Artificial Intelligence

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Assistant Professor
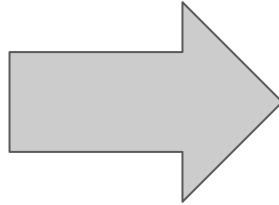MPSTME
NMIMS University

Contents

- What is Intelligence?

- What is Artificial Intelligence?

- A.I. in everyday life

- Machine Learning

- Data

- Deep Learning

- How is A.I. beneficial?

What is Intelligence ?

- Perception
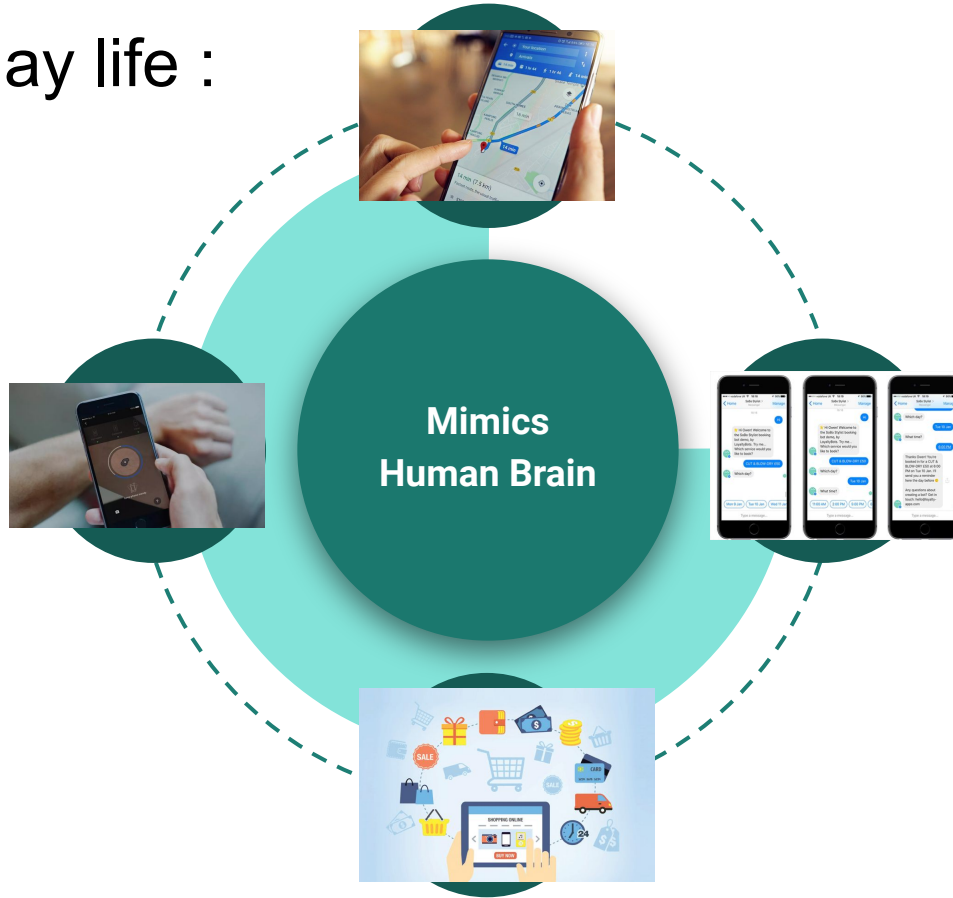
- Learning

- Reasoning

- Problem Solving

What is 'Artificial' Intelligence ?

- Perception

- Learning

- Reasoning

- Problem Solving

by MACHINE

A.I. in everyday life :
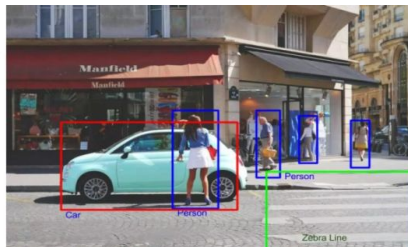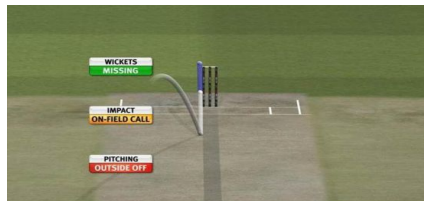

Mimics
Human Brain

AUTISM detection

- Eye Movement tracking (eye tracking Image)

- Speech Signal (Audio)

- Motor Difficulties(movement/Videos)

- MRI Scan(Medical Images)

- Questionnaire (Structured data)

OBJECT detection

Object tracking

Detecting Vehicles
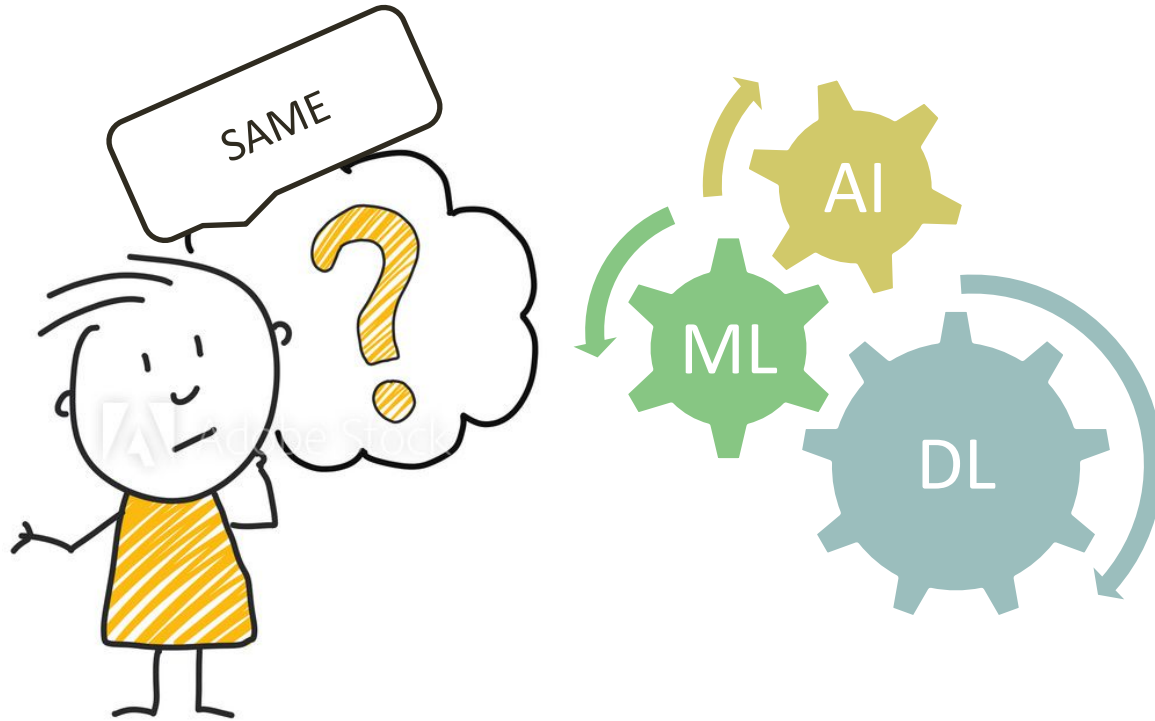
Counting the crowd
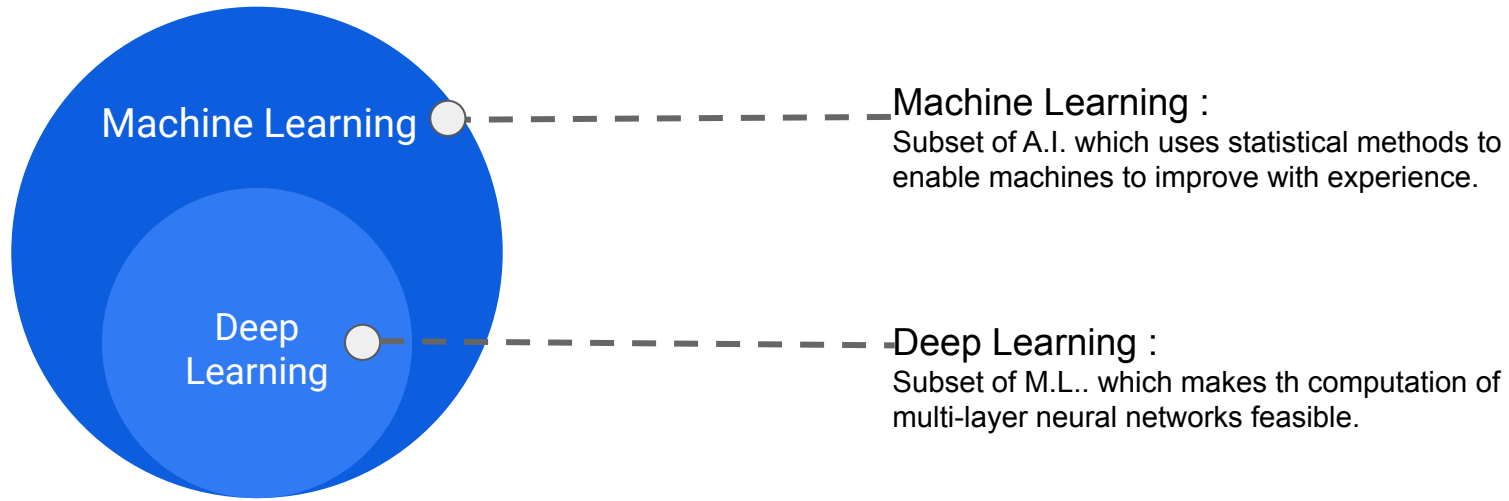
Anomaly Detection

Self driving cars

A.I. for the visually impaired

Machine Learning and Deep Learning

The M.L. Landscape

Machine Learning :
Subset of A.I. which uses statistical methods to enable machines to improve with experience.

Deep Learning :
Subset of M.L.. which makes th computation of multi-layer neural networks feasible.

ML : Definitions

" Learning is any process by which a system improves performance from experience."

Herbert Alexander Simon

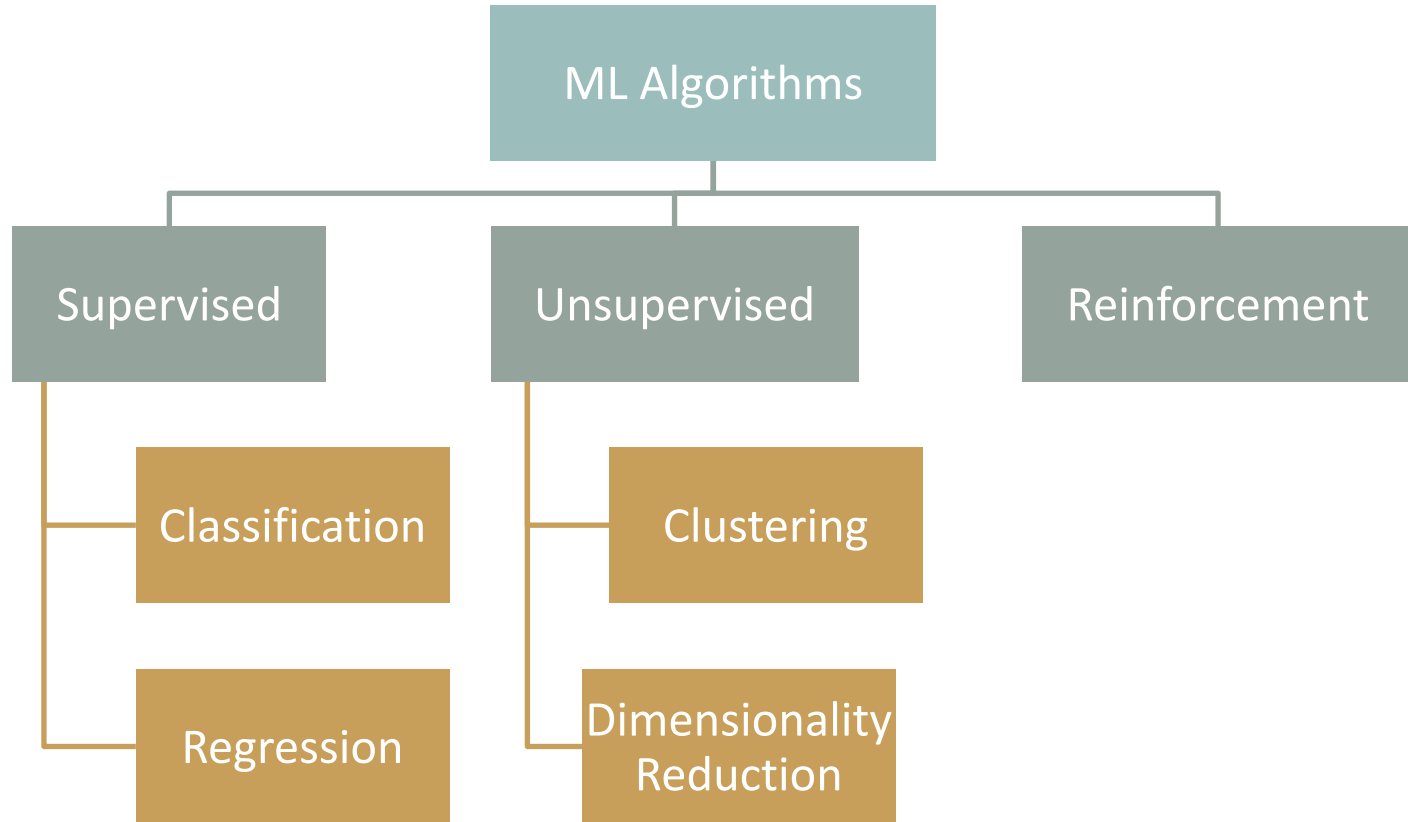" Machine Learning is concerned with computer programs that automatically improve their performance through experience."
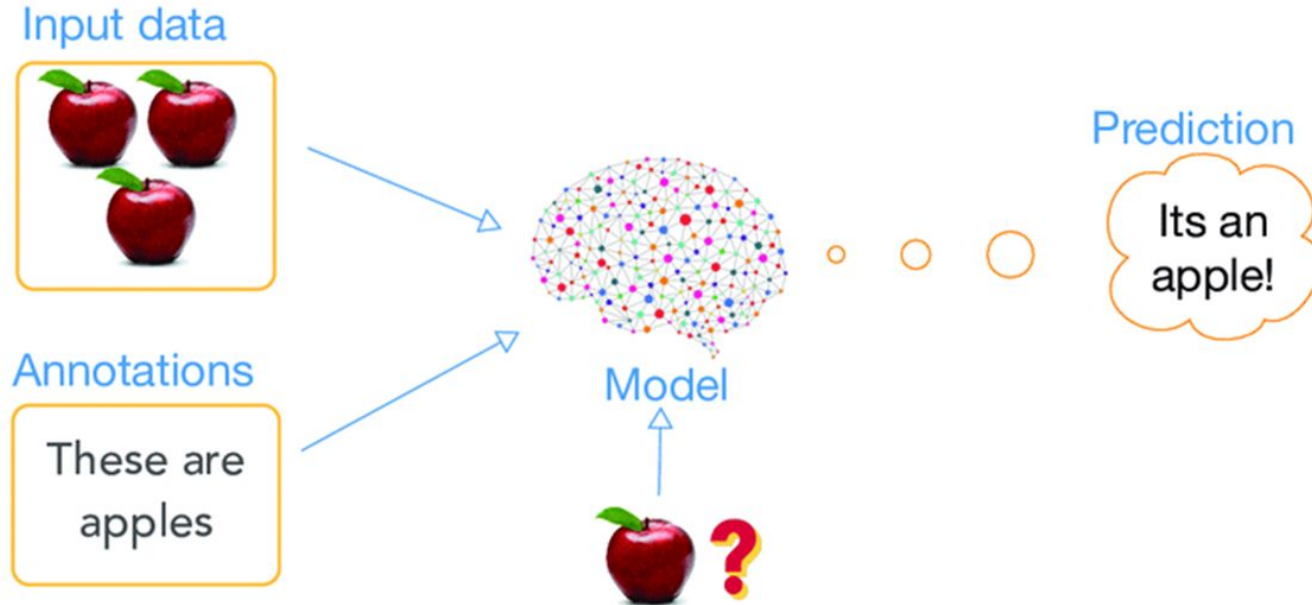
Classical Programming v/s ML Paradigm

Data →

Rules →

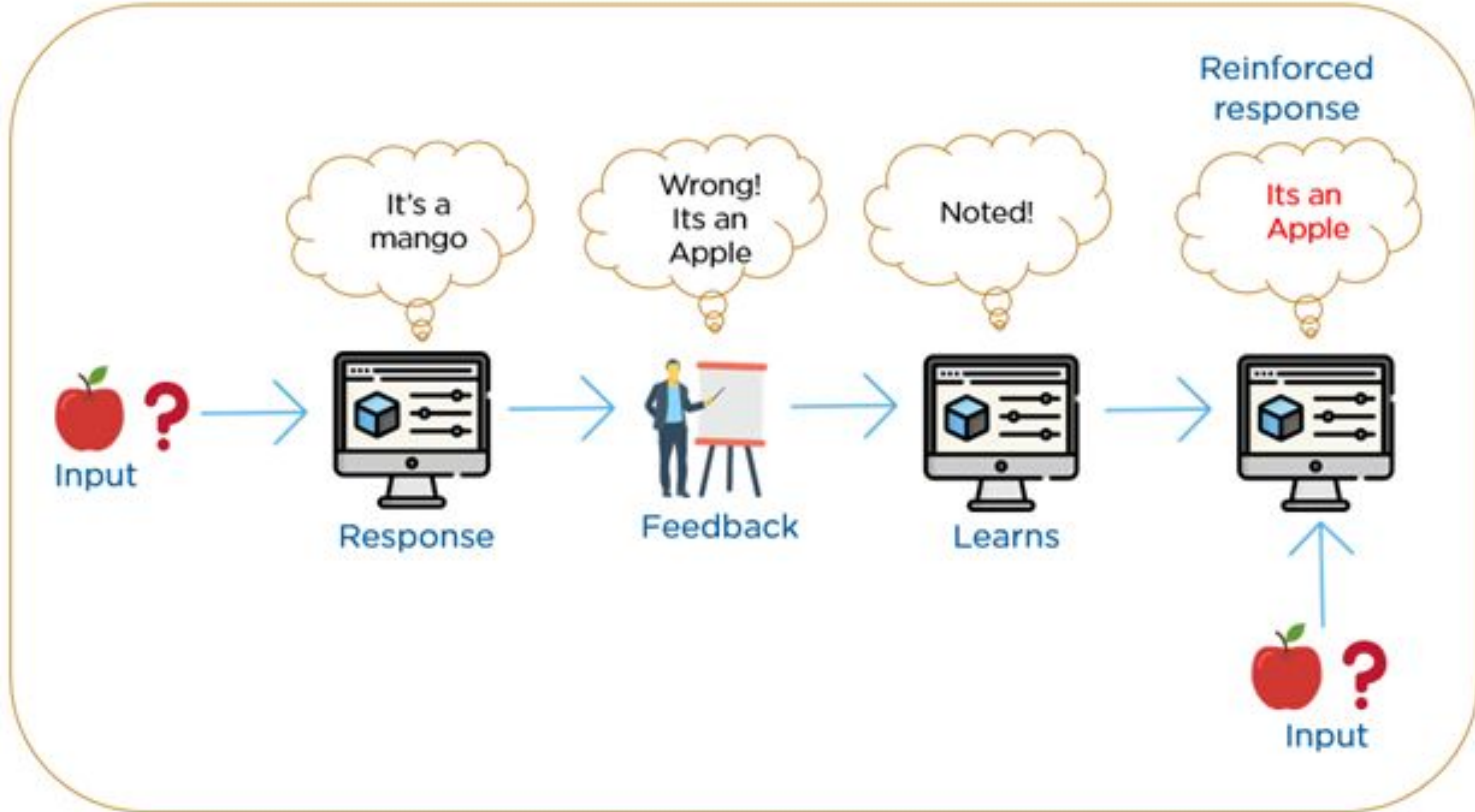Classical Programming

→ Output

Data →

Output →

Machine Learning

→ Rules
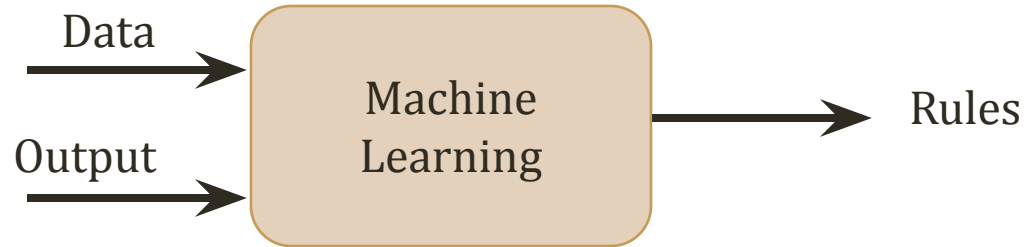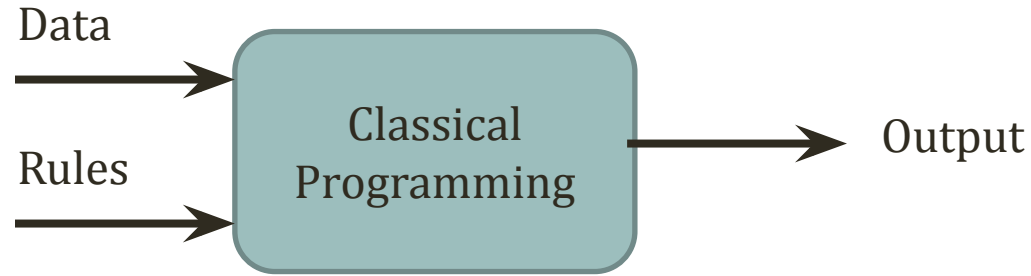
Training and Testing ML models
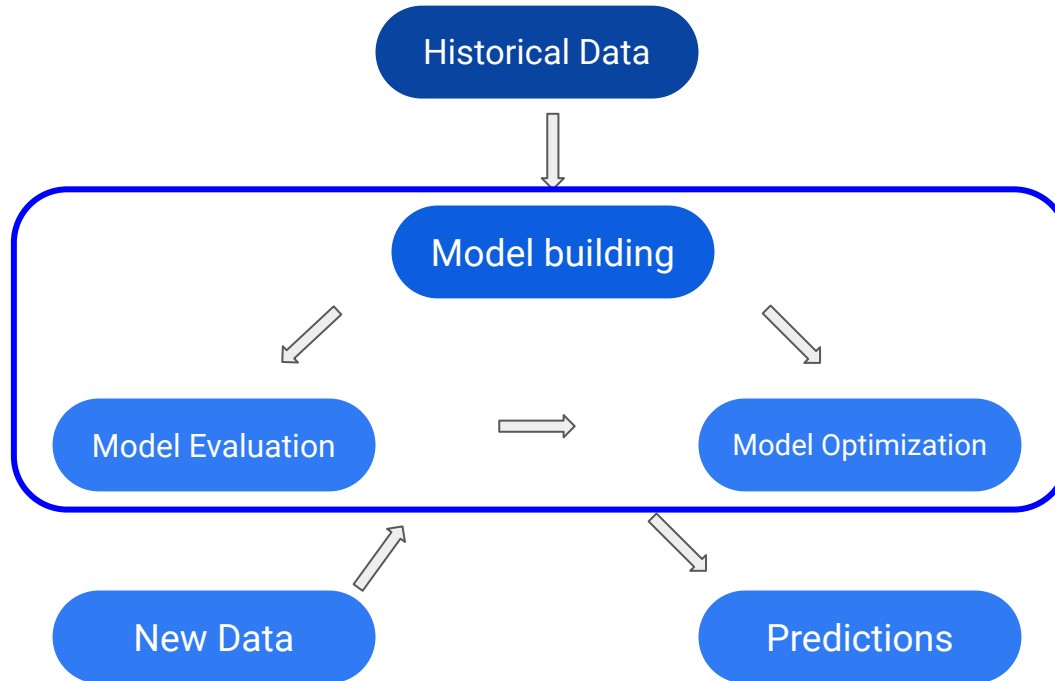
Types of ML models

Supervised Learning - Classification
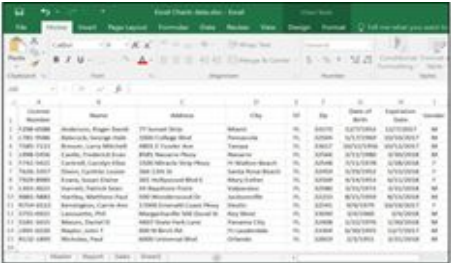
Reinforcement Learning

Types of Data

- Flood of available data types (especially with the advent of the Internet)
- Types of DATA
  - Structured (simpe)
    - Database
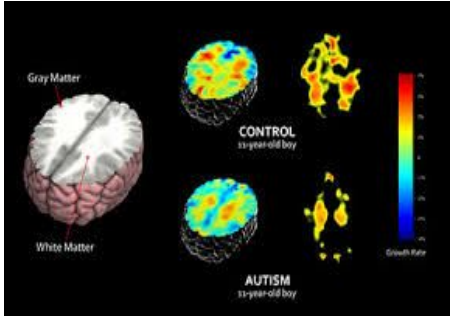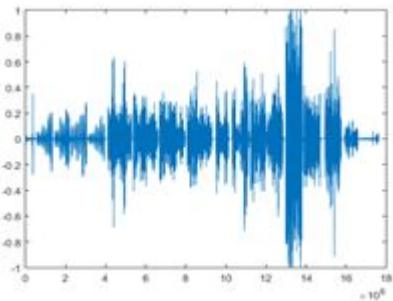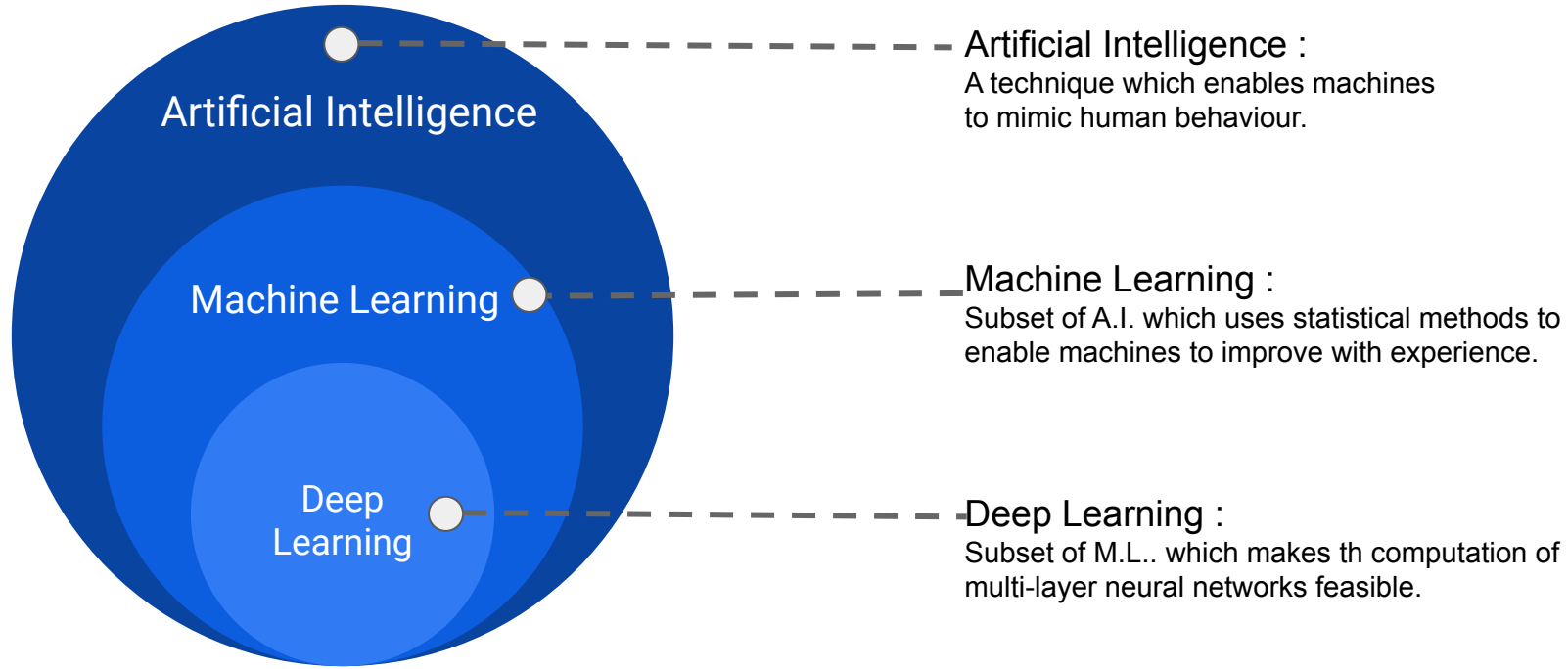 - Unstructured (complex)
    - Images, Video, Audio

Data Modalities

The A.I. Landscape

Artificial Intelligence

Machine Learning

Deep
Learning

Artificial Intelligence :
A technique which enables machines
to mimic human behaviour.

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Subset of A.I. which uses statistical methods to
enable machines to improve with experience.

Deep Learning :
Subset of M.L.. which makes th computation of
multi-layer neural networks feasible.
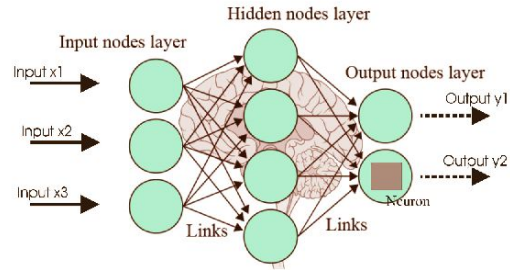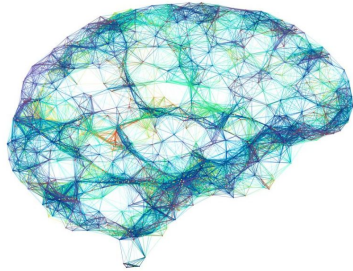
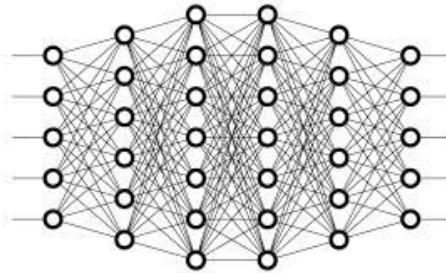# Deep Learning Architecture
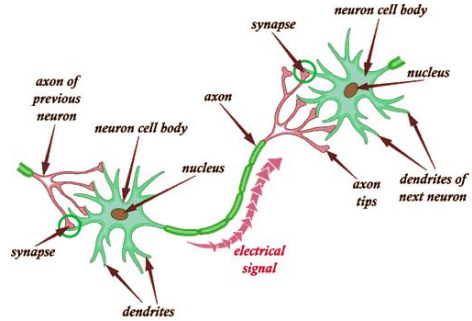
Neuron in our brain.

Neural Network develop using A.I.

How are IMAGES interpreted ?

How is A.I. beneficial ?

- Empathy + Rationality
- Creativity + Perseverance
- Curiosity + Efficiency

Augmented Intelligence

We are better Together