Reinforcement Learning:-

Algorithm learns to behave in an environment by trial and error. The algorithm receives rewards for taking action. That lead to desired outcome and penalities for taking actions that lead to undesired outcome.

→ over time, the algorithm learn to choose actions that maximised its rewards.

Example:-

1- Self-driving Car
2- Video gaming
3- trading algorithm
4- industrial control system.

Differentiation b/w Types of machine learning:-

1- The type of data that algorithm is trained.

2- the algorithm is trained to perform.

→ Supervised learning
Classification or regression

→ unsupervised learning
clustering and anomaly detection.

→ Reinforcement learning
typically trained to solve control tasks.

3 also differe in the way that they learn

→ Supervised learning
mapping input/output.

→ unsupervised learning
finding patterns and relationship data.

→ Reinforcement learning
learn by trial and error.

Assignment 1

what is Machine learning?

Machine learning is the type of artifical intelligence that allow to software application become more accurate in predicting outcome.

→ Machine learning algorithms use historical data as input to predict new value as output.

Types of Machine learning

1- Supervised learning
2- unSupervised learning
3- Semi-Supervised learning
4- Reinforcement learning

1- Supervised learning:-

in supervised learning, the algorithm is trained on a label dataset. where each input example having output.

→ The algorithm learn to map the input to the output.

→ then can be used to predict output for new unseen input.

1- Continous target variable
2- Categorical target variable.

Real-life-example

1- Spam filtering
2- product Recommandation
3- Fraud detection
4- Medical imaging
5- image Recognition

2- unsupervised learning:- 3

in unsupervised learning, the algorithm is trained on an unlabeled dataset. where the input example do not having any corresponding outputs.

→ the Algorithm is learn to find patterns and relationship in the data, without being told, what to get for.

1- Clustering.
2- Dimensionality reduction
3- Anomaly detection

Clustering:- Group similar data points together

Dimensionality:- Compress data using fewer number

Anomaly:- find unusual data points.

Real life example of unSupervised

1- Customer segmentation
2- Anomaly detection
3- Market Research
4- Fraud Research
5- Natural language processing

3- Semi- Supervised learning::

in Semi- Supervised learning the algorithm having very small amount of label data and large amount of unlabel data

→ ~~Algorithm is trained on label data.~~

Model developed like Supervised learning but Traing perform both Supervised or unsupervised or label data or unlabel data

→ text Classification example