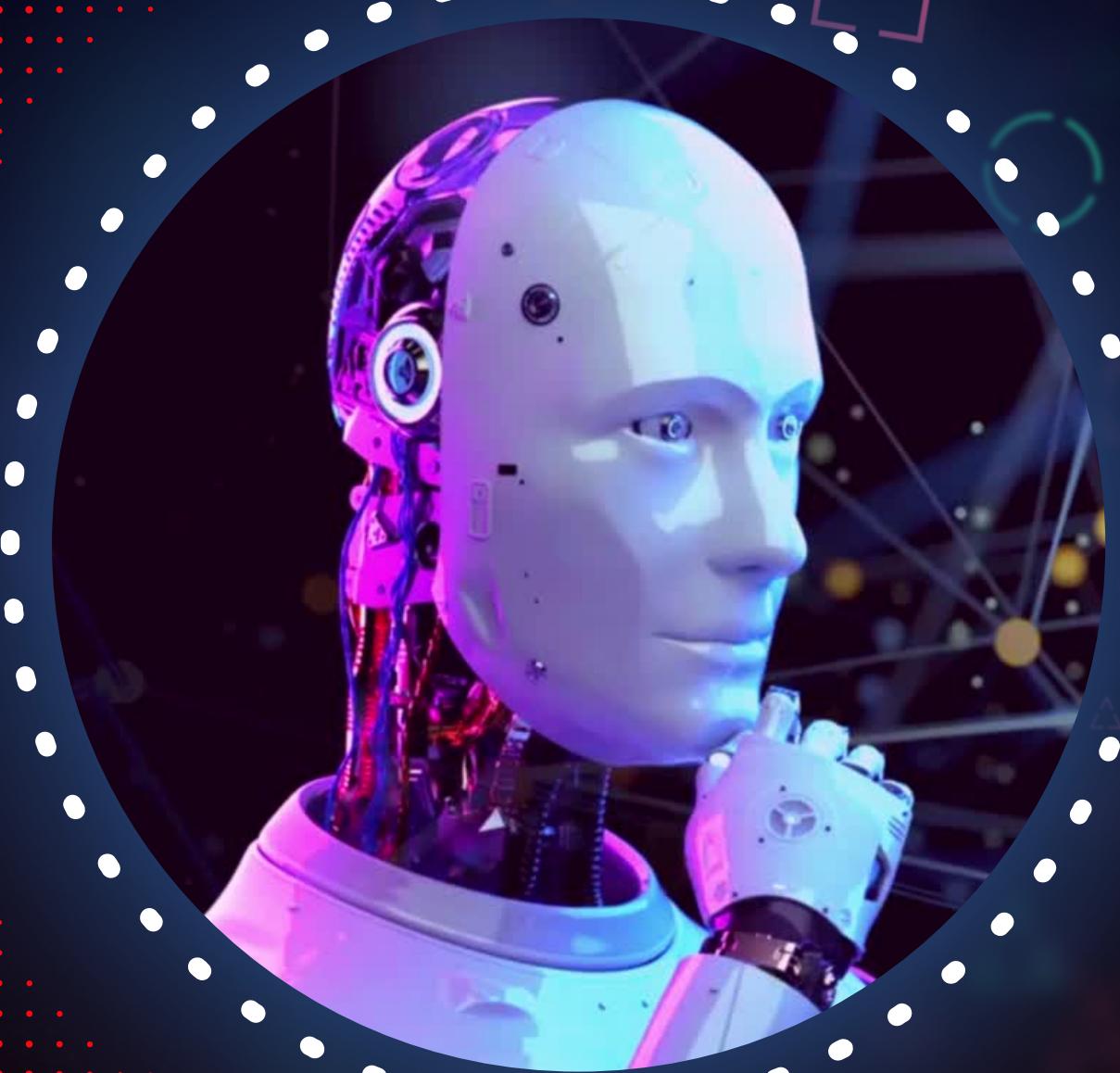


LIVE



# MACHINE LEARNING DAY - 1

# WHAT IS MACHINE LEARNING ?

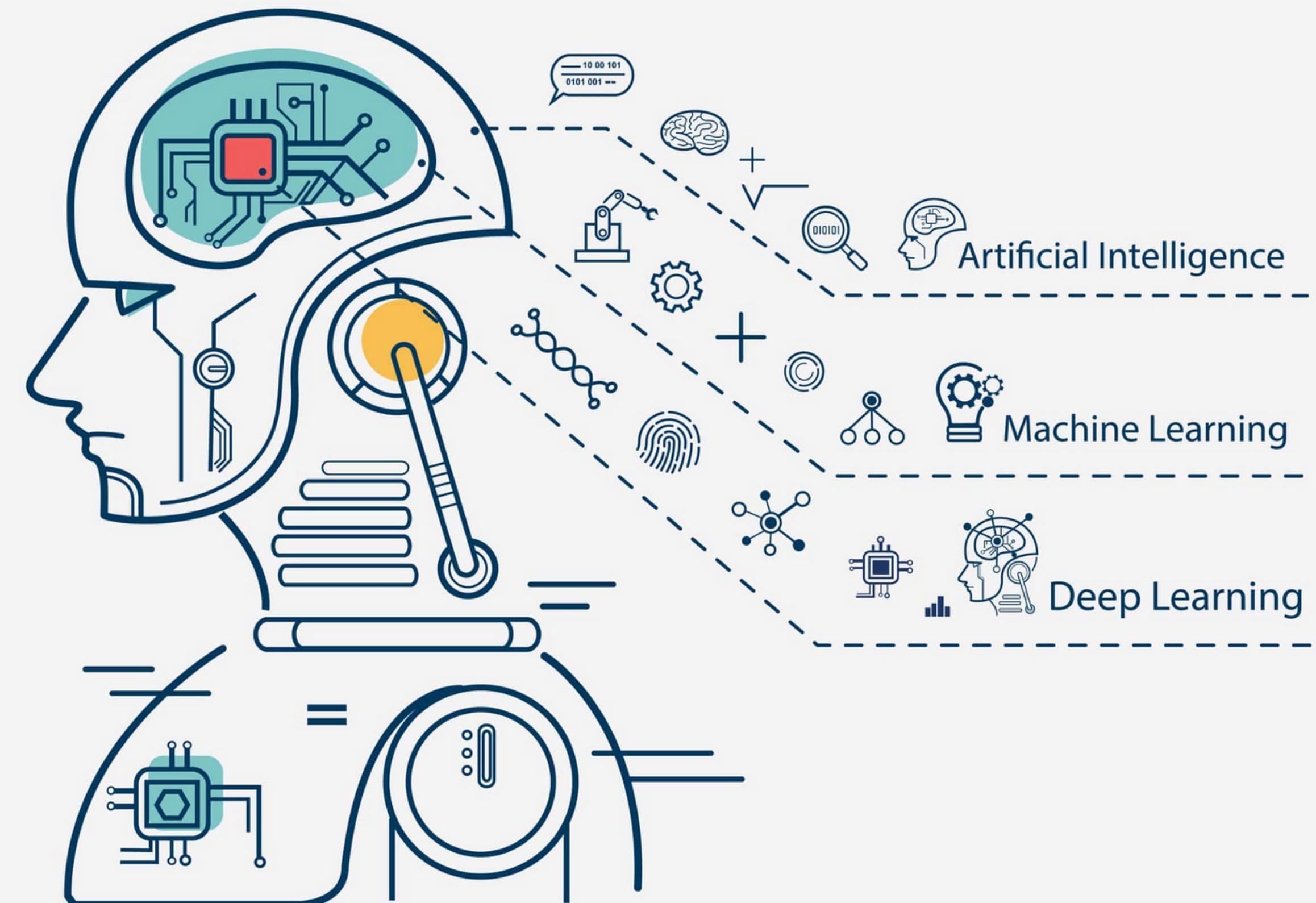


# ARTIFICIAL INTELLIGENCE ?

# MACHINE LEARNING ?

# DEEP LEARNING ?





# ARTIFICIAL INTELLIGENCE ?



# ARTIFICIAL INTELLIGENCE ?

*SIMULATION OF HUMAN-LIKE INTELLIGENCE  
AND PROBLEM-SOLVING ABILITIES IN  
MACHINES AND COMPUTER SYSTEMS.*



 India Today

## Chandrayaan 3 lands on Moon: How AI played big role in how it flew and landed

Chandrayaan 3 lands on Moon: Artificial Intelligence (AI) played a significant role in facilitating Indian Space Research Organisation...





ISRO

@isro

### Chandrayaan-3 Mission:

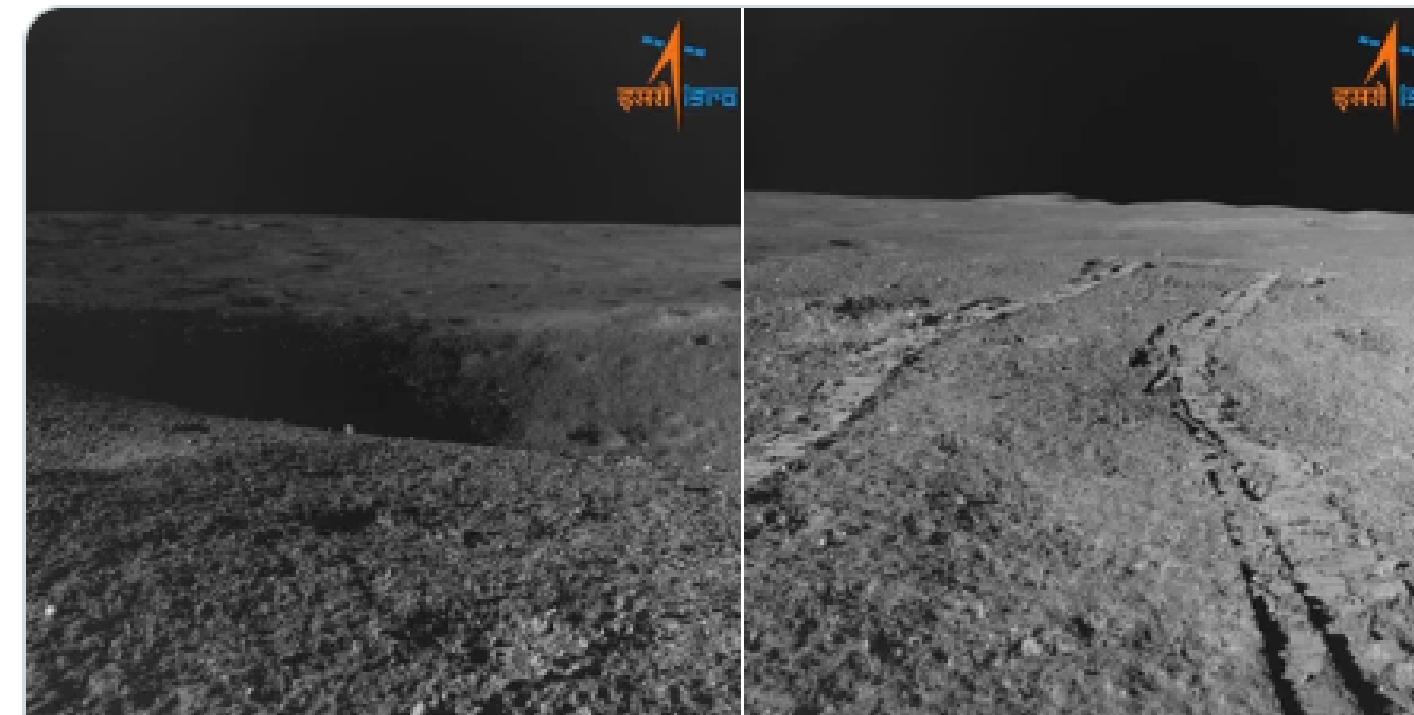
On August 27, 2023, the Rover came across a 4-meter diameter crater positioned 3 meters ahead of its location.

The Rover was commanded to retrace the path.

It's now safely heading on a new path.

#Chandrayaan\_3

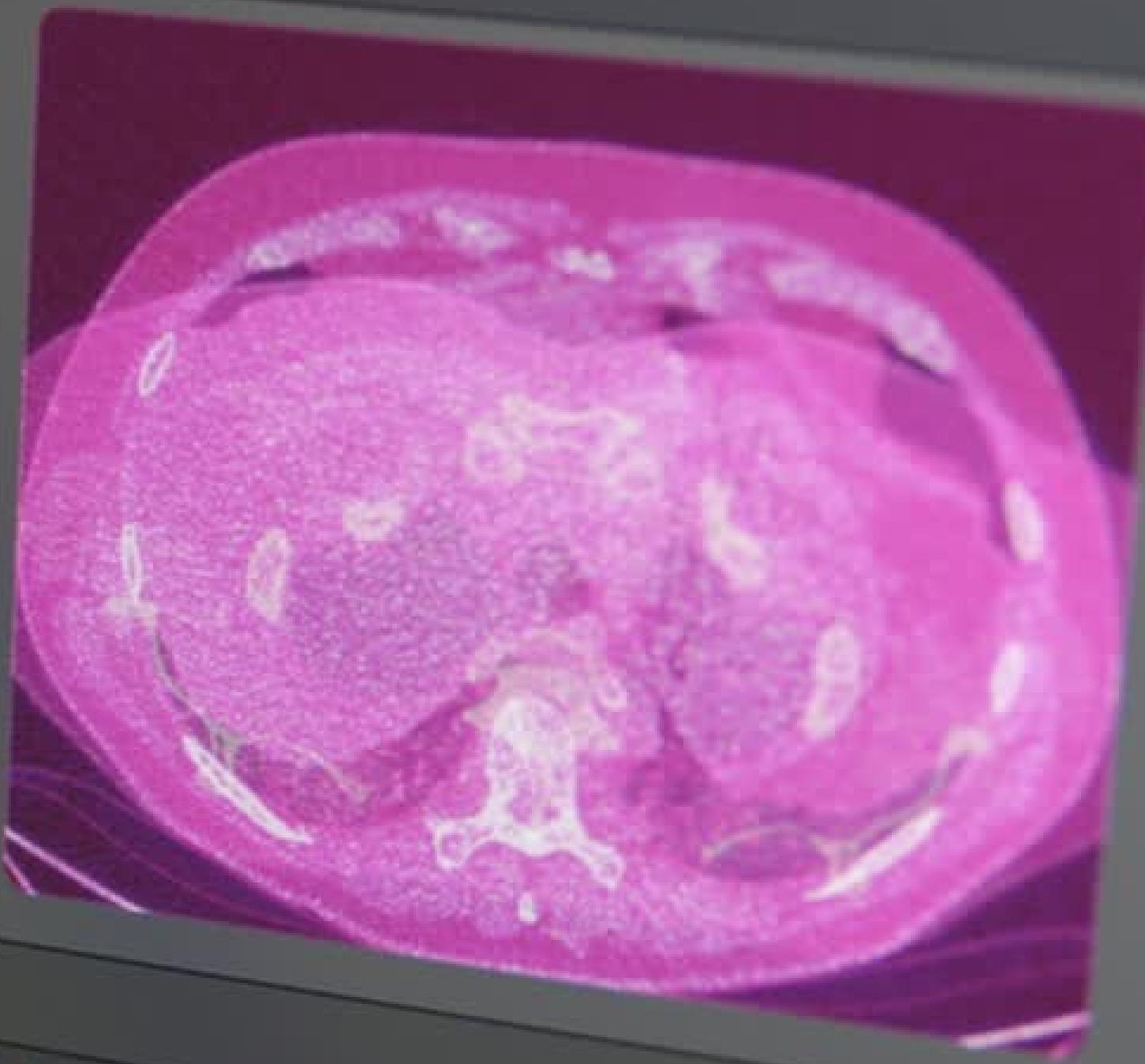
#Ch3



The crater that the Chandrayaan-3 Rover encountered on August 27, 2023, as seen by the Navigation Camera.

The path retraced by the Chandrayaan-3 Rover on August 27, 2023, as viewed by Navigation Camera onboard Rover.

```
10 import CreateMLUI  
11 let builder = MLImageClassifierBuilder()  
12 builder.showInLiveView()
```



Automatic split: 5% of data is being used for validation.  
Extracting image features from training data.  
Analyzing and extracting image features.  
Samples Processed | Elapsed Time | Percent Complete

1.38s

1.44s

9%

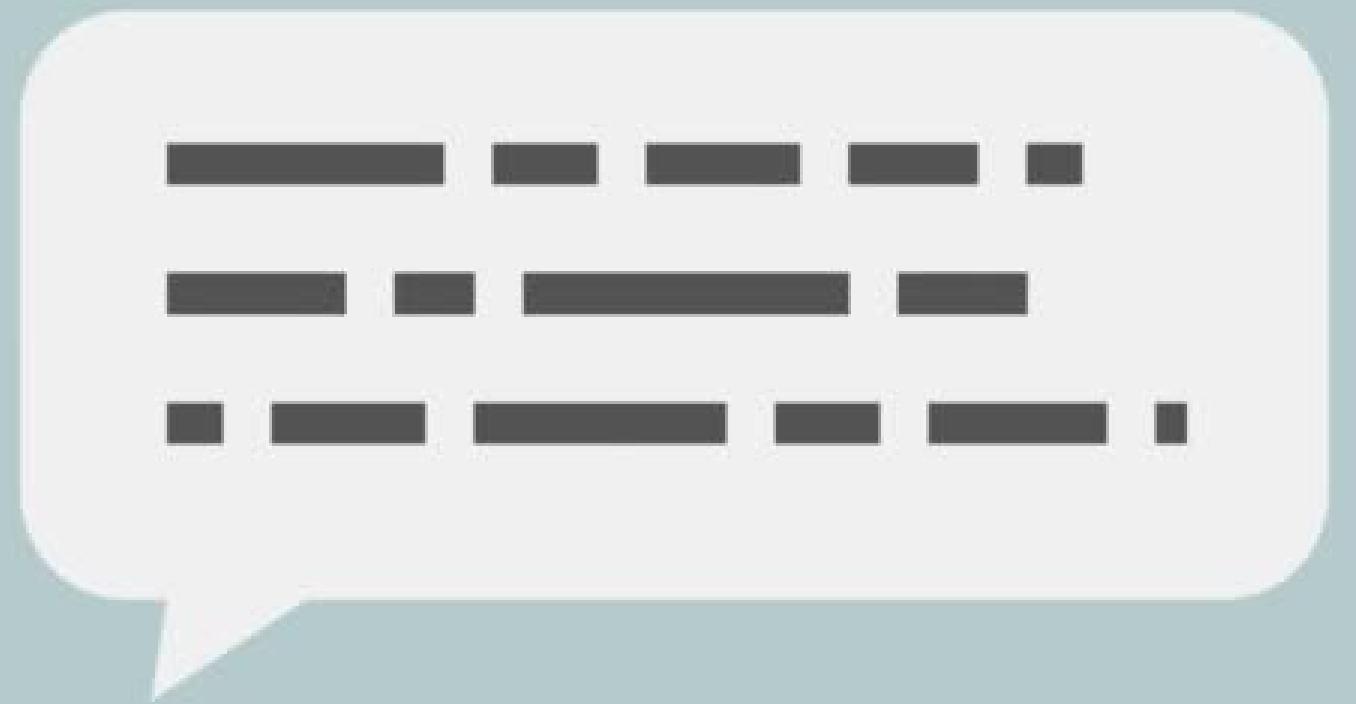
MLImageClassifierBuilder was deprecated

Image Classifier Builder  
Open Assistant Editor View

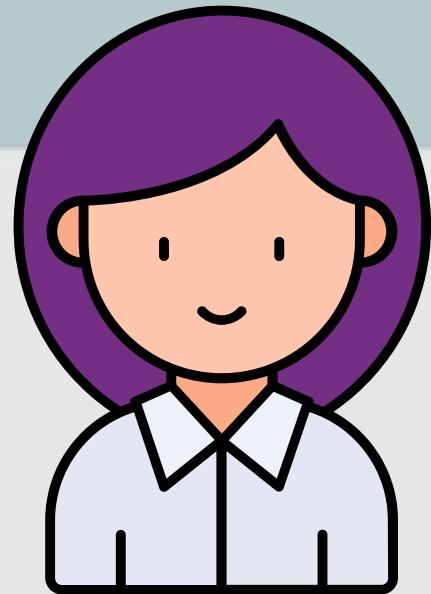
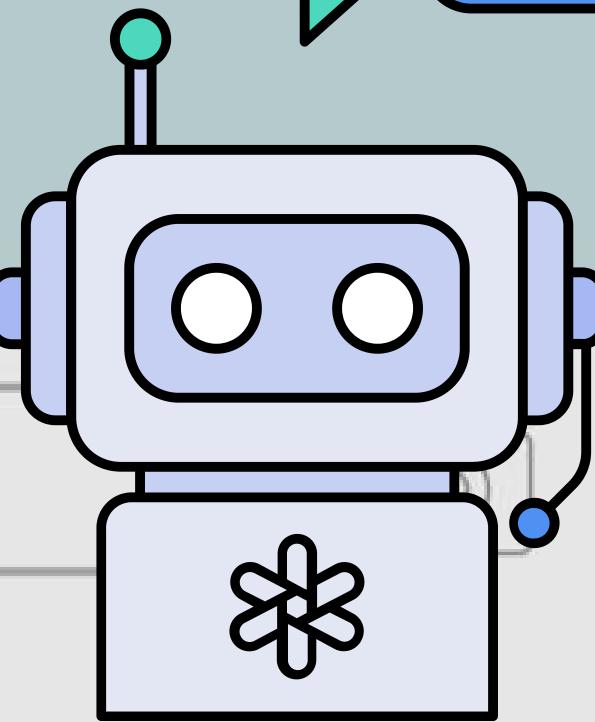
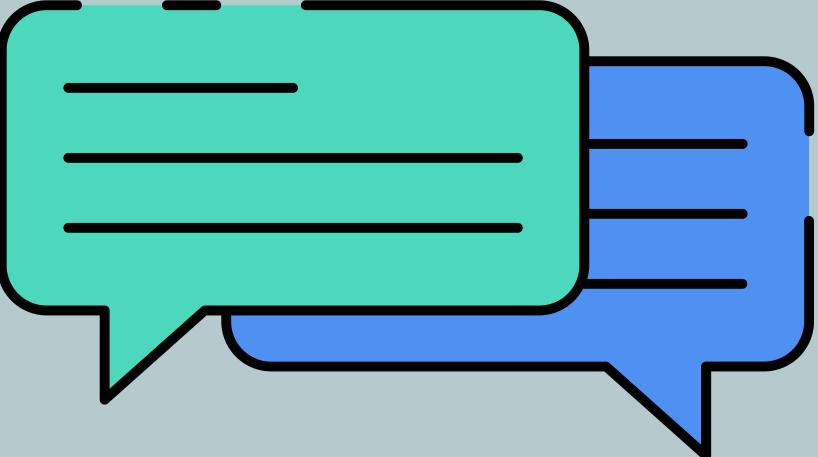
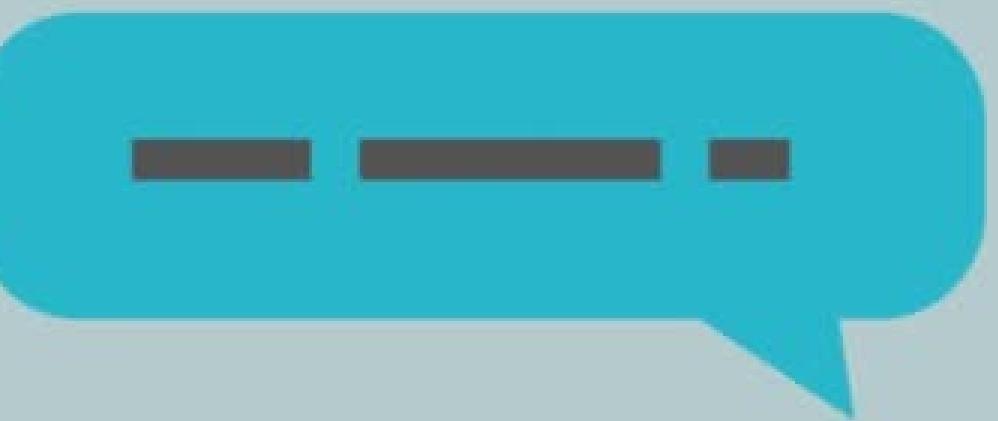




# ChatGPT



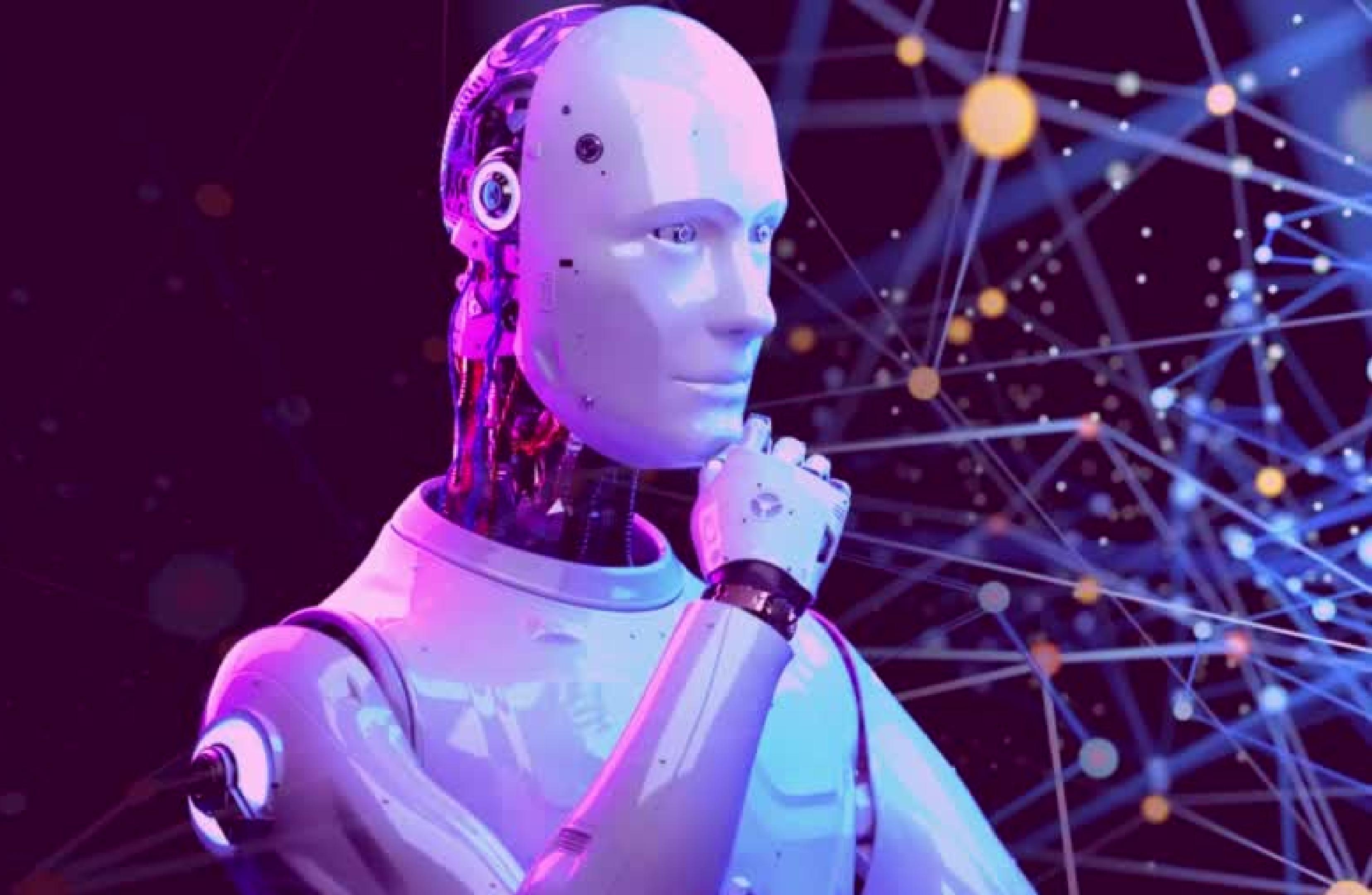
+







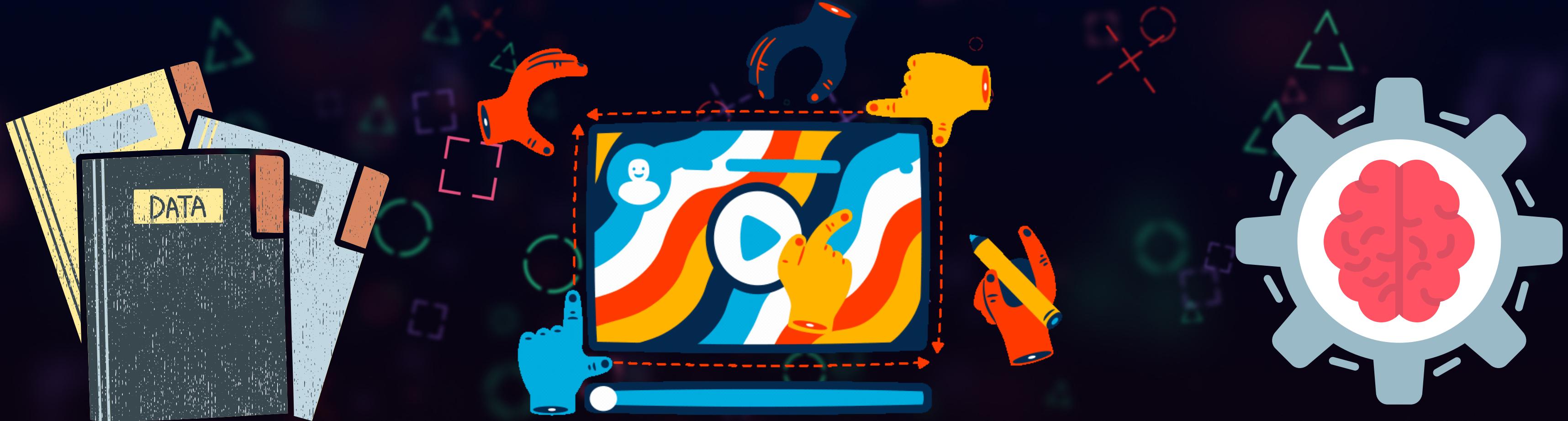
The image features a dark, almost black, background with a subtle grid pattern. Overlaid on this grid are numerous glowing blue digits and symbols, primarily numbers. These numbers are arranged in a way that suggests a digital or data-oriented theme. The most prominent feature is a large, semi-transparent blue number '8' located in the lower-left quadrant. Behind it, there's a dense cluster of smaller numbers and symbols, including '9', '7', '6', '5', '4', '3', '2', '1', and '0'. The overall effect is one of a digital interface, a data visualization, or a futuristic display screen.



# MACHINE LEARNING ?

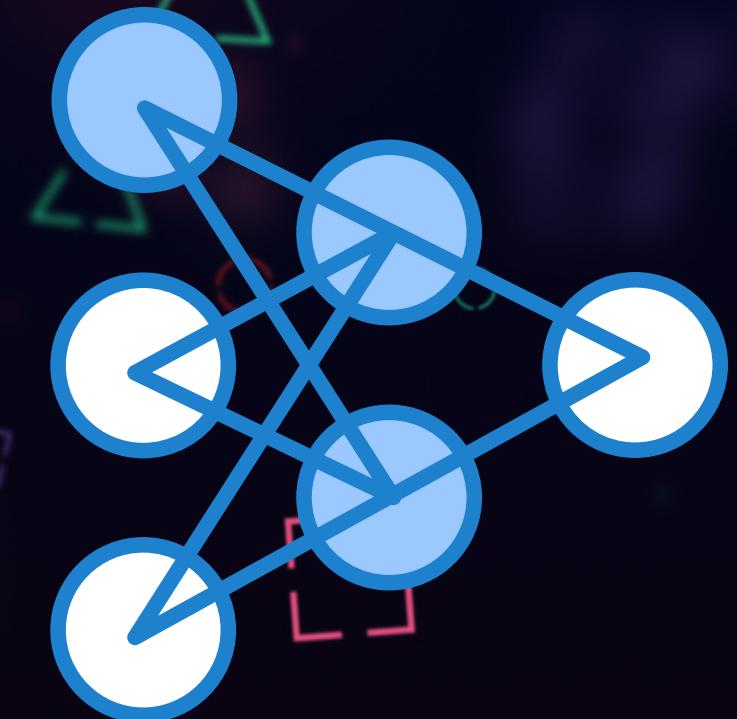


*CREATING ALGORITHMS AND MODELS CAPABLE  
OF MAKING INFORMED CHOICES OR DECISIONS  
BY PROCESSING DATA AND LEARNING FROM IT.*



**DATA** → **ANALYSIS & PREPROCESSING** → **ML ALGORITHM**

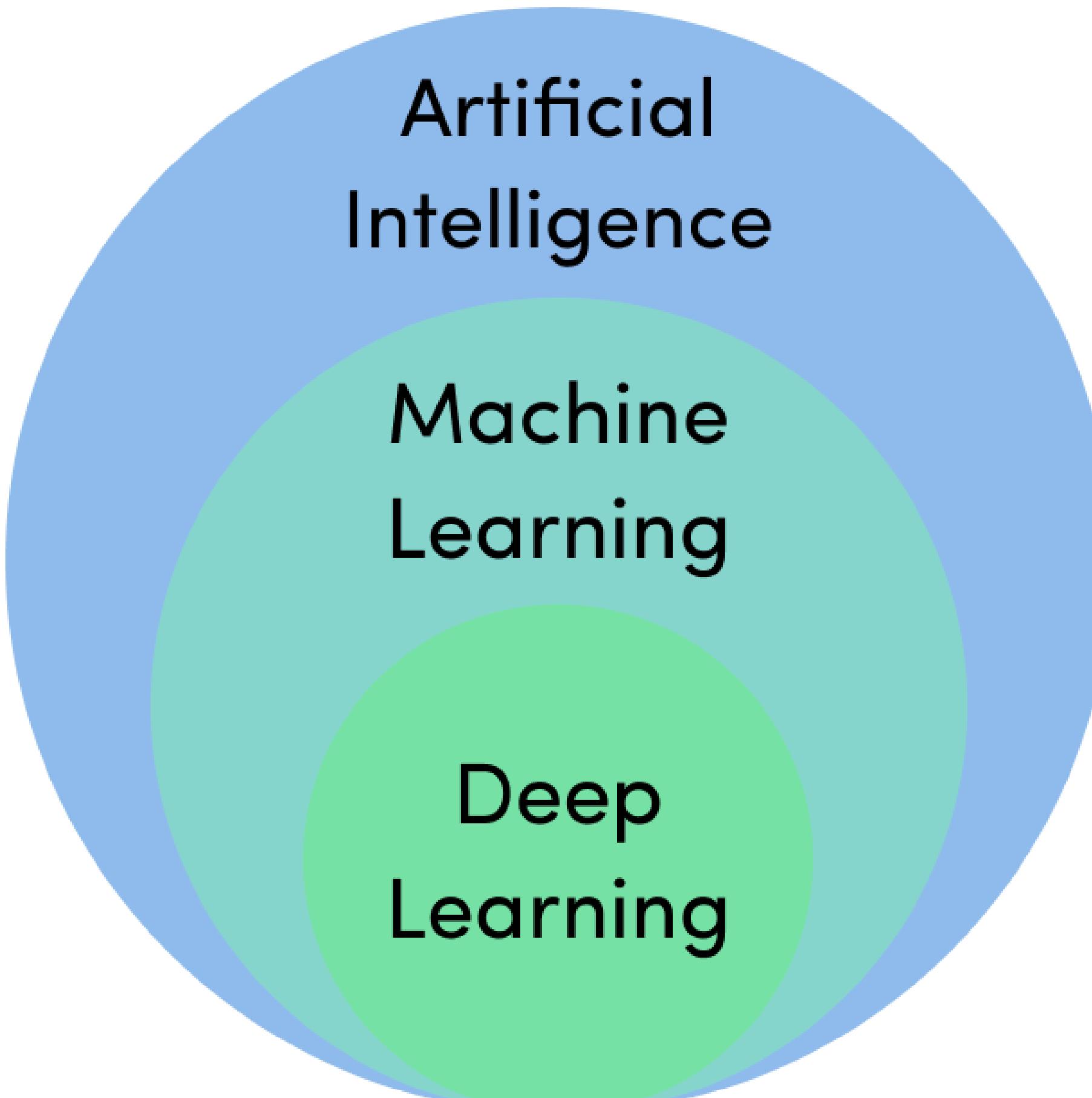
# DEEP LEARNING ?



*IT IS A SPECIALIZED FIELD WITHIN MACHINE LEARNING  
WHERE ARTIFICIAL NEURAL NETWORKS ARE EMPLOYED  
TO PROCESS AND ANALYZE COMPLEX DATA.*



**DATA** → **ANALYSIS & PREPROCESSING** → **NEURAL NETWORK**



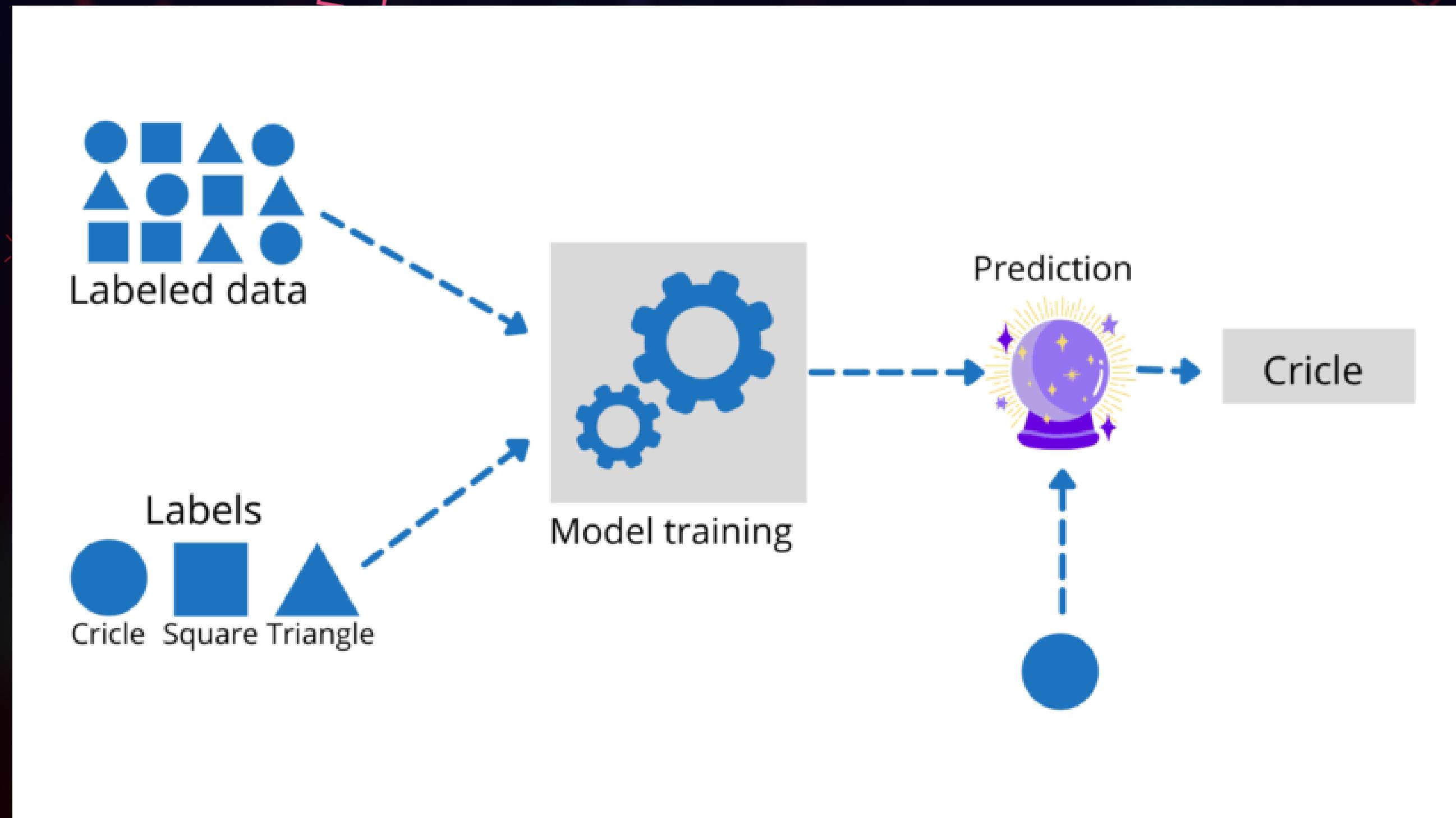
Artificial  
Intelligence

Machine  
Learning

Deep  
Learning

# **TYPES OF MACHINE LEARNING**

# 1. SUPERVISED LEARNING



# 1. SUPERVISED LEARNING

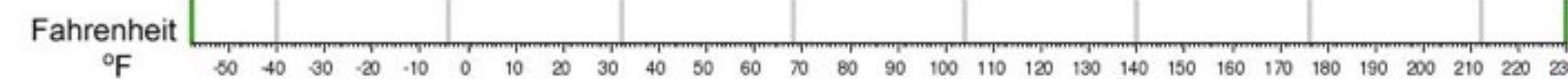


## Regression

What is the temperature going to be tomorrow?

PREDICTION

84°



## Classification

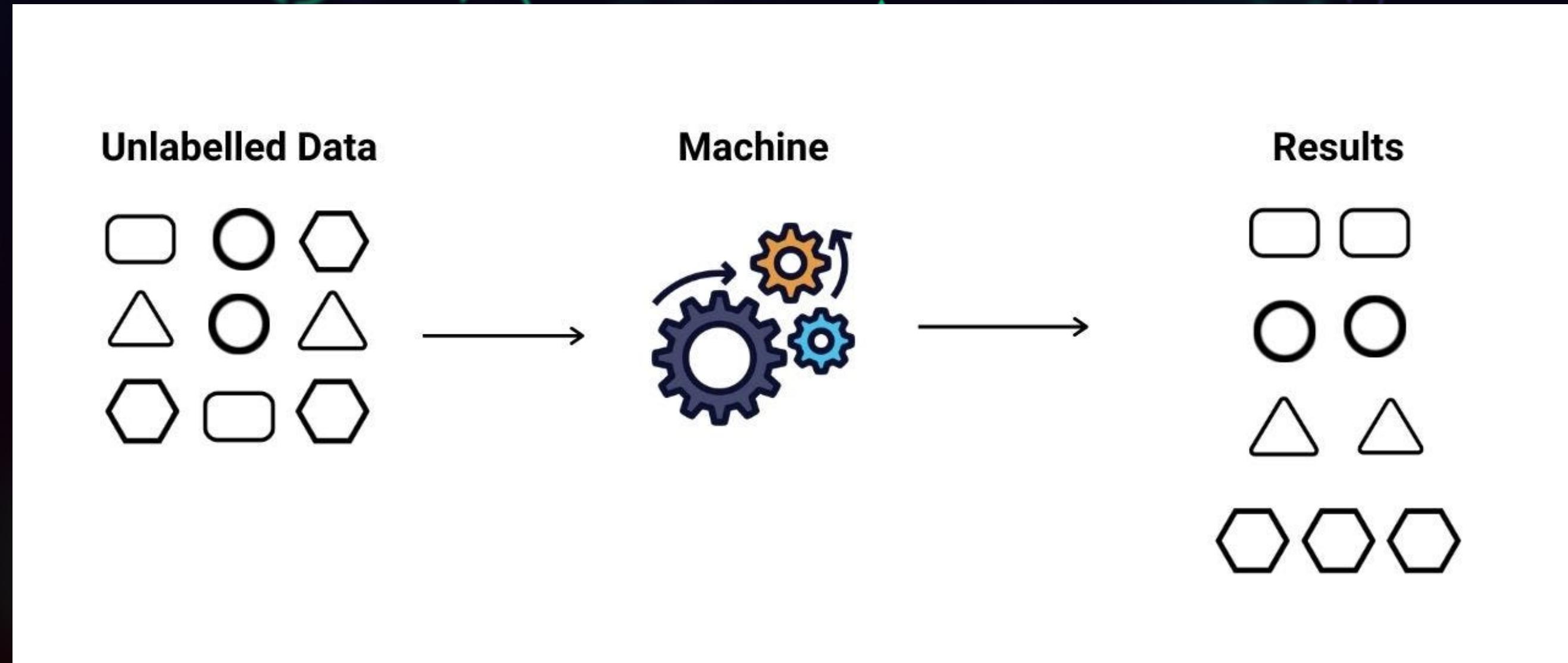
Will it be Cold or Hot tomorrow?

PREDICTION

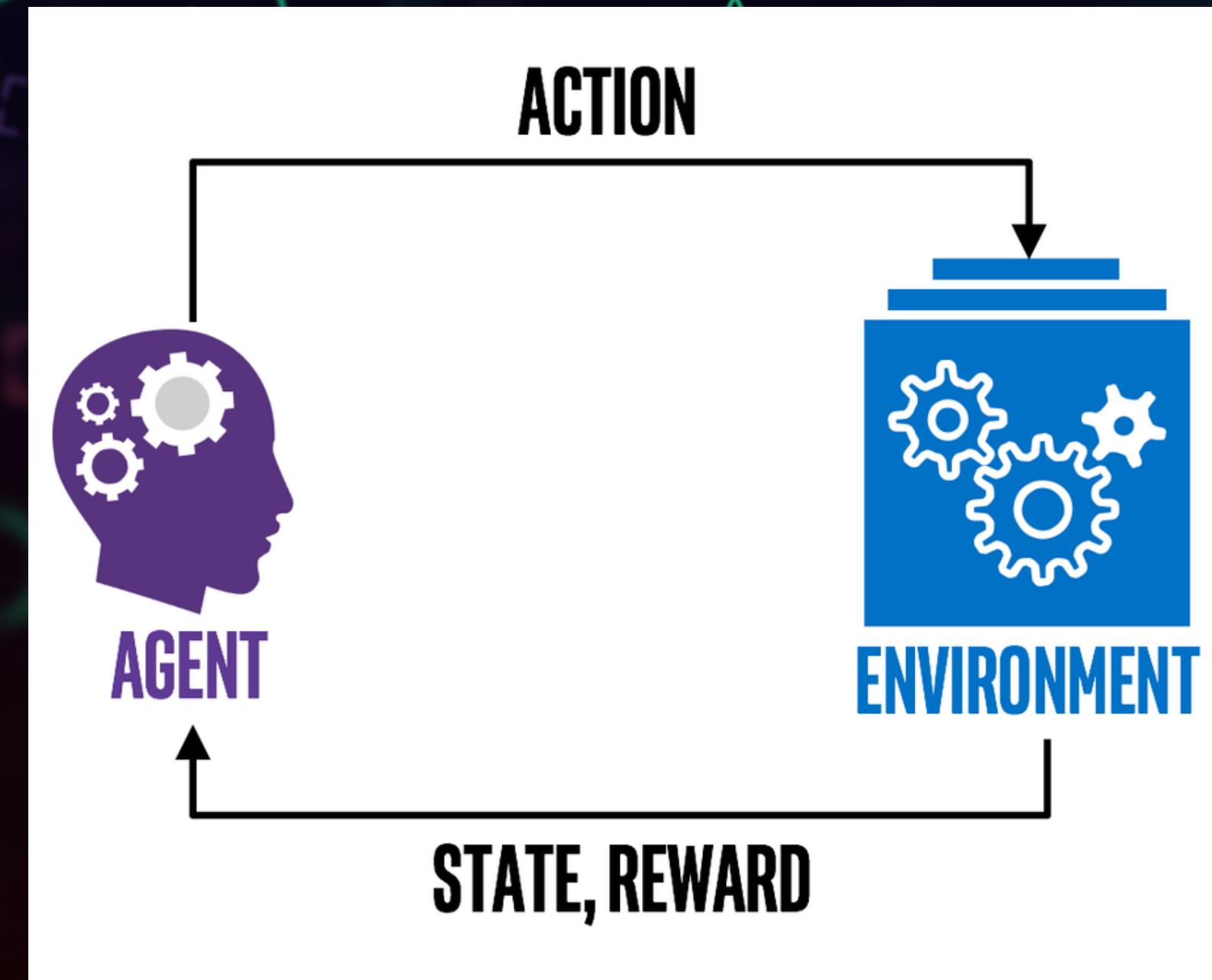
HOT



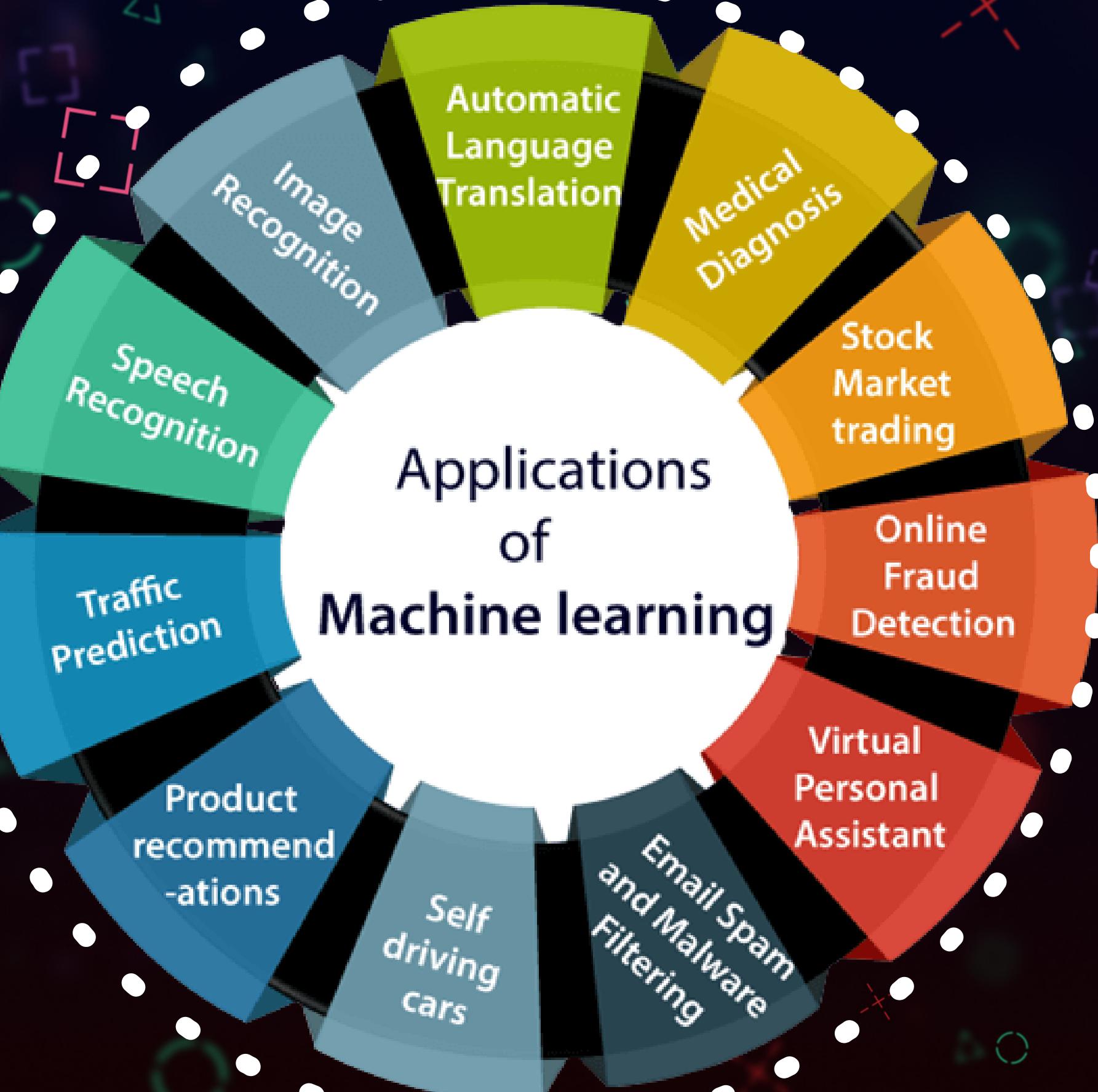
## 2. UNSUPERVISED LEARNING



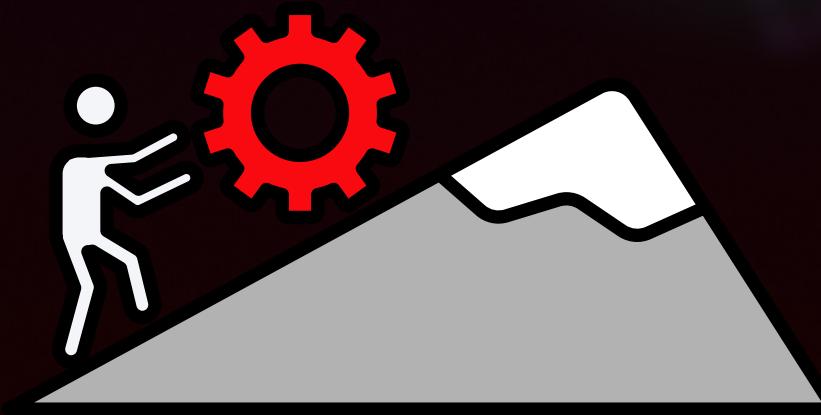
# 3. REINFORCEMENT LEARNING



# Applications of Machine learning



# **ROADMAP FOR MACHINE LEARNING**



# STEP -1

- PYTHON PROGRAMMING
- DATA ANALYTICS
- STATISTICS/MATHEMATICS



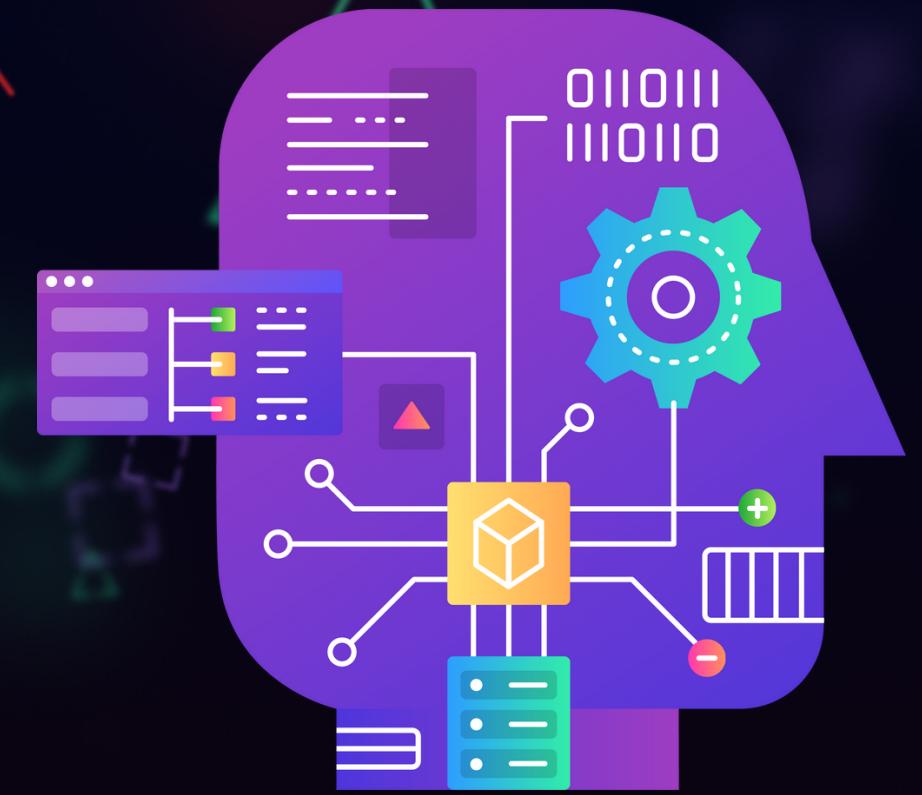
# STEP -2

- DATA PREPROCESSING
- ML CONCEPTS



# STEP -3

- ALGORITHMS
- MODEL EVALUATION, OPTIMIZATION



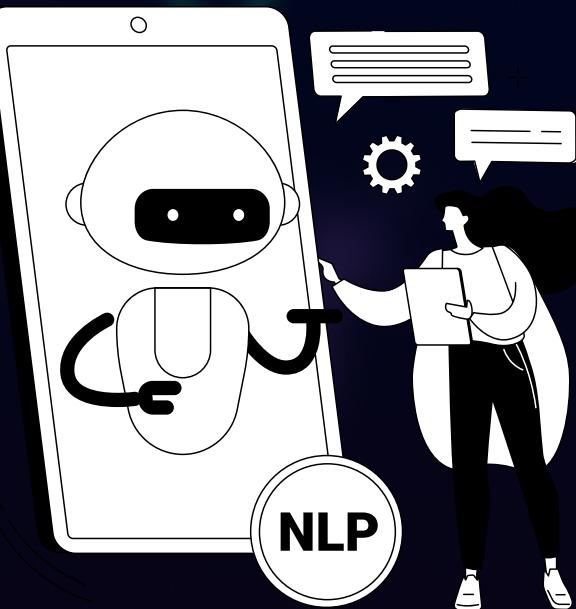
# STEP -4

- PROJECTS
- COMPETITIONS (KAGGLE)



# STEP - 5

- NATURAL LANGUAGE PROCESSING
- TIME SERIES ANALYSIS
- COMPUTER VISION



# JOIN OUR LINKEDIN COMMUNITY

A screenshot of a LinkedIn group page. The header features a purple background with abstract geometric shapes (circles, triangles, squares) in red, green, and blue. The main content area has a white background. At the top left is a small thumbnail image of three people. To its right are two large, semi-transparent circular avatars. Below these are four small icons: a blue square with an 'i', a blue arrow pointing right, a blue bell, and three dots. The group name "PANTECH - Python , Machine & Deep Learning , AI Group" is displayed in bold black text. Below it, a smaller line of text says "Public group". At the bottom left, there is a blue link that reads "Earn an Active Group badge". On the right side of the main content area is a large blue "in" logo.

PANTECH - Python , Machine & Deep Learning ,  
AI Group

Public group

Earn an Active Group badge

# AGENDA

# STEP - 1



Day - 1 : Introduction, Python basics

Day - 2 : Python Data Structures

Day - 3 : Python Programming Fundamentals

Day - 4 : Class & object, Modules/packages/libraries

Day - 5 : Machine learning introduction, Steps, data collection

# STEP - 1

Day - 6 : Pandas Library

Day - 7 : Exploratory data analysis project with pandas on Sales dataset

Day - 8 : Numpy Library

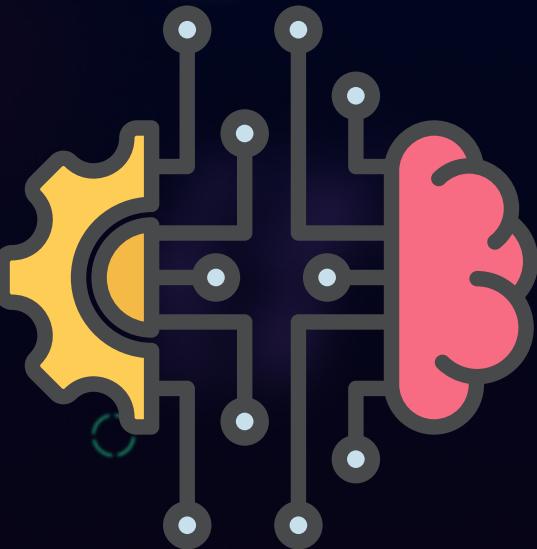
Day - 9 : Visualization with Matplotlib & Seaborn Library

Day - 10 : Exploratory data analysis project with

pandas & visualization libraries (population dataset)



# STEP - 2



**Day - 11:** scikit-learn library : Scaling, encoding, handling null values

**Day - 12 :** scikit-learn library : Outlier detection & handling,  
imbalanced dataset

**Day - 13 :** scikit-learn library : train test split, feature selection,  
feature extraction

# STEP - 3

Day - 14 : ML algorithms : linear model, support vector machines

Day - 15 : ML algorithms : Decision tree, ensemble algorithms

Day - 16 : ML algorithms : Naive bayes, KNN, clustering algorithms

Day - 17 : Hyperparameter optimization, Metrics

# STEP - 4



**Day - 18 :** ML classification project - Credit card fraud detection

**Day - 19 :** ML Regression project - Calories burnt prediction

**Day - 20 :** ML clustering project - Spotify music recommendation

# STEP - 5

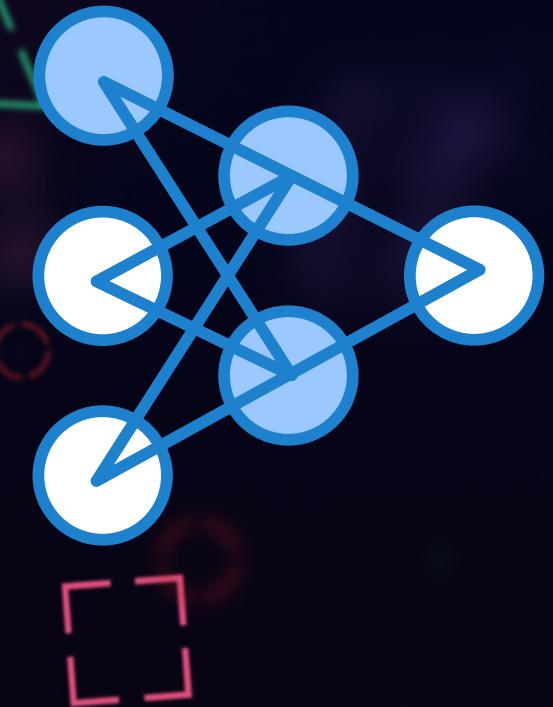
Day - 21 : Deep learning introduction

Day - 22 : ANN project - Churn prediction project

Day - 23 : RNN, LSTM introduction

Day - 24 : Time series analysis introduction

Day - 25 : Time series algorithms



# STEP - 5



**Day - 26 :** Time series project - Carbon dioxide emission prediction

**Day - 27 :** Time series project with Neural networks

- Stock price prediction

**Day - 28 :** NLP introduction

**Day - 29 :** NLP project - Fake news classification using NLP

**Day - 30 :** NLP project with Neural networks

- Movie rating prediction using NLP

TIME  
TO SHIFT  
GEARS



01



# PYTHON

# WHAT IS PYTHON?



## PYTHON IS A POPULAR PROGRAMMING LANGUAGE

- It was created by Guido van Rossum, and released in 1991.
- It emphasis on code readability, shorter codes, ease of writing.
- Programmers can express logical concepts in fewer lines of code in comparison to languages such as C++ or Java.

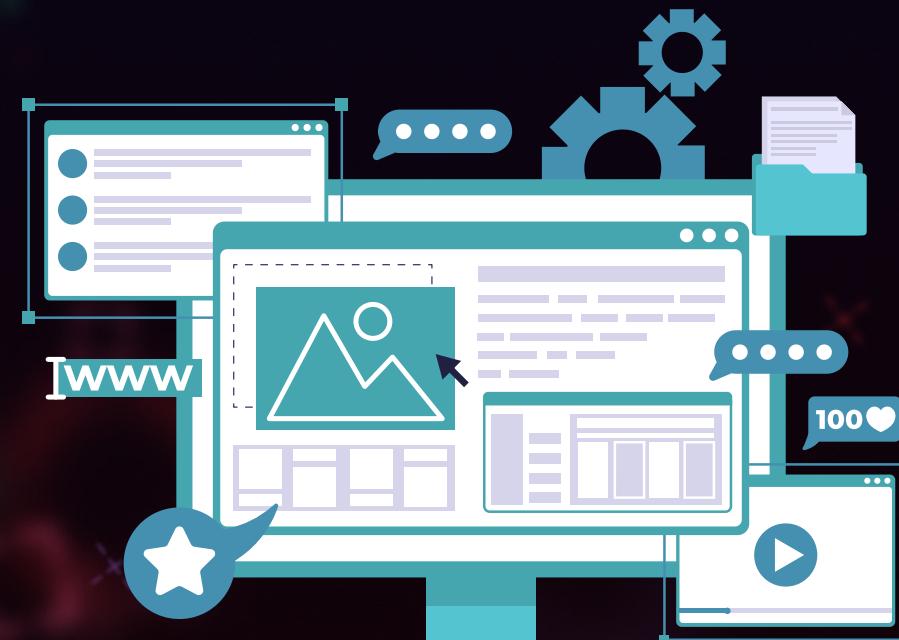
# WHAT CAN PYTHON DO ?

CAN BE USED ON A  
SERVER TO CREATE  
WEB APPLICATIONS

CAN BE USED  
ALONGSIDE SOFTWARE  
TO CREATE  
WORKFLOWS

CAN BE USED TO  
HANDLE BIG DATA AND  
PERFORM COMPLEX  
MATHEMATICS

CAN CONNECT TO  
DATABASE SYSTEMS



# WHY PYTHON ?



- Python is easy to learn.
- Its syntax is easy and code is very readable.
- lot of applications in web applications, data science, rapid application development, and so on.
- Allows you to write programs in fewer lines of code

GET STARTED →



# "HELLO WORLD!"



C++

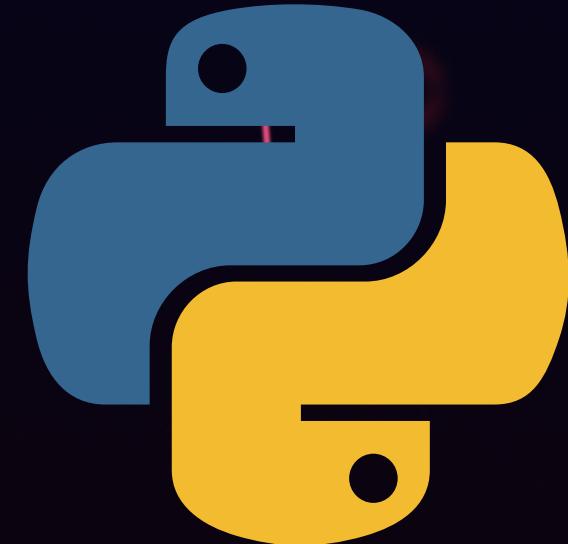
```
#include <iostream>

int main() {
    std::cout << "Hello World!";
    return 0;
}
```



Java

```
class HelloWorld {
    public static void main(String[] args) {
        System.out.println("Hello World!");
        // Hello World!
    }
}
```



Python

```
print("Hello World !")
```



# APPLICATIONS OF PYTHON

WEB APPLICATIONS

DESKTOP APPLICATIONS

GAME DEVELOPMENT

DATA SCIENCE

IMAGE PROCESSING

DATABASE  
MANAGEMENT



# WEB APPLICATION DEVELOPMENT



# DESKTOP APPLICATION



A screenshot of a desktop application window titled "tk". The window contains three text input fields labeled "Name", "User ID", and "Password", each with a corresponding empty white input box. Below these fields is a single "Submit" button with a dark grey border and a light blue background.

# GAME DEVELOPMENT

**Pygame**



# DATABASE

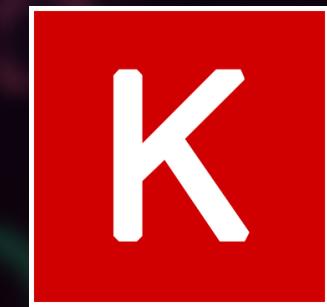
MySQL®



# DATA SCIENCE

 TensorFlow

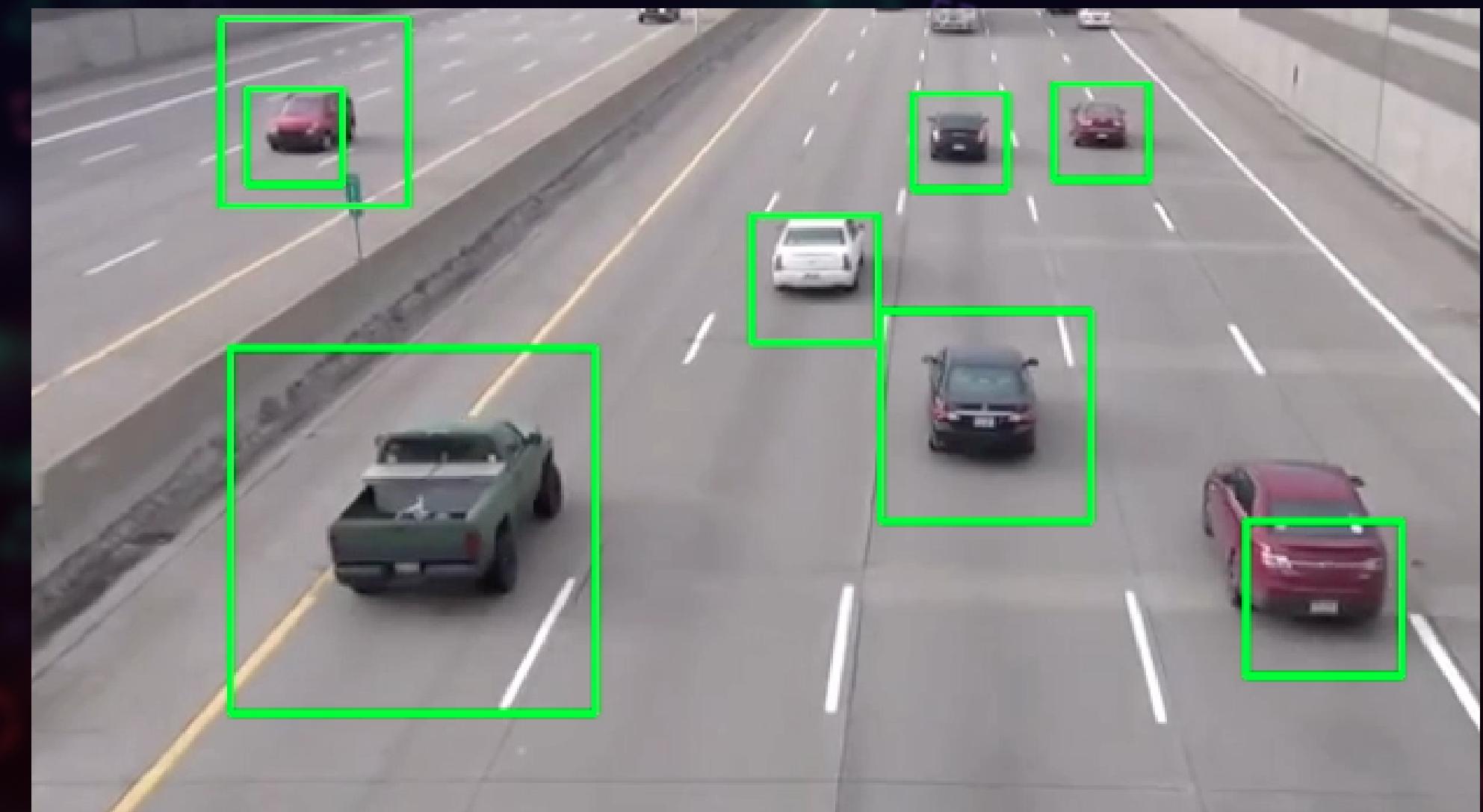
 scikit  
learn



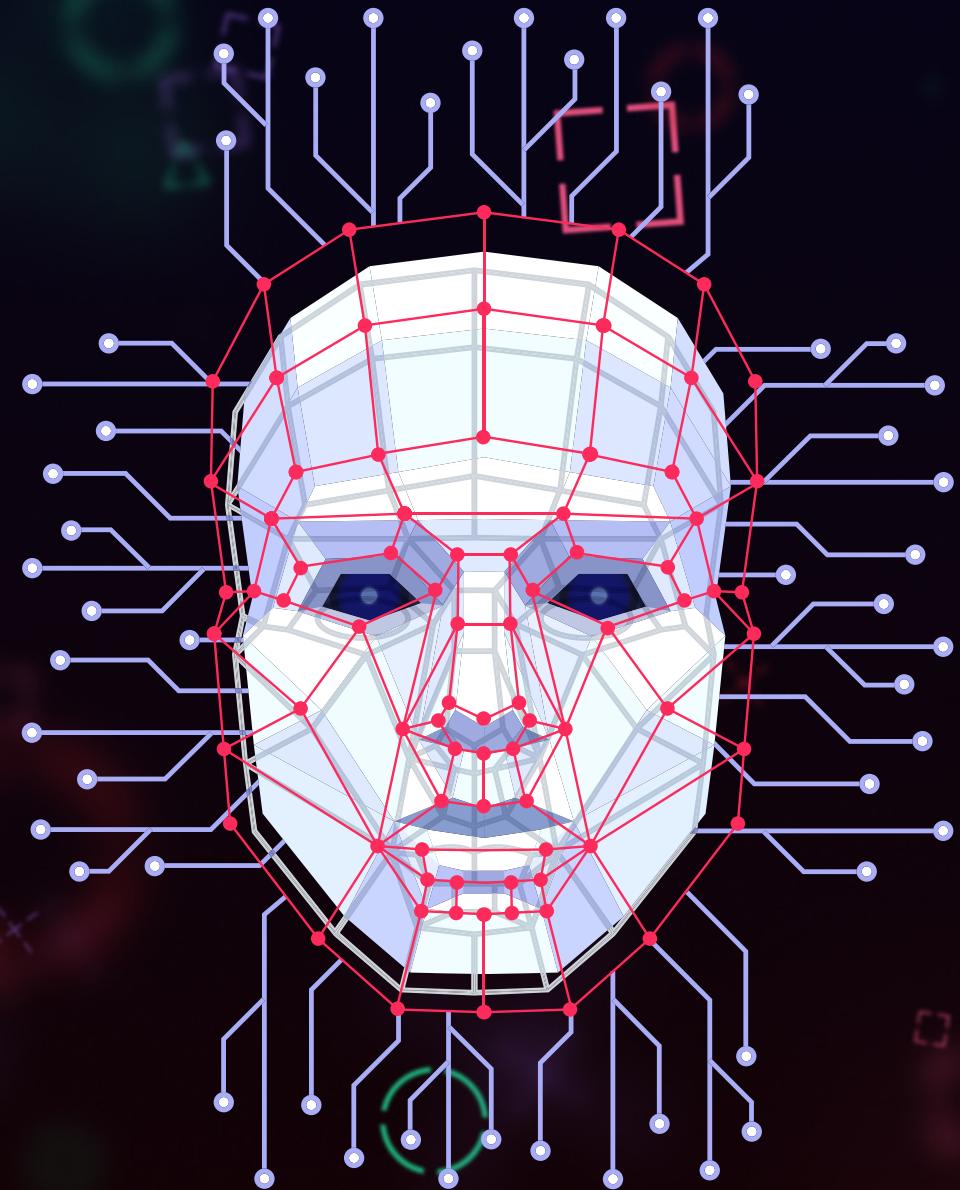
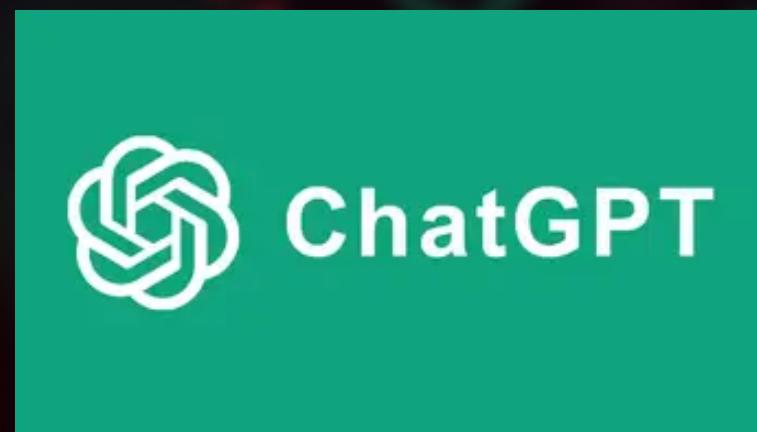
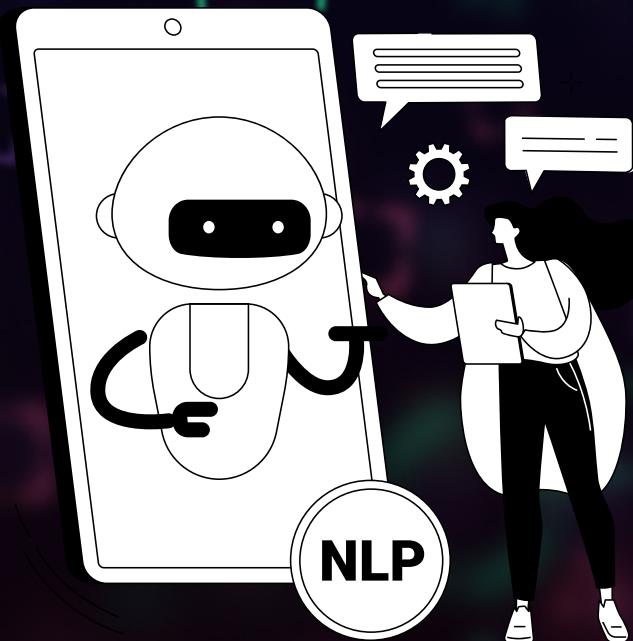
# IMAGE PROCESSING



OpenCV



# ARTIFICIAL INTELLIGENCE



# GET STARTED

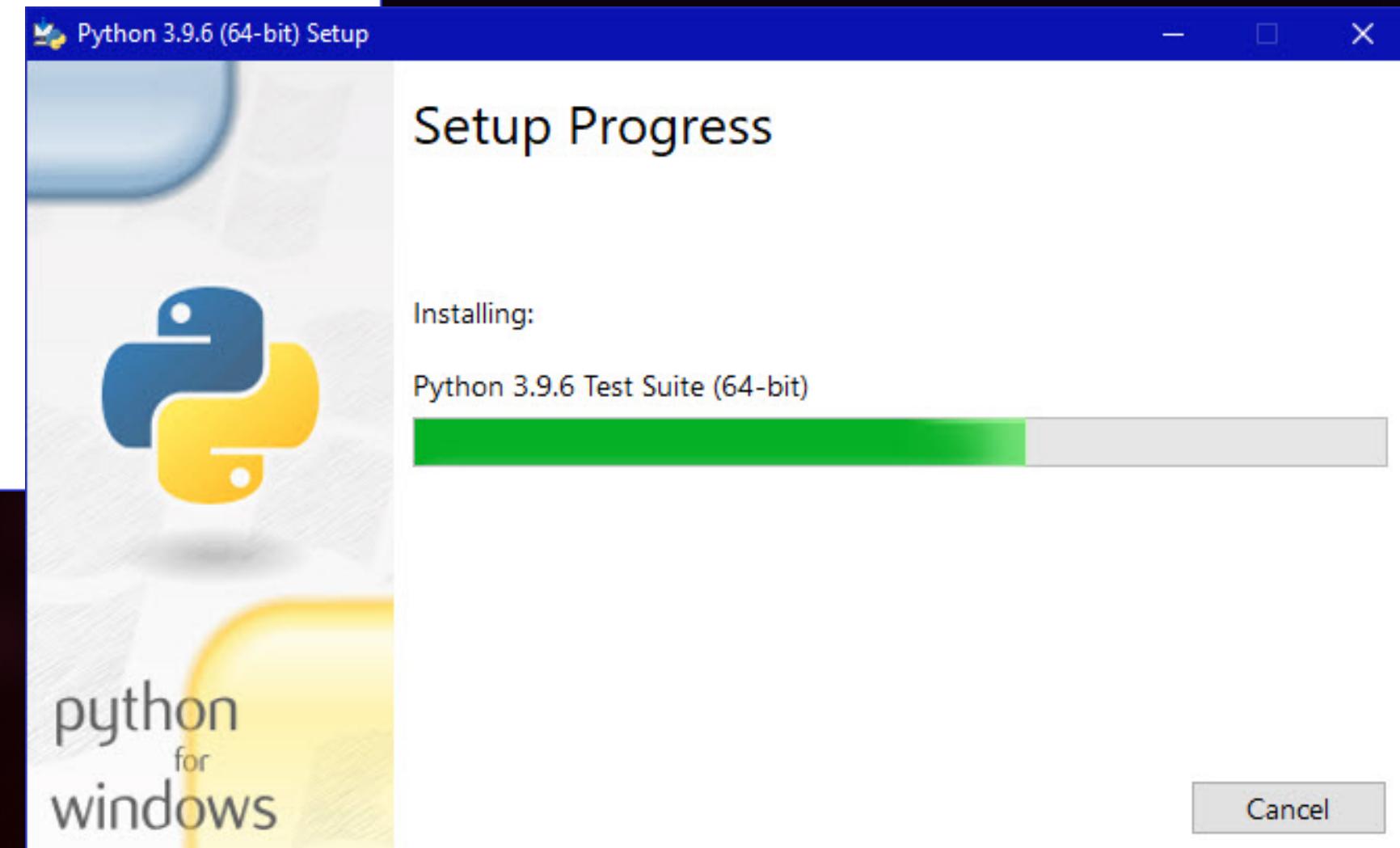
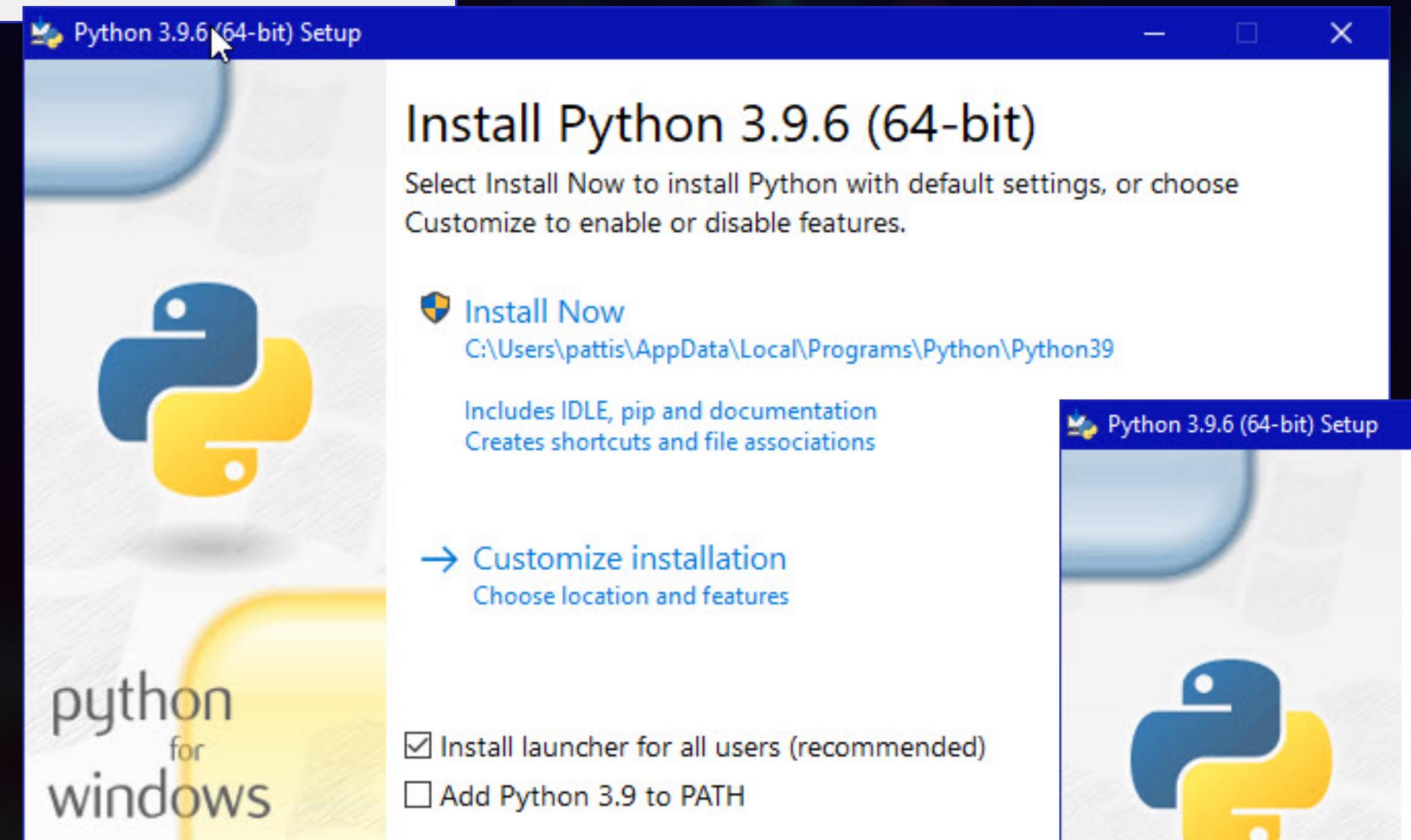
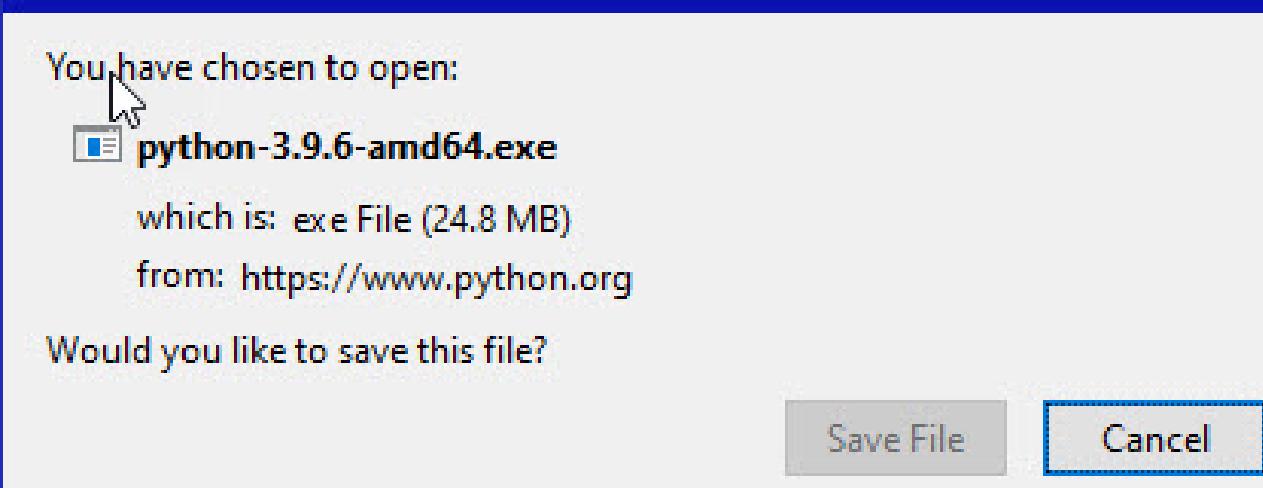


# PYTHON INSTALLATION



- Download Python from <http://www.python.org>
- Install Python.
- Run Idle from the Start Menu.

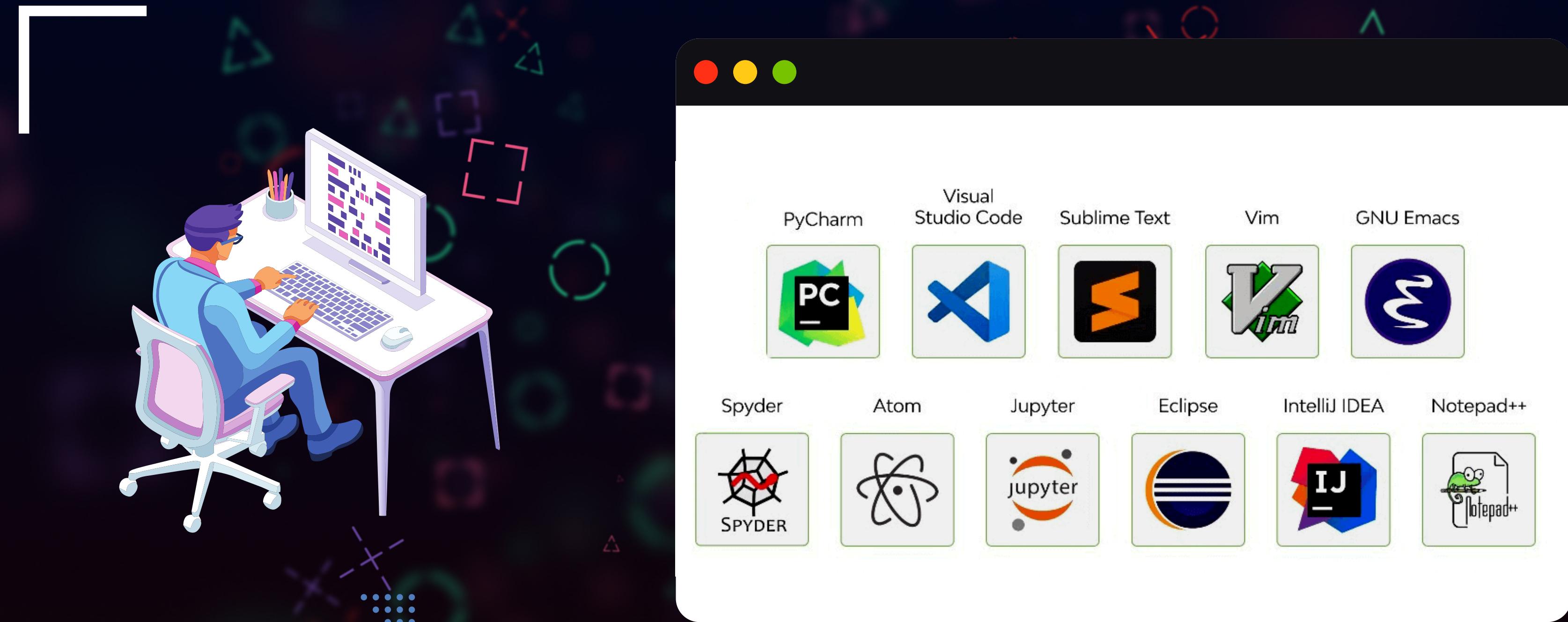
Opening python-3.9.6-amd64.exe



# PYTHON IDLE

(INTEGRATED DEVELOPMENT AND LEARNING ENVIRONMENT )

```
File Edit Shell Debug Options Window Help
Python 3.10.6 (tags/v3.10.6:9c7b4bd, Aug 1 2022, 21:53:49) [MSC v.1932
 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information
>>>
```

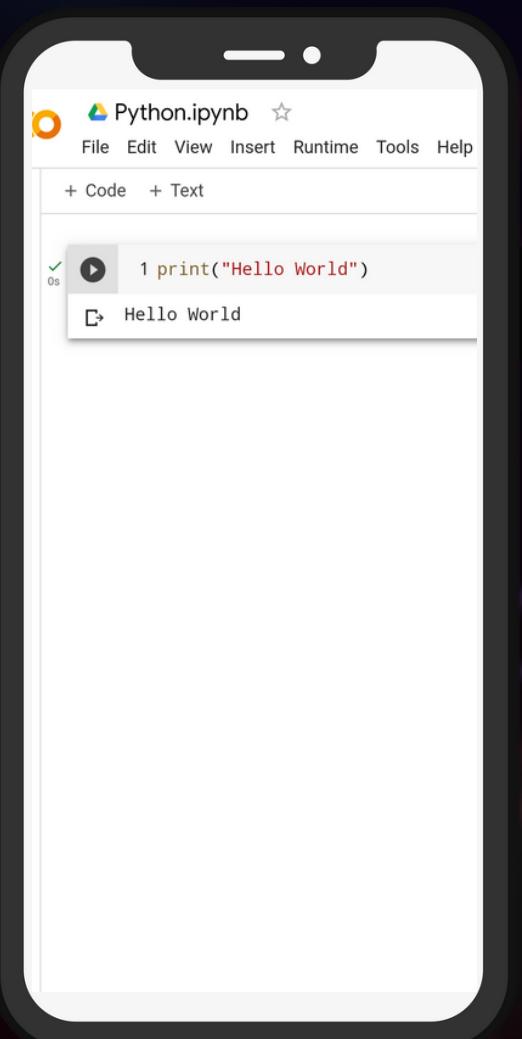


# PYTHON IDE

“

(INTEGRATED DEVELOPMENT ENVIRONMENTS )

# GOOGLE COLAB



Welcome To Colaboratory

File Edit View Insert Runtime Tools Help

Share Sign in

+ Code + Text Copy to Drive Connect Editing

## What is Colaboratory?

Colaboratory, or "Colab" for short, allows you to write and execute Python in your browser, with

- Zero configuration required
- Free access to GPUs
- Easy sharing

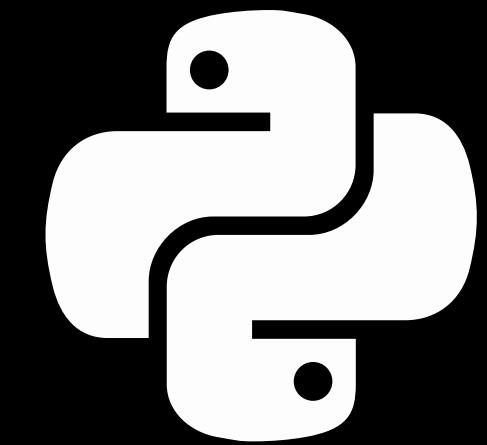
Whether you're a **student**, a **data scientist** or an **AI researcher**, Colab can make your work easier. Watch [Introduction to Colab](#) to learn more, or just get started below!

### Getting started

The document you are reading is not a static web page, but an interactive environment called a **Colab notebook** that lets you write and execute code.

For example, here is a **code cell** with a short Python script that computes a value, stores it in a variable, and prints the result:

```
[ ] seconds_in_a_day = 24 * 60 * 60
seconds_in_a_day
```



# Python Basics

# THANK YOU



Pantech e Learning  
DIGITAL LEARNING SIMPLIFIED