Lec-2, RL, 24-25

In order to define the computational approach, there comes an "agent". Idea is to capture the most imp. aspect of the real problem facing a learning agent interacting over time with its environment to achieve its goal.

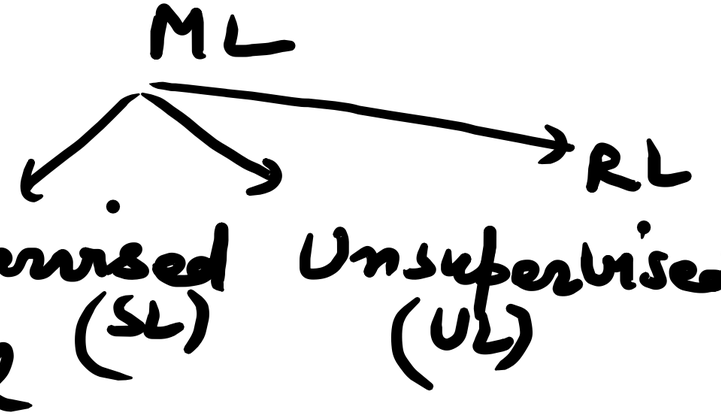
→ Abstract manner.

→ A learning agent must be able to sense the state of its environment to some extent & must be able to take actions that affect the state

→ The agent also must have a goal or goals relating to the state of the environment.

Most RL problems in the initial days | work have been formalized as the optimal control problems in incompletely-known Markov decision processes (MDPs)

MDPs are intended to include just three (3) aspects - sensation, action & goal.



RL Vs Supervised (SL) :- presence of knowledgable external Supervisor.

Obj. of SL :- extrapolation or generalization of response so that it acts correctly in situations not present in the

training set.

↳ In interactive problems, it is often impractical to obtain examples of desired behavior that are both correct & "representative of all the situations in which the agent has to act".

RL vs UL :- RL may be a type of UL because UL does not realy on examples of correct behavior, RL is trying to max. a reward signal instead of trying to find hidden structures.

→ Exploration vs. Exploitation - trade off
these two things do not arise in SL & UL, in

the purest form of these paradigms.
→ RL starts with a complete, interactive, goal seeking agent.

Elements of RL:- (1) agent, (2) Environment - 4 more

(3) Policy (4) Reward (5) Value function

(6) Model of the environments