



DATA ANALYSIS

Machine Learning Part 1

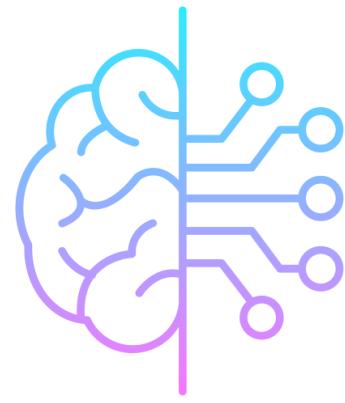
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MIND REFRESHING

let us remember

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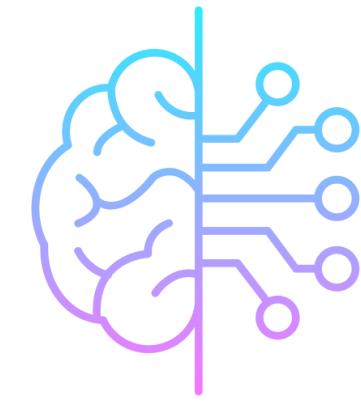
Libraries



A library is a collection of modules that provide additional functionality for use in a Python program.

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Libraries



Well-known libraries for data manipulation

Pandas

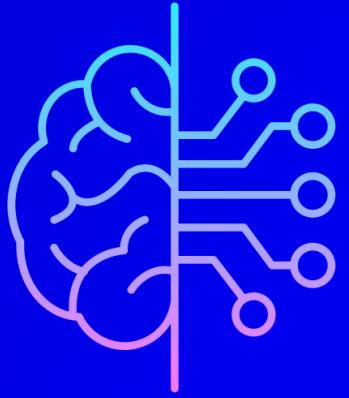
Pandas is a library for data analysis that provides fast and flexible data structures for efficiently storing and manipulating large datasets.

pip install pandas

NumPy

NumPy is a library for numerical computing that provides support for large arrays and matrices of numerical data, along with a large collection of mathematical functions to operate on these arrays.

pip install numpy



WHAT IS ARTIFICIAL INTELLIGENCE

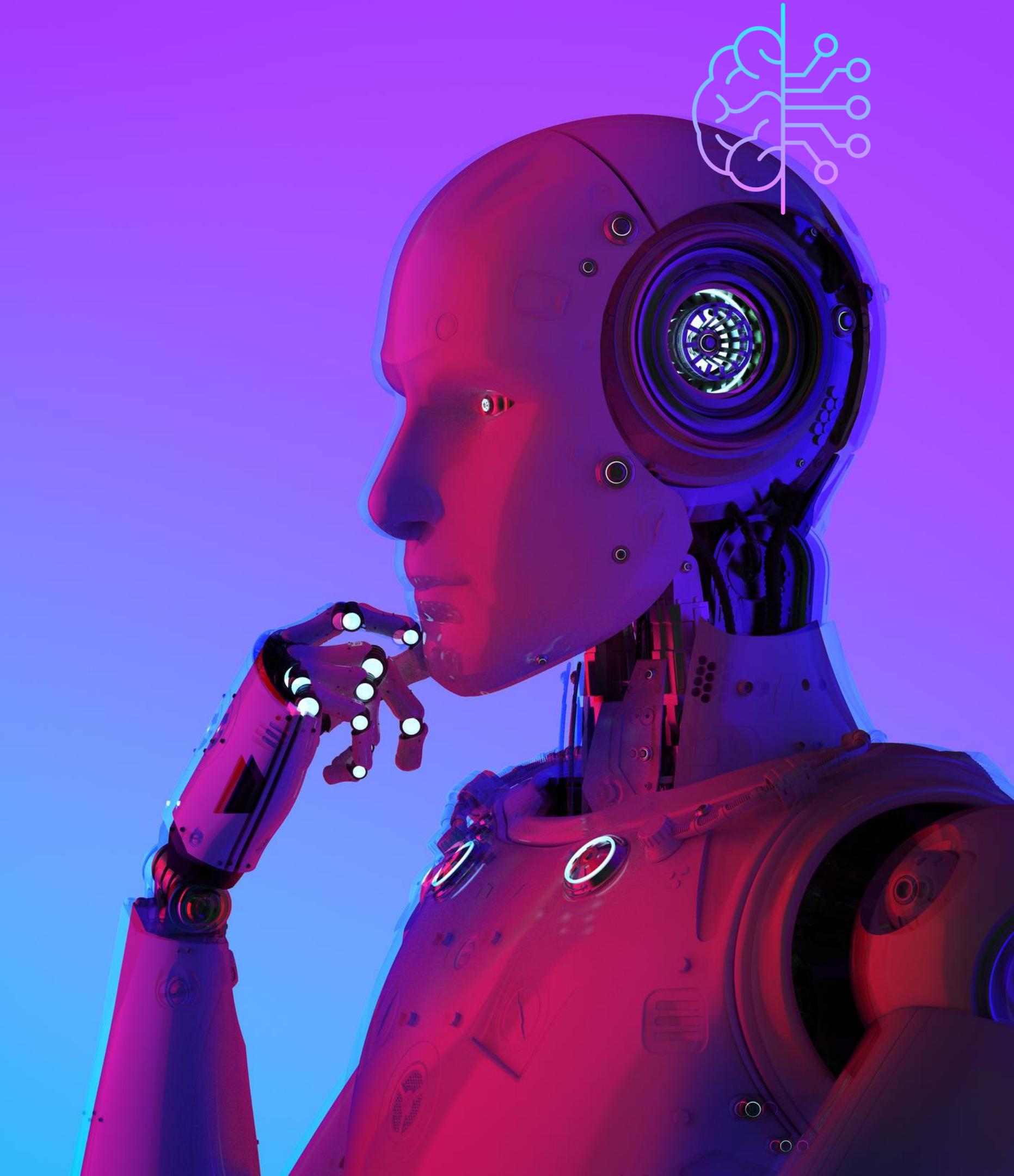
Artificial intelligent is simply human intelligence exhibited by machines .Now days artificial intelligent is in all life domains because it makes our lives easier and saves time and money .

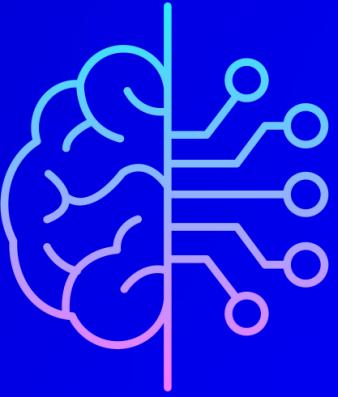
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WHAT IS ARTIFICIAL INTELLIGENCE

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is a popular branch of computer science that concerns with building intelligent systems.





AI APPLICATIONS

AI has a wide range of applications, from **healthcare** to **finance**. AI can be used to **automate tasks**, **improve accuracy** and **efficiency**, and **reduce costs**. AI is also being used to **develop new products** and **services**, as well as to **improve existing ones**. AI can also be used to **analyze data** and make **decisions based on that data**.

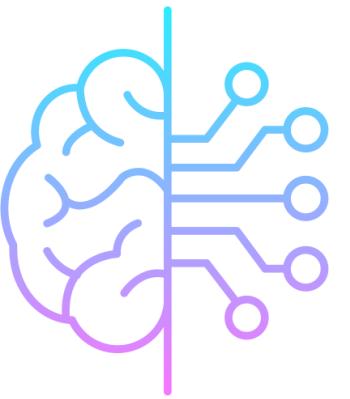
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HOW AI IS CHANGING SCIENCE



The latest AI algorithms are probing the evolution of galaxies, calculating quantum wave functions, discovering new chemical compounds and more.

Votre texte de paragraphe



LEVELS OF ARTIFICIAL INTELLIGENCE

Artificial Narrow Intelligence (ANI)



Stage-1

Machine Learning

- ▶ Specialises in one area and solves one problem



Artificial General Intelligence (AGI)



Stage-2

Machine Intelligence

- ▶ Refers to a computer that is as smart as a human across the board

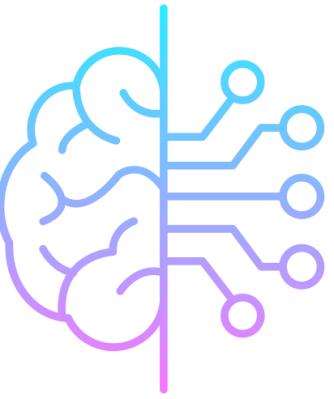
Artificial Super Intelligence (ASI)



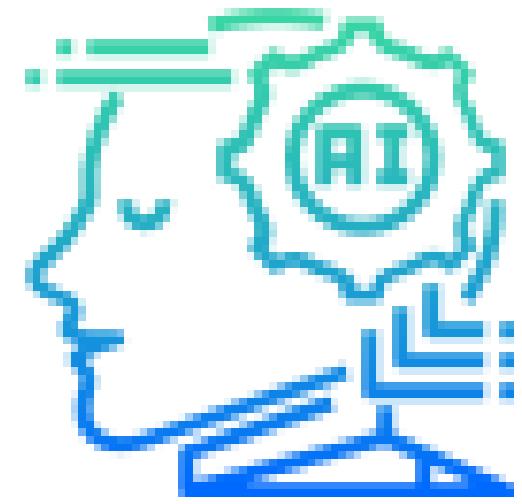
Stage-3

Machine Consciousness

- ▶ An intellect that is much smarter than the best human brains in practically every field

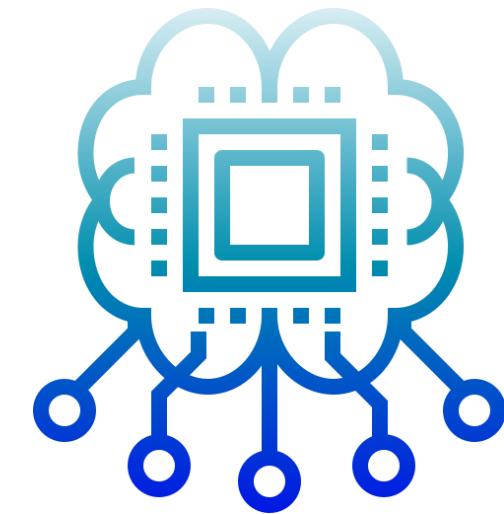


ARTIFICIAL INTELLIGENCE SUBSETS



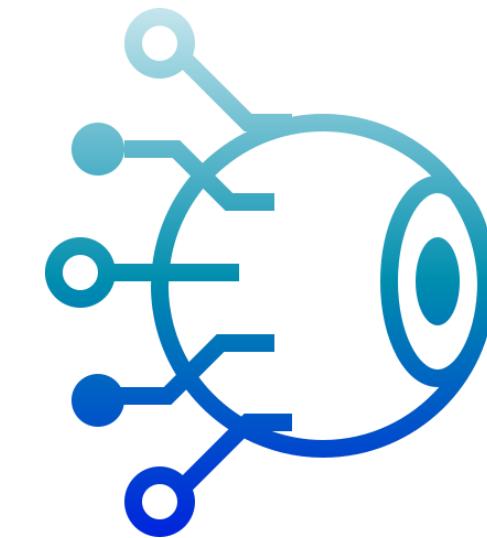
ARTIFICIAL INTELLIGENCE

ENGINEERING OF MAKING
INTELLIGENT MACHINES AND
PROGRAMS



MACHINE LEARNING

ability to learn without being
explicitly programmed

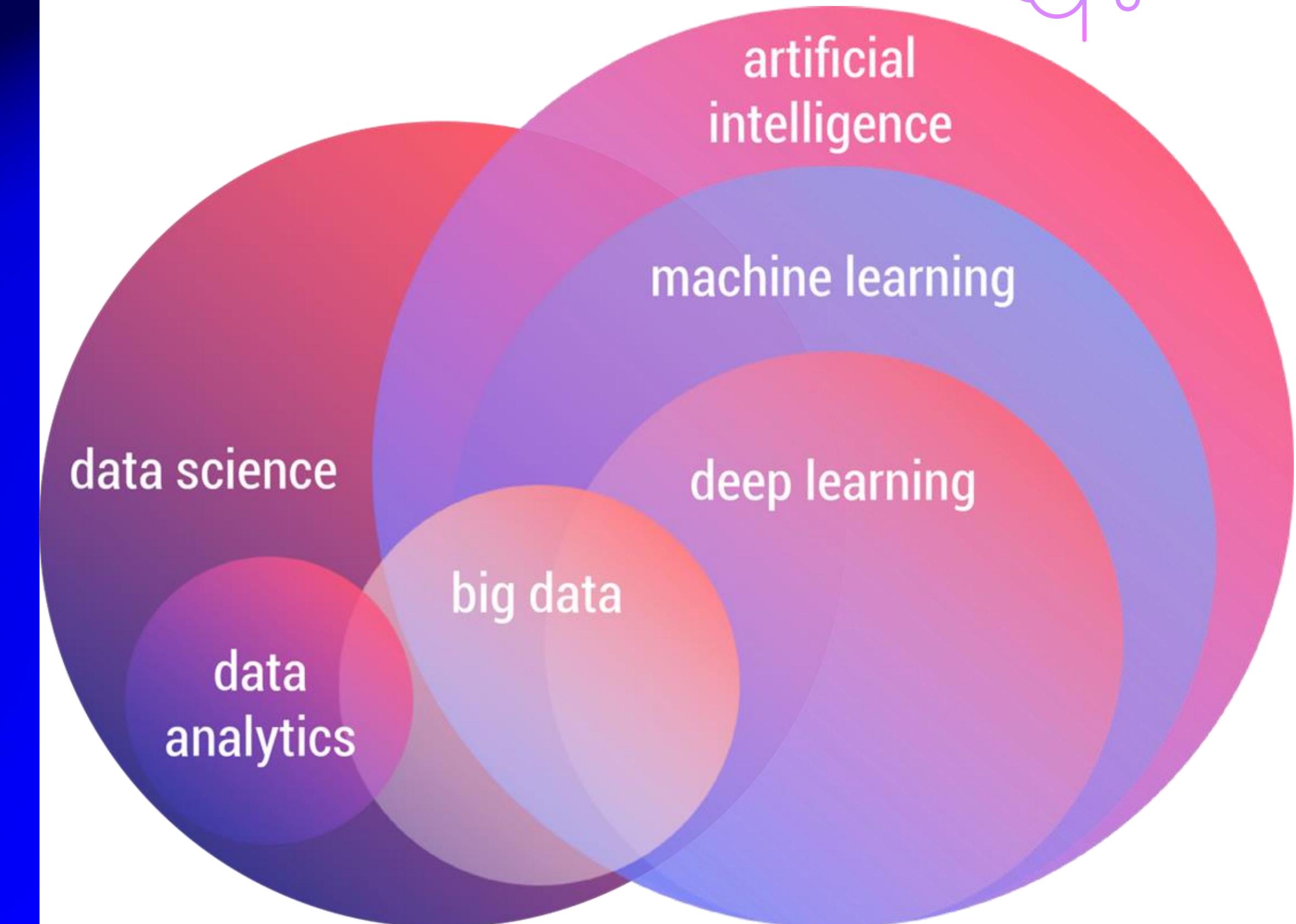
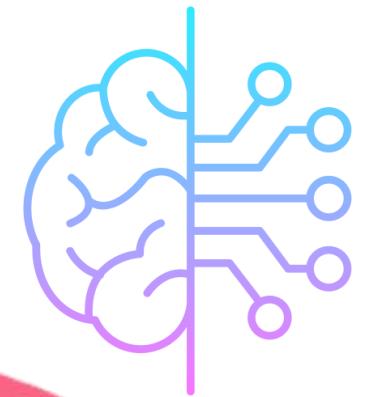


DEEP LEARNING

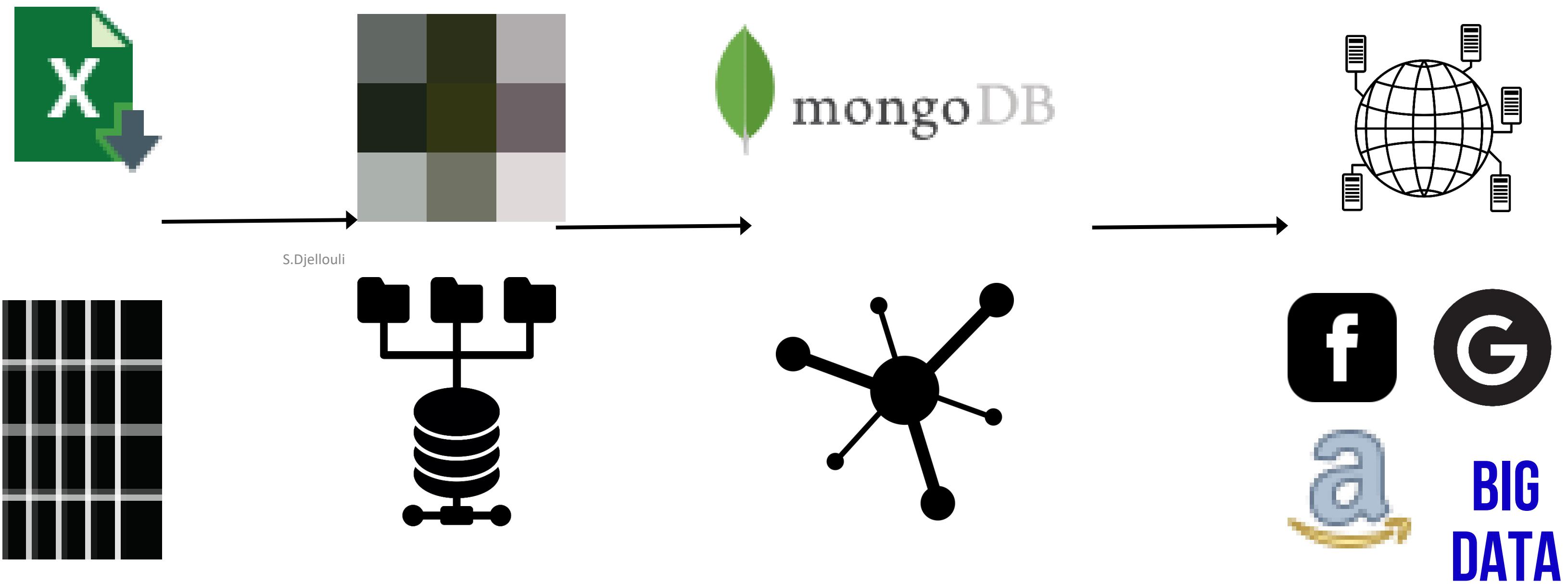
learning based on neural
network

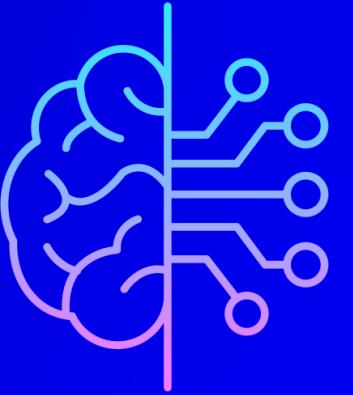
THE RELATION BETWEEN DATA SCIENCE AND AI

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THE REVOLUTION OF DATA SCIENCE AND AI



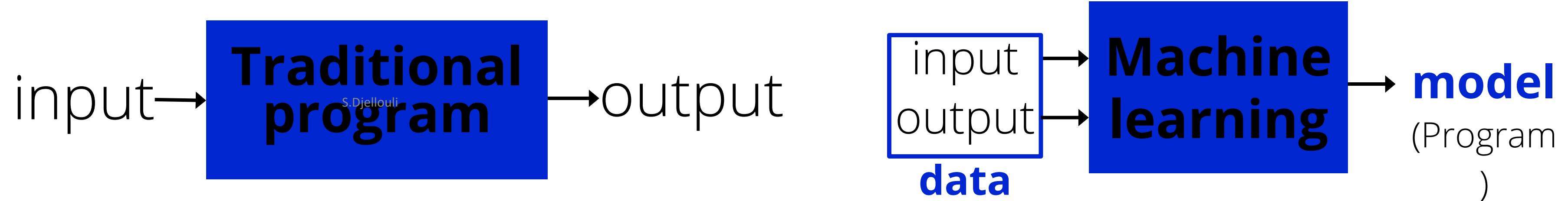


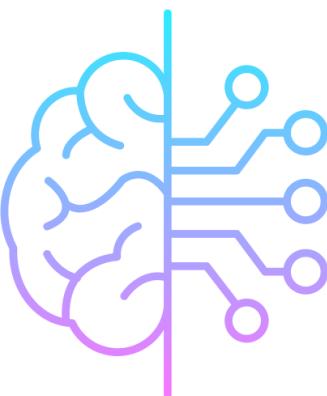
MACHINE LEARNING

"Machine learning is a subfield of artificial intelligence based on the idea that systems can learn from data, identify patterns and make decisions with minimal human intervention.
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MACHINE LEARNING





APPLICATION OF MACHINE LEARNING

**Virtual
Assistants**

**Pattern
Recognition**

**Face
Recognition**

**Recommendation
Engines**

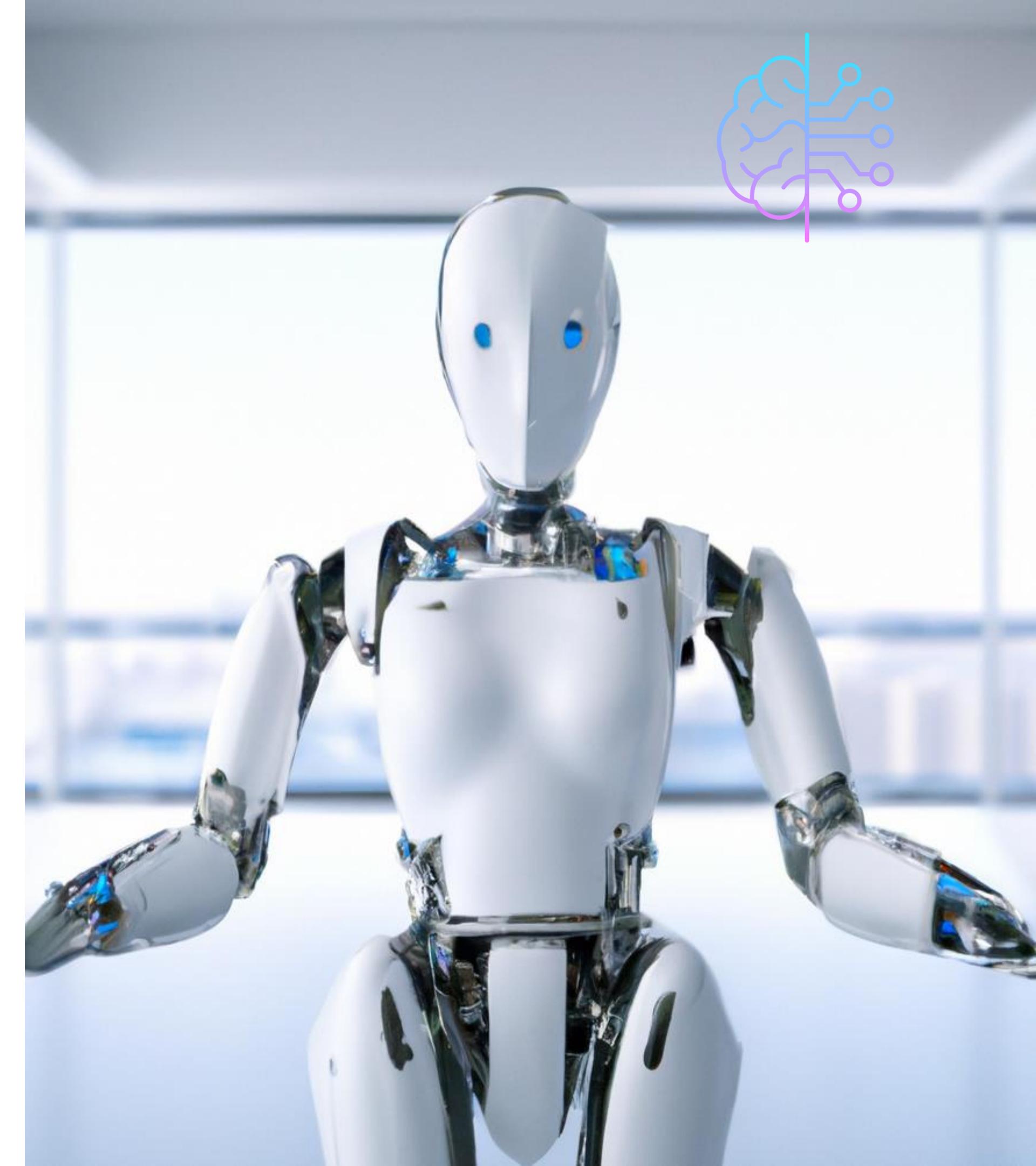
**Fraud
Detection**

**Speech
Recognition**



APPLICATION OF MACHINE LEARNING

- predict customer behaviors
- diagnose medical conditions
- optimize business operations



STEP TO IMPLEMENT MACHINE LEARNING

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1 DEFINE OBJECTIVES

identify the problem to be solved and create a clear objectives.

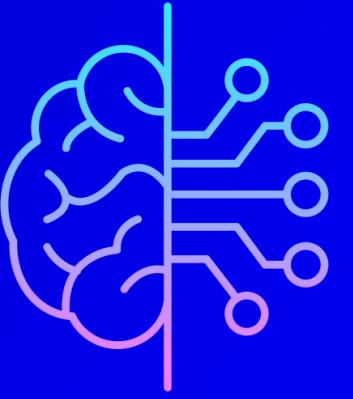
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2 COLLECT DATA

Collect data using sensors or download it from famous data bases like Kaggle, UCI, Physionet or hospitals and social service agencies.





3 DATA PRE-PROCESSING

A real-world data generally contains **noises**, **missing values**, and maybe in an **unusable format** which cannot be directly used for machine learning models. **Data preprocessing** is required tasks for **cleaning the data** and making it suitable for a machine learning model which also increases **the accuracy** and **efficiency** of a machine learning model.

WHY WE HAVE TO LEARN DATA SCIENCE BEFORE WE DO MACHINE LEARNING

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YOUR DATA QUALITY DEFINES THE QUALITY OF YOUR MODEL !

ANALYS YOUR DATA

more than data science the knowledge of S.Djedout data analysis is required to get started with Machine Learning. Learning programming languages like R, Python and Java are required to understand and clean data to use it for creating ML algorithms.

CLEAN YOUR DATA

Data cleaning is the process of preparing data for analysis by removing or modifying data that is incorrect, incomplete, irrelevant, duplicated, or improperly formatted.



HERE WE WILL PRESENT 03 IMPORTANT LIBRARIES



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WHAT IS NUMPY

NumPy is a package for scientific computing.

- Multi dimensional array
- Methods for processing arrays
- Element by element operations
- Mathematical operations like logical, Fourier transform, shape manipulation, linear algebra and random number generation



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lets do some coding and get advanced in numpy !

WHAT IS PANDAS

Pandas is an open-source Python library providing efficient, easy-to-use data structure and data analysis tools. The name Pandas is derived from "Panel Data" - an Econometrics from Multidimensional Data. Pandas is well suited for many different kinds of data:

- Tabular data with heterogeneously-type columns.
- Ordered and unordered time series data.
- Arbitrary matrix data with row and column labels.

PANDAS PROVIDES THREE DATA STRUCTURE

- all of which are build on top of the NumPy array
- all the data structures are value-mutable

- **SERIES (1D) - LABELED, HOMOGENOUS ARRAY OF IMMUTABLE SIZE**
- **DATAFRAMES (2D) - LABELED, HETEROGENEOUSLY TYPED, SIZE-MUTABLE TABULAR DATA STRUCTURES**
- **PANELS (3D) - LABELED, SIZE-MUTABLE ARRAY**



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lets do some coding and get advanced in pandas !

WHAT IS MATPLOTLIB

1. Matplotlib is a Python library that is specially designed for the development of graphs, charts etc., in order to provide interactive data visualisation
2. Matplotlib is inspired from the MATLAB software and reproduces many of it's features



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lets do some coding and get advanced in matplotlib !