SNS COLLEGE OF TECHNOLOGY

(AN AUTONOMOUS INSTITUTION)

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Department of Artificial Intelligence and Machine Learning

Course Name: 19AMT301 & Deep Learning

III Year : VI Semester

Unit I –INTRODUCTION

Topic : Introduction to Machine Learning

Machine Learning

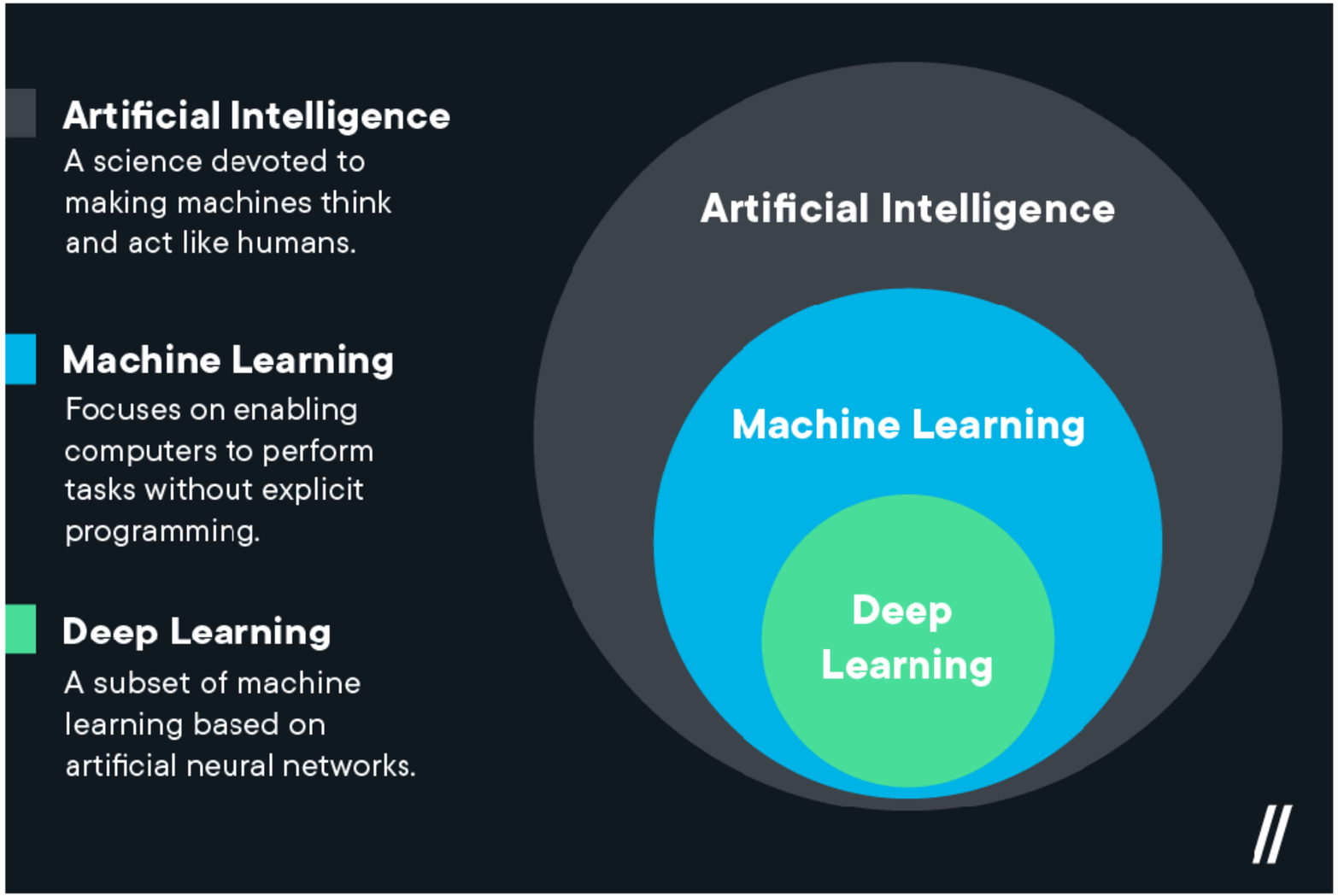
• Machine Learning(ML) is the field of study that gives computers the capability to learn without being explicitly programmed.

•ML is one of the most exciting technologies that one would have ever come across.

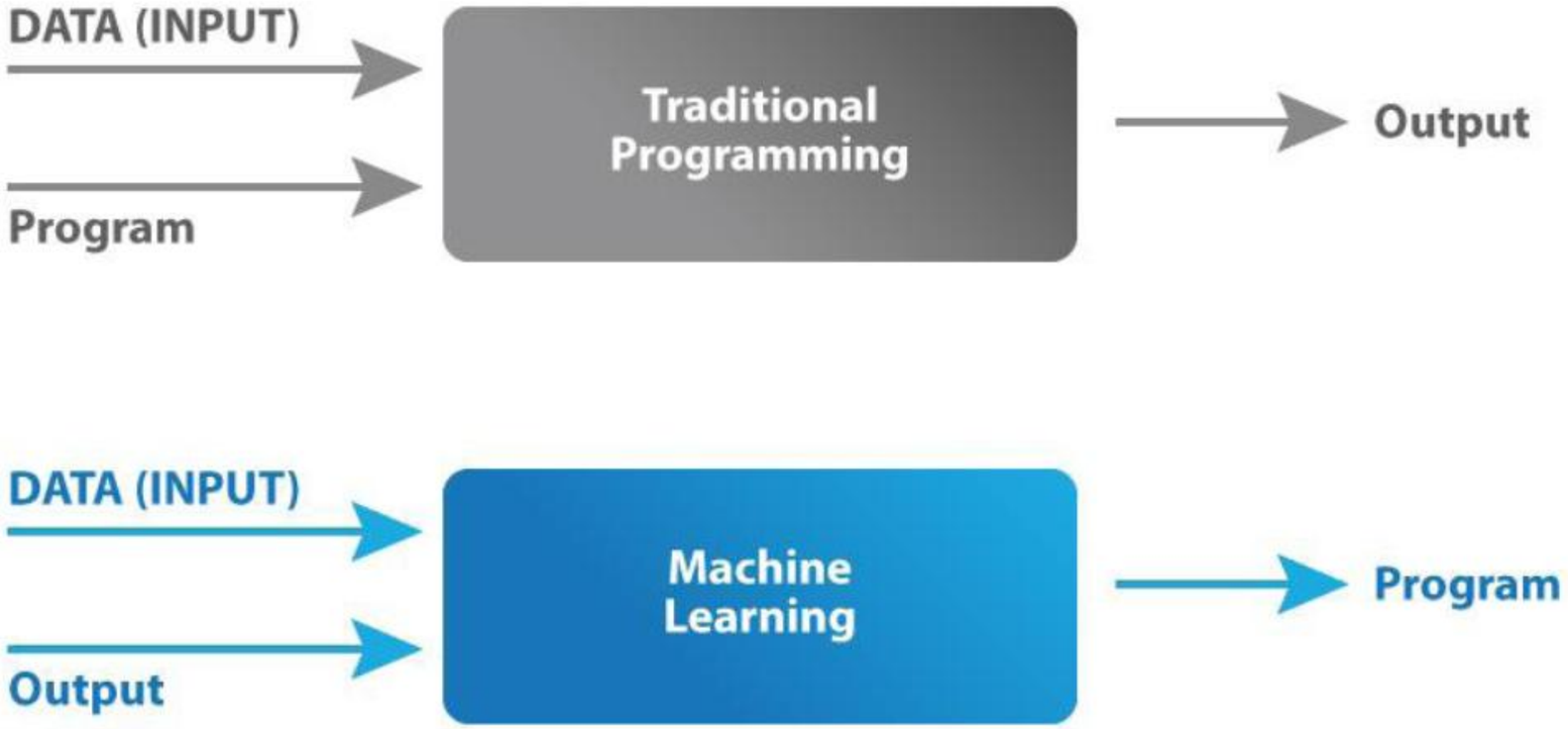
•Machine learning is actively being used today, perhaps in many more places than one would expect.

• Machine learning (ML) is a type of artificial intelligence (AI) that allows software applications to become more accurate at predicting outcomes without being explicitly programmed to do so.

AI Vs ML Vs DL

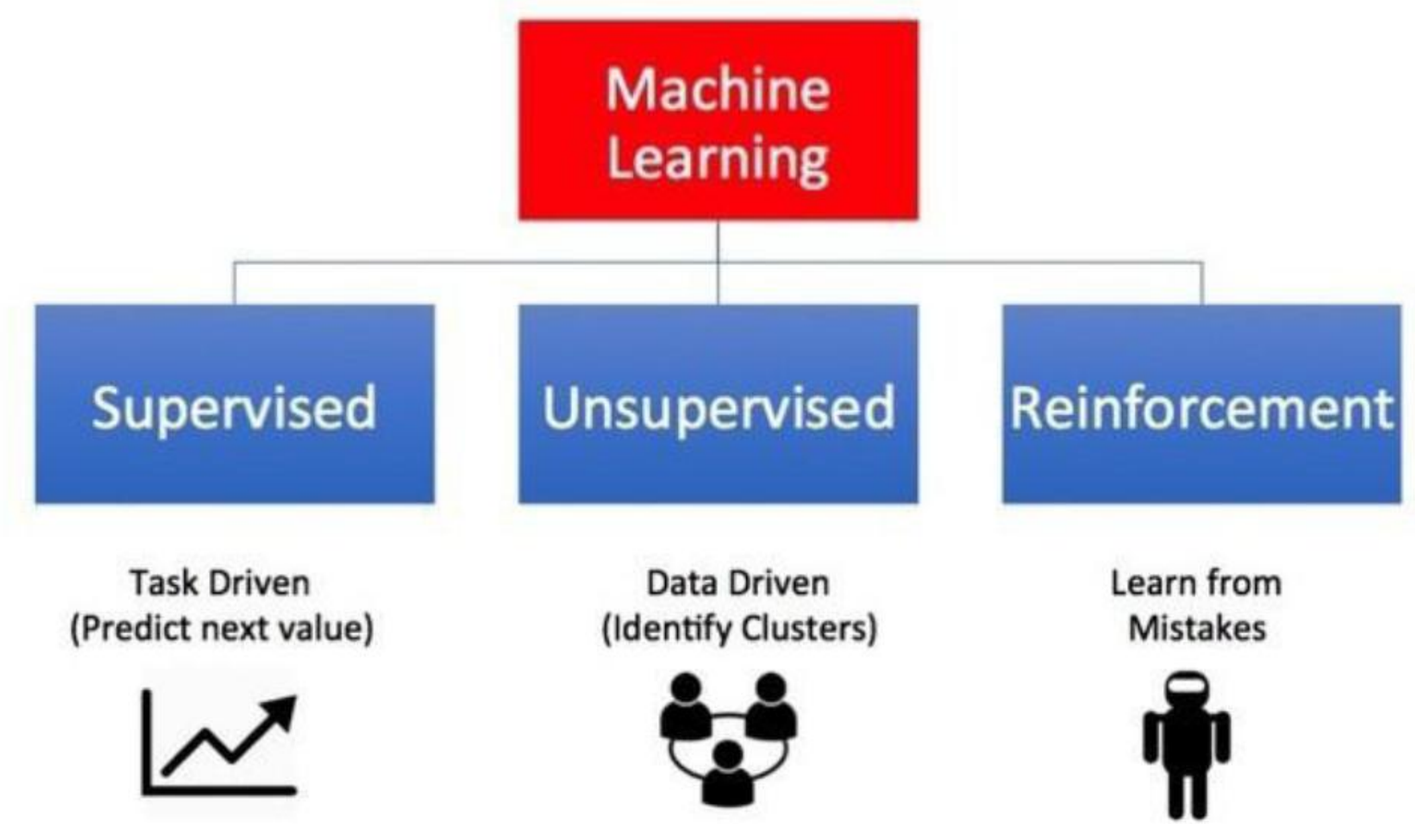

Artificial Intelligence
A science devoted to making machines think and act like humans.
Machine Learning
Focuses on enabling computers to perform tasks without explicit programming.
Deep Learning
A subset of machine learning based on artificial neural networks.
Artificial Intelligence
Machine Learning
Deep Learning

Traditional Programming Vs ML



GROUP DISCUSSION FOR 10 MINUTES ABOUT APPLICATIONS OF MACHINE LEARNING

Types of Machine Learning



Supervised Learning

- Trained using labelled data
- Training data set- small part of big dataset
- Finds relationship between variables- Cause and effect relationship and learns about relation between i/p and o/p
- Finally applied to Testing dataset

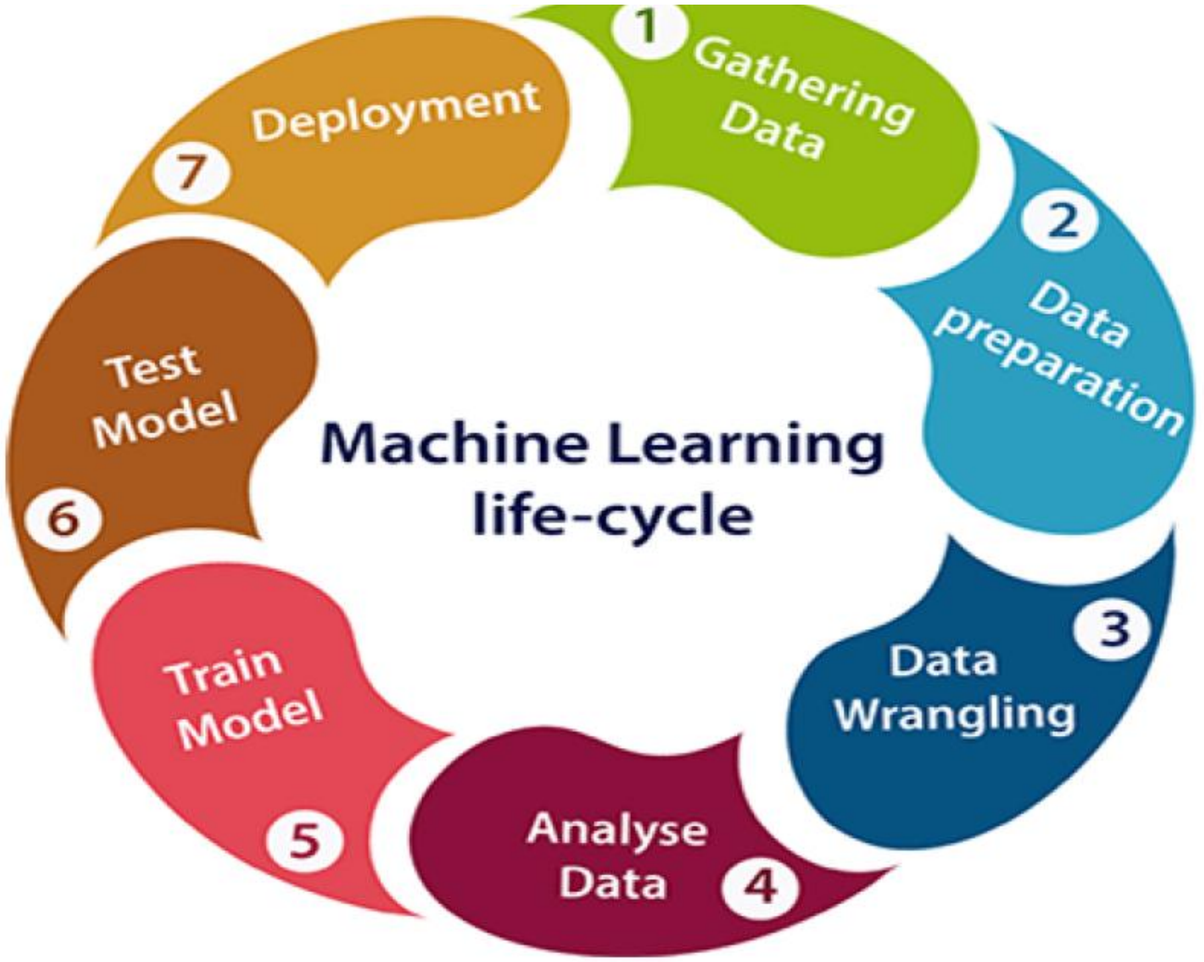
UnSupervised Learning

- Works with unlabelled data
- Relationships between data points perceived in an abstract manner
- There is a hidden structure between i/p and o/p

Reinforcement Learning

- Inspiration from Human perception
- Trial-and –error method
- Favorable outputs- Encouraged or reinforced
- Non favorable outputs- Discouraged or “Punished”
- Interpreter and reward system
- Score of effectiveness

Machine learning Process



Gathering data

- Data collection
- Identification of data sources

Data Preparation

• Data preparation is a step where we put our data into a suitable place and prepare it to use in our machine learning training.

•Ordering of data

•Data exploration

•Data pre-processing

Data Wrangling

• process of cleaning and converting raw data into a useable format

•It is the process of cleaning the data, selecting the variable to use, and transforming the data in a proper format to make it more suitable for analysis in the next step

•Issues in data:

Missing Values

Duplicate data

Invalid data

Noise

Data Analysis

- Selection of analytical techniques
- Building models
- Review the result

Train the model

• we train our model to improve its performance for better outcome of the problem

•We use datasets to train the model using various machine learning algorithms. Training a model is required so that it can understand the various patterns, rules, and, features.

Test model

- Once our machine learning model has been trained on a given dataset, then we test the model.
- In this step, we check for the accuracy of our model by providing a test dataset to it.
- Testing the model determines the percentage accuracy of the model as per the requirement of project or problem.

Deployment

- The last step of machine learning life cycle is deployment, where we deploy the model in the real-world system.
- If the above-prepared model is producing an accurate result as per our requirement with acceptable speed, then we deploy the model in the real system.
- But before deploying the project, we will check whether it is improving its performance using available data or not. The deployment phase is similar to making the final report for a project.

Think and answer !!!

Consider that you are going to create a machine learning model for diagnosing arrhythmia from the ECG of a person. Identify the data source and the ways you can get it.

The below table gives the information about the task and its planned time. Identify the problem with this data and what corrections need to be done. Note that no new data addition is required.

Task	Time
Breakfast	8.00 AM
Wake up	5.00 AM
Reach office	9.00 AM
Lunch break at office	1.00 PM
Tomato price	Rs 60
Tea break	15.30 PM
Leaving office	4.00 PM

In a x and y coordinate system, there are two data points, A(1,2) and B(3,2). Calculate the distance between A and B.

THANK YOU

QUESTIONS ??