



DEMYSTIFYING DEEP LEARNING: TUTORIAL SERIES

CHAPTER 1: INTRO TO DEEP LEARNING

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AGENDA FOR THE SERIES

Session	Topic
Session 1	Introduction to Deep Learning
Session 2	Building blocks of Neural Network - 1
Session 3	Building blocks of Neural Network - 2
Session 4	Convolutional Neural Network
Session 5	CNN for Image Classification
Session 6	CNN for Object Detection
Session 7	Architectures like AlexNet, Inception etc.
Session 8	Recurrent Neural Network
Session 9	NLP Applications of RNN

AGENDA FOR SESSION 1

- *What is Deep Learning?*
- *Why is Deep Learning so popular?*
- *What are the various tools available?*
- *What are use cases of Deep Learning?*
- *How can you learn Deep Learning?*

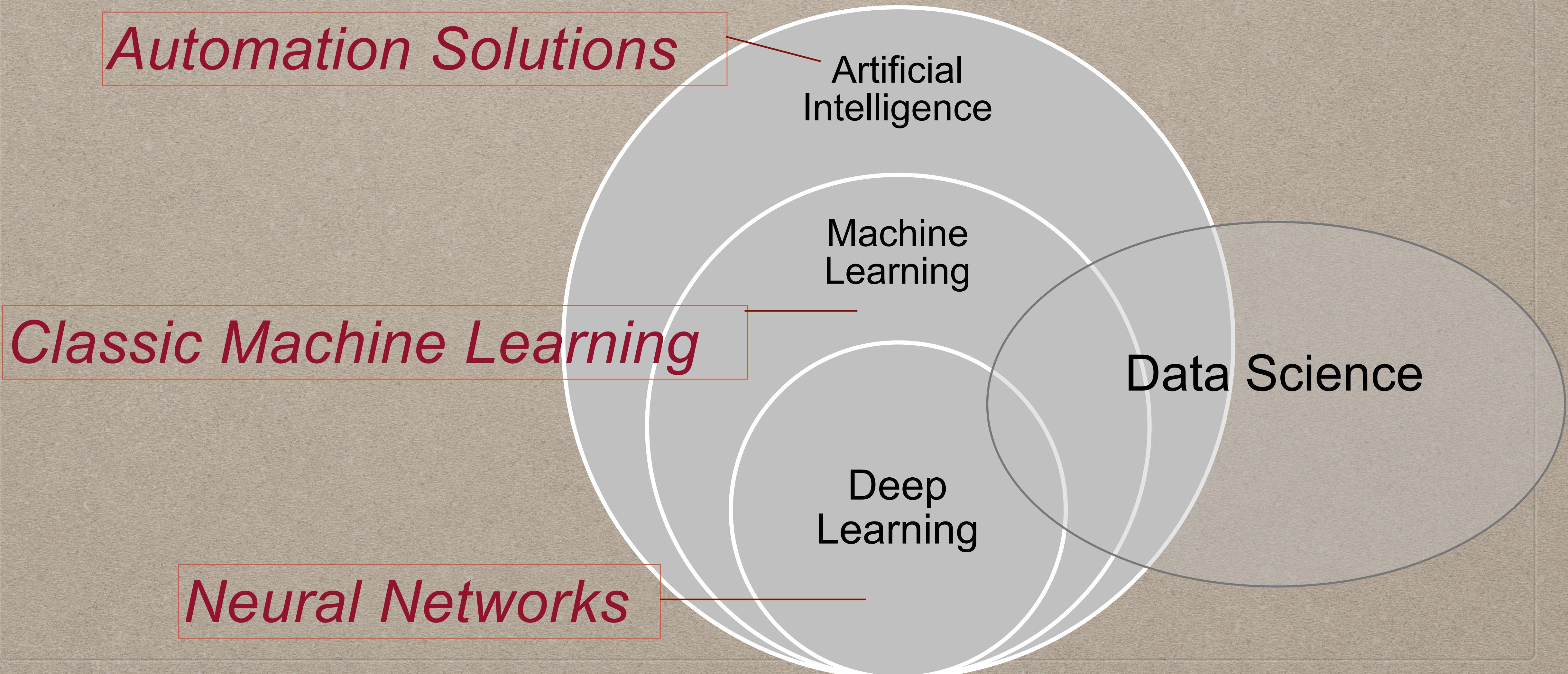


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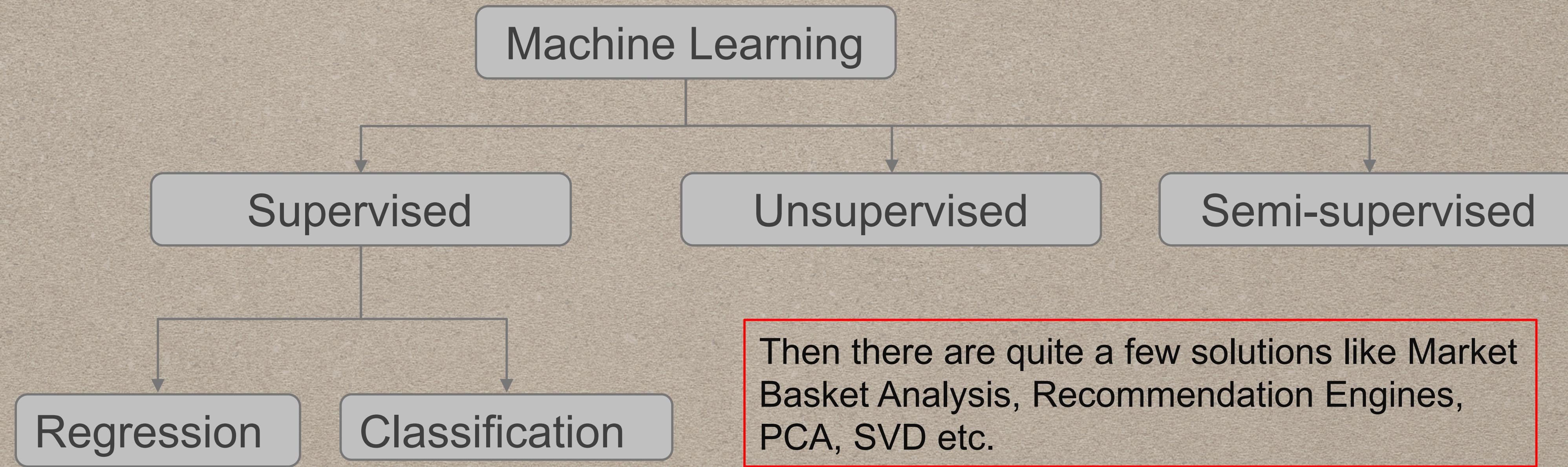
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WHAT IS DEEP LEARNING



IT STARTED WITH MACHINE LEARNING



Algorithms generally used in Machine Learning:

Regression (Linear/Logistic)

Decision Tree

Random Forest

Gradient Boosting

Support Vector Machine

Neural Networks

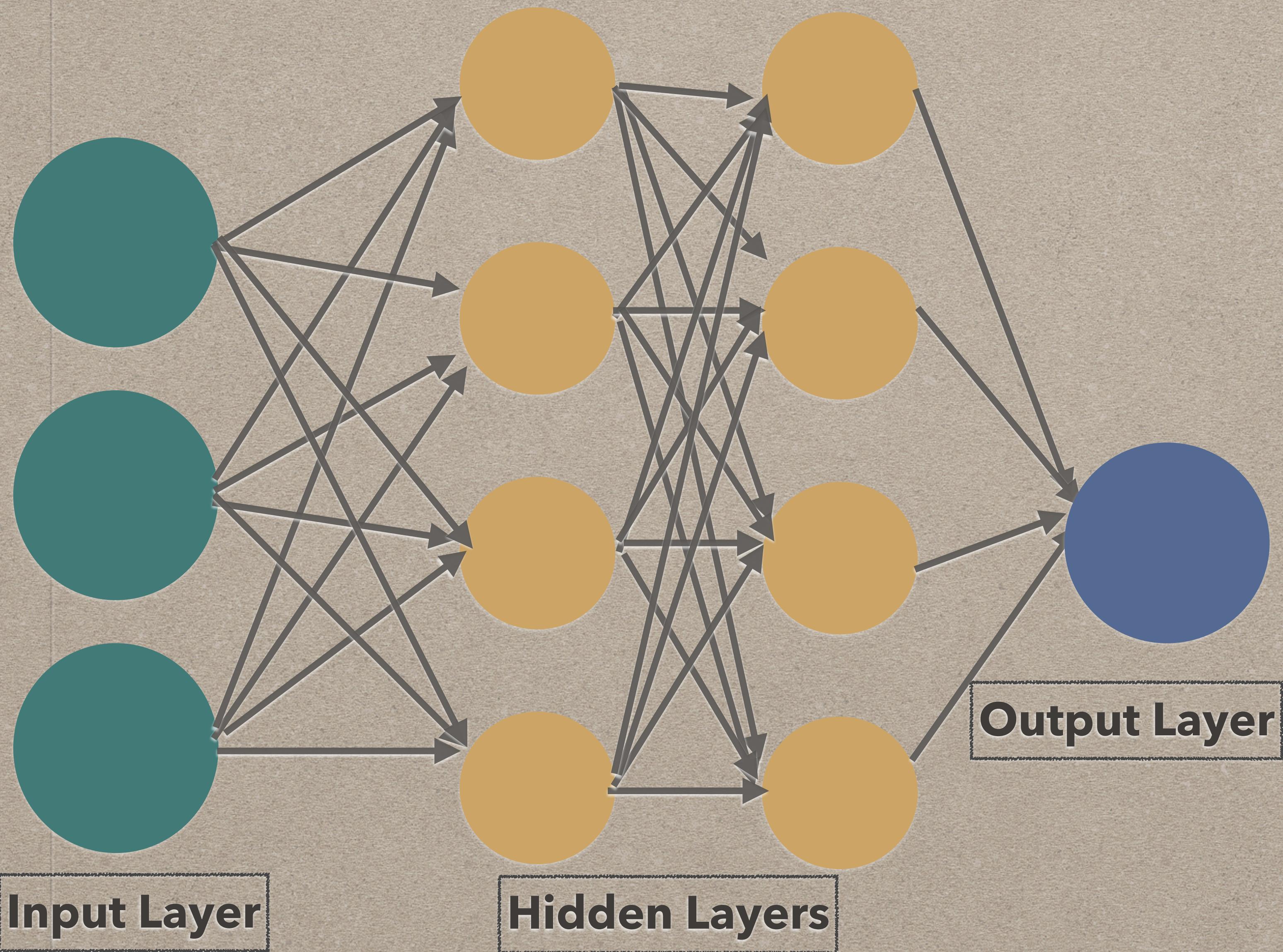
Clustering

Market Basket Analysis

Recommendation Engine

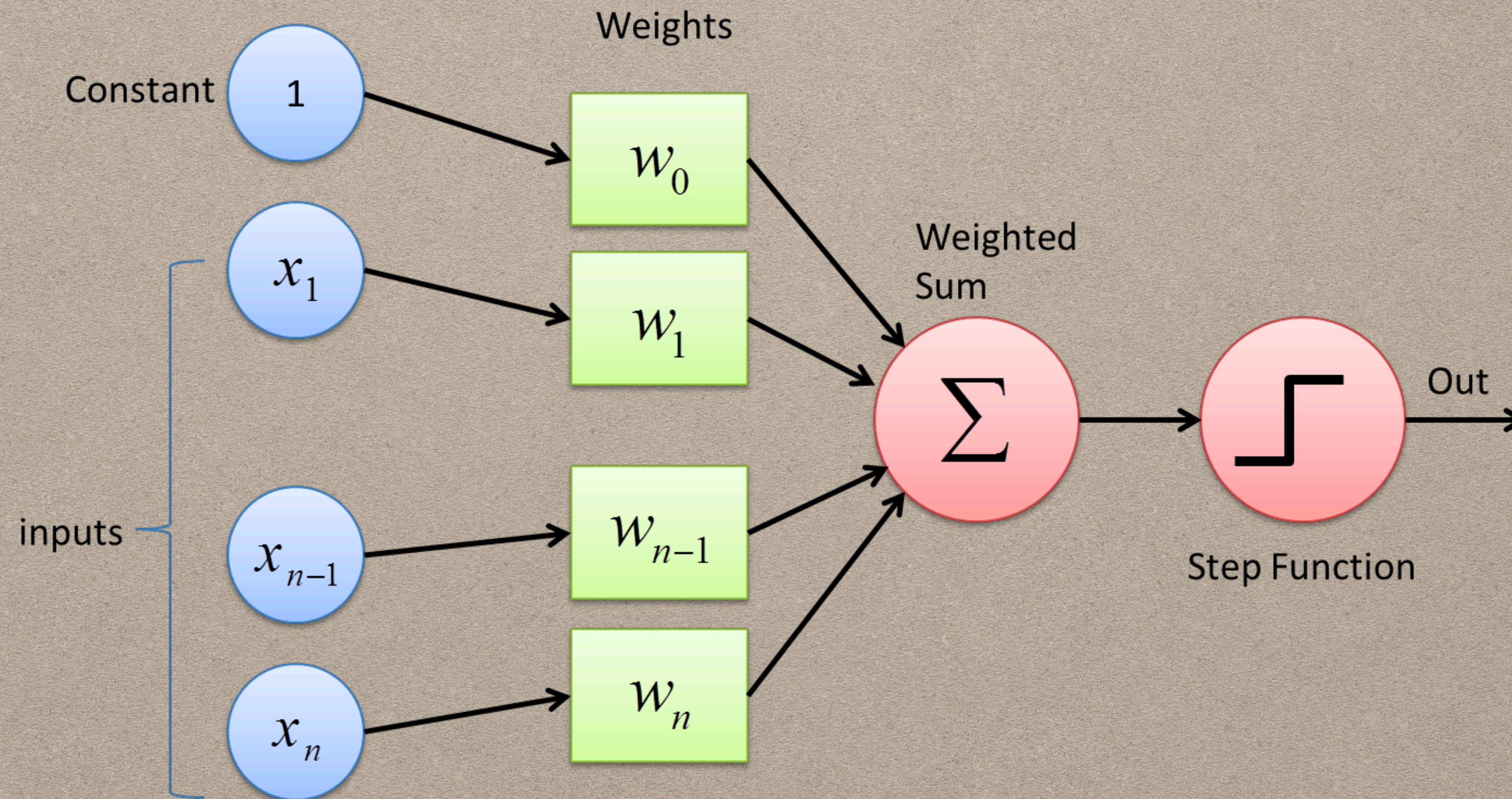
Principal Component Analysis

A TYPICAL NEURAL NETWORK



- Deep refers to the depth in the Neural Network which means the number of hidden layers
- Number of neurons in a layer are also important
- But if the network is deep, it does not necessarily mean that the accuracy will be higher

WHAT IS A PERCEPTRON

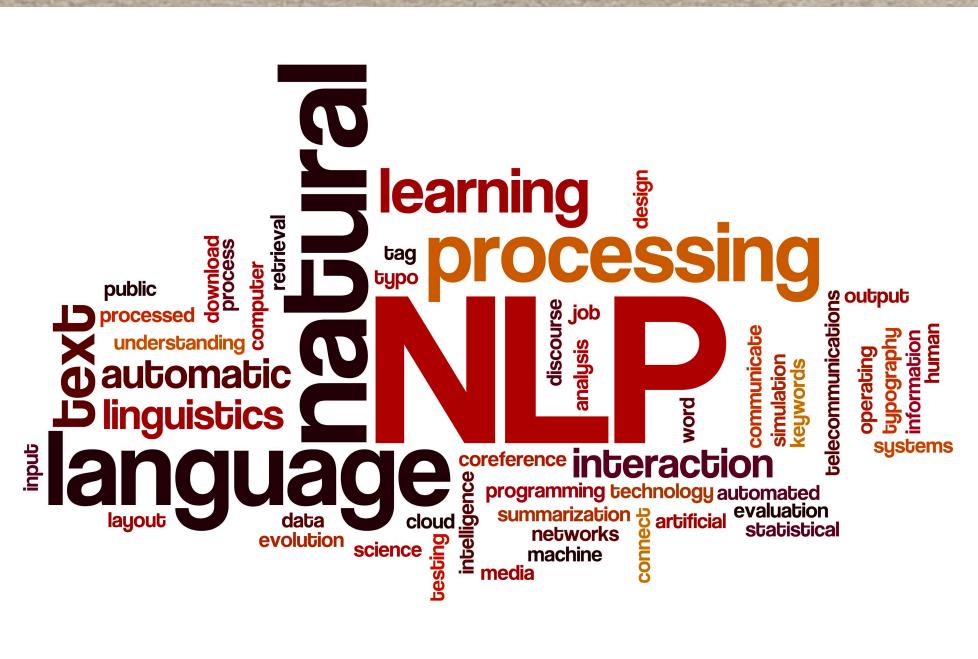


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MACHINE LEARNING HAS FEW LIMITATIONS



Text Data

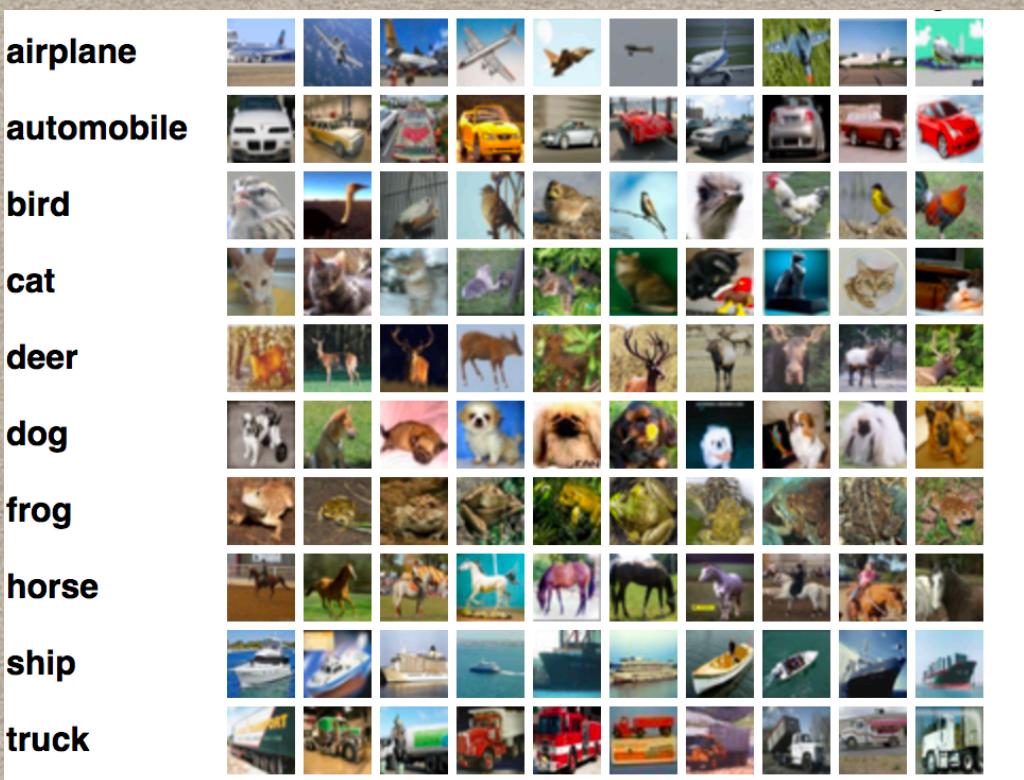
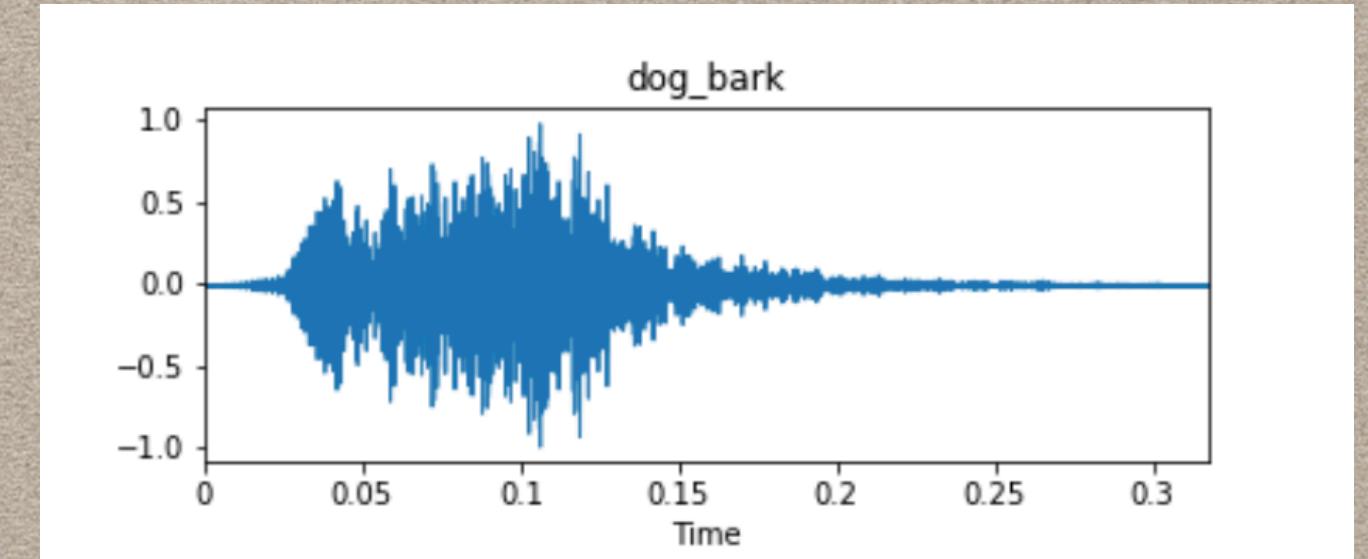


Image Data



Audio Data



Video Data

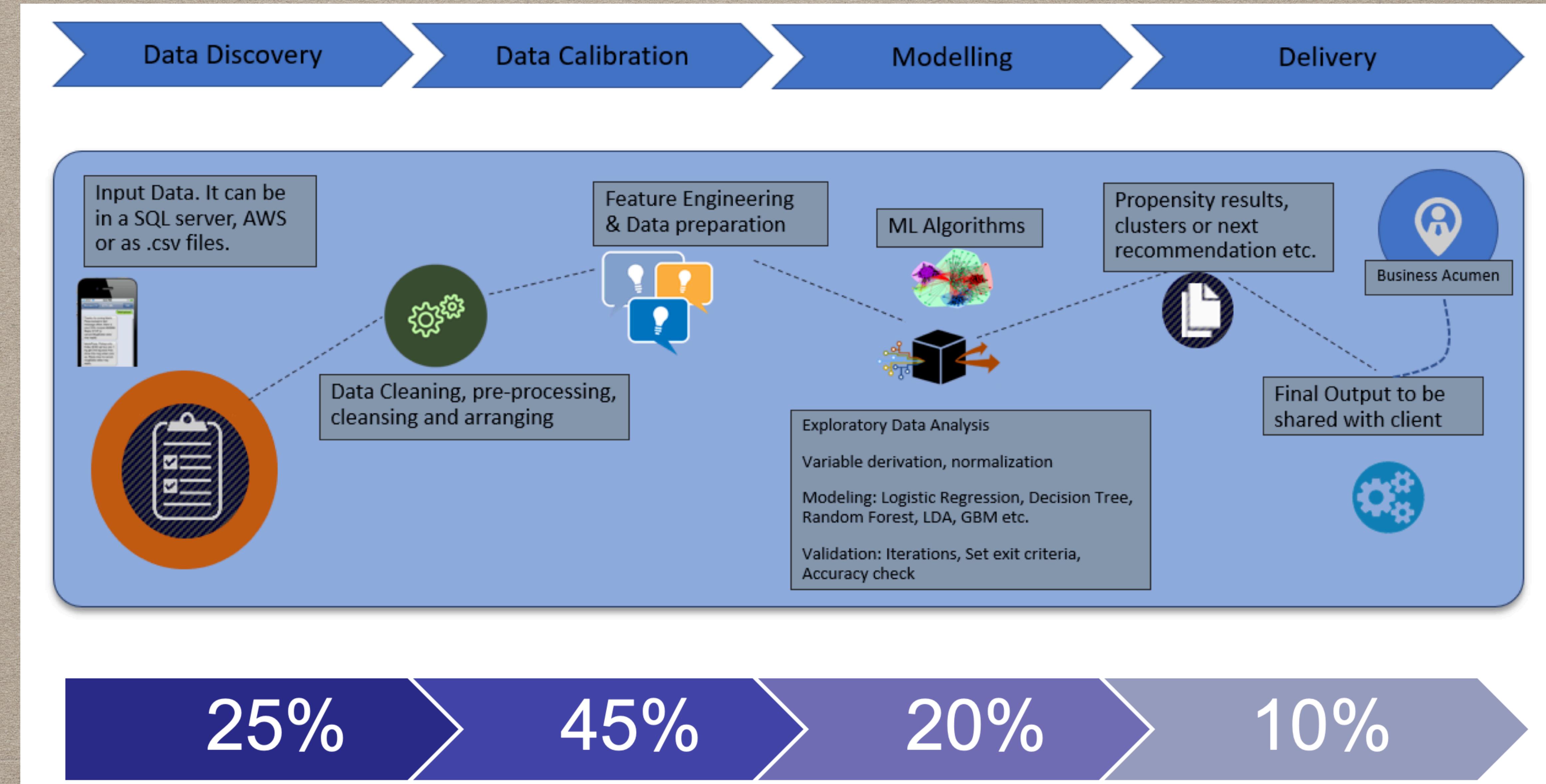
- **Classic Machine Learning like regression, decision tree struggle to find patterns in unstructured data**
- **Deep Learning offers help here to find the patterns**

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MACHINE LEARNING PROJECT PROCESS



THERE ARE QUITE A FEW TOOLS AVAILABLE

Python is becoming the go-to choice for Deep Learning. The number of libraries available, the community support, rich code base and examples at github, the flexibility it offers etc. are the prime reasons for it.



PROCESSING POWER IS AVAILABLE TOO



colab



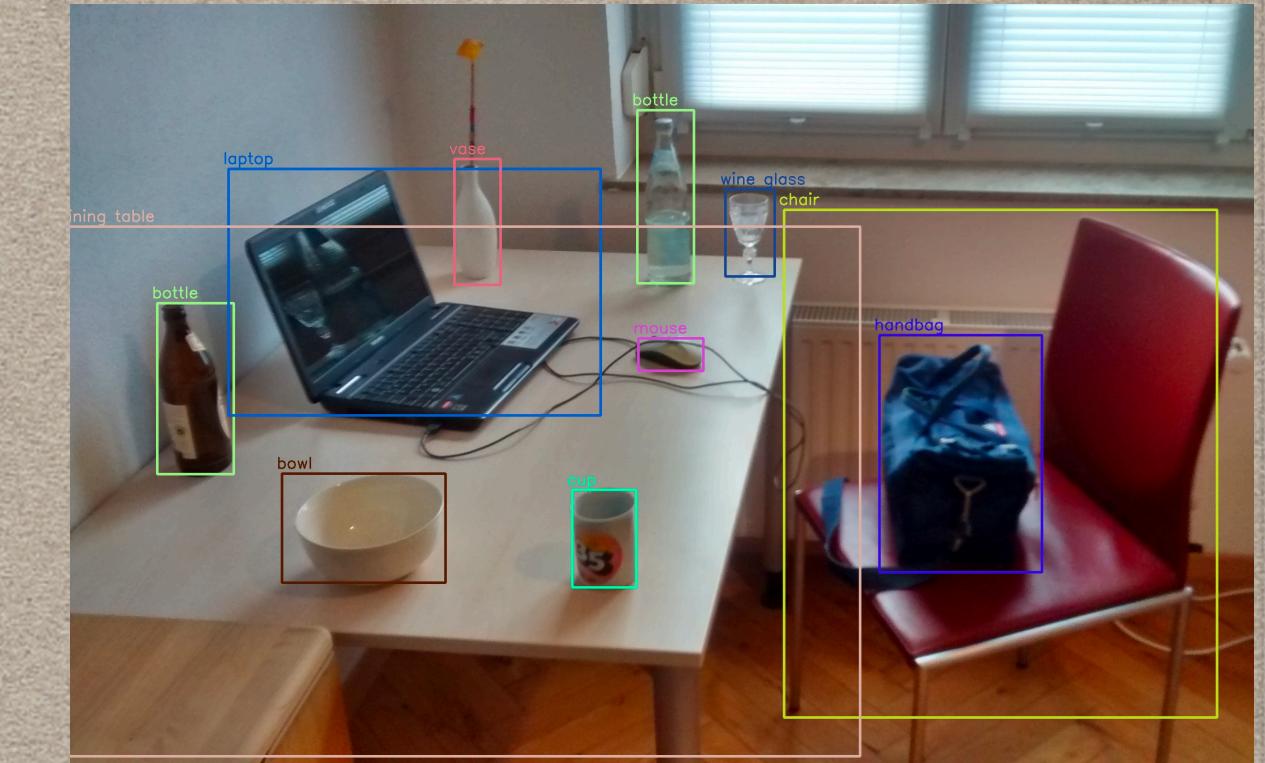
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THE IMPACT OF DEEP LEARNING

- **Object Detection and Object Tracking**
- **Image Classification and identification**
- **Speech to text conversion**
- **Emotion identification in audio file**
- **Video Analytics**
- **Real Time face recognition**
- **Image captioning**
- **Spell and grammar check**
- **Fraud Detection**
- **and many many more...**



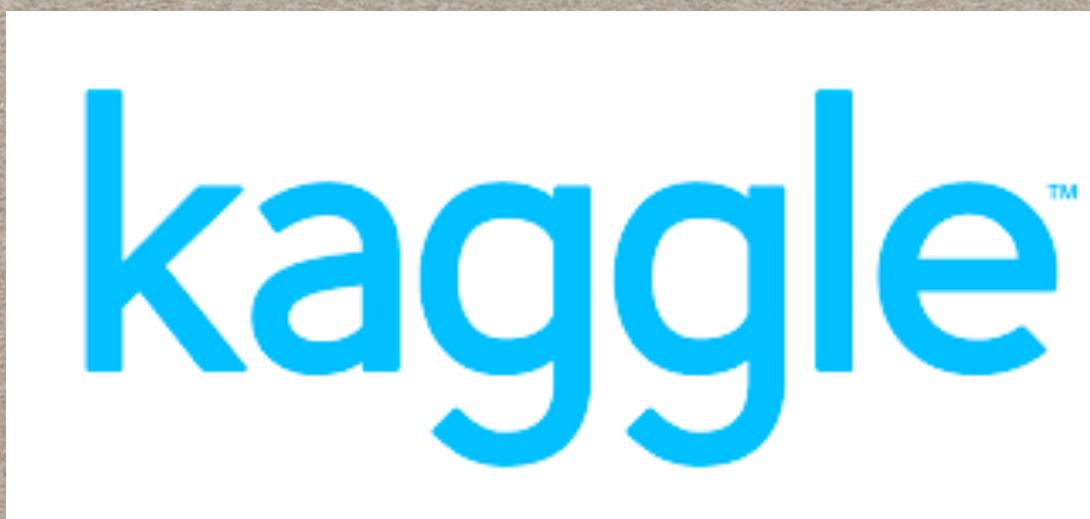
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HOW CAN YOU LEARN DEEP LEARNING

- There are quite a good courses available for it online (both paid and unpaid)
- There are many books available too
- Take an existing code and use it to create your version
- Practice, practice and practice...
- Network, network and network...



QUESTIONS PLEASE!

github.com/vverdhan



thanks

