1. What is semi-supervised learning :

- Semi-supervised learning is a category of machine learning that use labeled and unlabeled data , as the name suggests, it is a hybrid technique between supervised and unsupervised learning.

- the core idea of semi-supervision is to treat a datapoint differently based on data is labeled or not:

1) if it labeled data (supervised): the algorithm will use traditional supervision to update the model weights

2) for unlabeled data (unsupervised): the algorithm minimizes the difference in predictions between other similar training examples.

1. What is reinforcement learning ?

**- reinforcement learning is a machine learning technique that trains software to make decisions to achieve the most optimal results, It mimics يقلد the trial-and-errorالمحاوله والخطا learning process that humans use to achieve their goals.**

## - the use cases of reinforcement learning?

## Reinforcement learning (RL) can be applied to a wide range of real-world use cases. We give some examples next.

## 1) Marketing personalization

## In applications like recommendation systems, RL can customize suggestions to individual users based on their interactions

## 2) Financial predictions

## The dynamics of financial markets are complex, with statistical properties that change over time

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3) What is ensemble learning :

ensemble learning:

- Ensemble learning is a machine learning technique that enhances accuracy and resilience in forecasting by combining predictions from multiple models. It aims to

Reducing errors that may exist in individual models by leveraging the collective intelligence of the ensemble.

- The underlying concept behind ensemble learning is to combine the outputs of diverse models لموديل متنوعه to create a more precise prediction.