while we are sitting at Grofers today ?



Answer to why Machine Learning in 2019 ?





Recent Advancements in the field of Machine Learning



Deep learning theory

The information bottleneck principle explains how a deep neural network learns.



Capsule networks

New type of deep neural network that learns with fewer errors and less data, by preserving key hierarchical relationships.



Deep reinforcement learning

This technique combines reinforcement learning with deep neural networks to learn by interacting with the environment.



Generative adversarial networks

A type of unsupervised deep learning system, implemented as two competing neural networks, enabling machine learning with less human intervention.



Lean and augmented data learning

Different techniques that enable a model to learn from less data or synthetic data.



Probabilistic programming

A high-level language that makes it easy for developers to define probability models.



Hybrid learning models

Approach that combines different types of deep neural networks with probabilistic approaches to model uncertainty.



Automated machine learning

Technique for automating the standard workflow of machine learning.



Digital twin

A virtual model used to facilitate detailed analysis and monitoring of physical or psychological systems.



Explainable artificial intelligence

Machine learning techniques that produce more explainable models while maintaining high performance.

Tools used in Machine Learning



Please NOTE :

Tools , here refer to the programming languages , libraries etc. which are used worldwide for experimenting with Machine Learning stuffs !!

Top Machine Learning Languages on GitHub

- 1 Python
- 2 C++
- 3 JavaScript
- 4 Java
- 5 C#
- 6 Julia
- 7 Shell
- 8 R
- 9 TypeScript
- 10 Scala



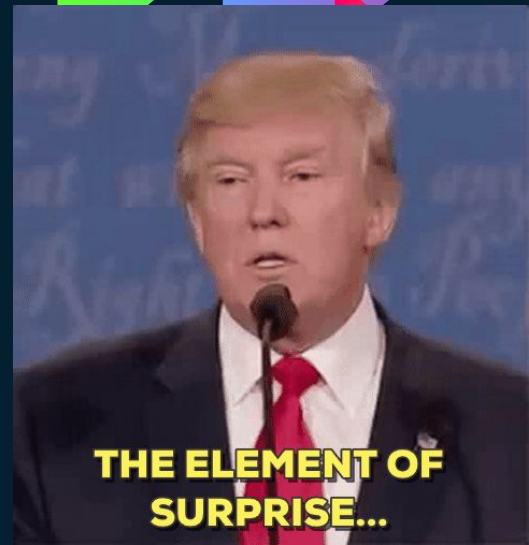
Packages Imported by Machine Learning Projects on GitHub

1	numpy	74%
2	scipy	47%
3	pandas	41%
4	matplotlib	40%
5	scikit-learn	38%
6	six	31%
7	tensorflow	24%
8	requests	23%
9	python-dateutil	22%
10	pytz	21%

Top Machine Learning Projects on GitHub

- 1 tensorflow/tensorflow
- 2 scikit-learn/scikit-learn
- 3 explosion/spaCy
- 4 JuliaLang/julia
- 5 CMU-Perceptual-Computing-Lab/openpose
- 6 tensorflow/serving
- 7 thtrieu/darkflow
- 8 ageitgey/face_recognition
- 9 RasaHQ/rasa_nlu
- 10 tesseract-ocr/tesseract

But ,
HOW
&
WHERE
to start ??



Now that you have got the plan to move forward in Machine Learning strategically , it`s time to



ANALYZE

PRACTICE

ROCK

Danke Scheon

Questions ? Any Feedbacks ? Did you like the talk?
Tell me about it.

If you think I can help you,
connect with me via

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