Learning Agents

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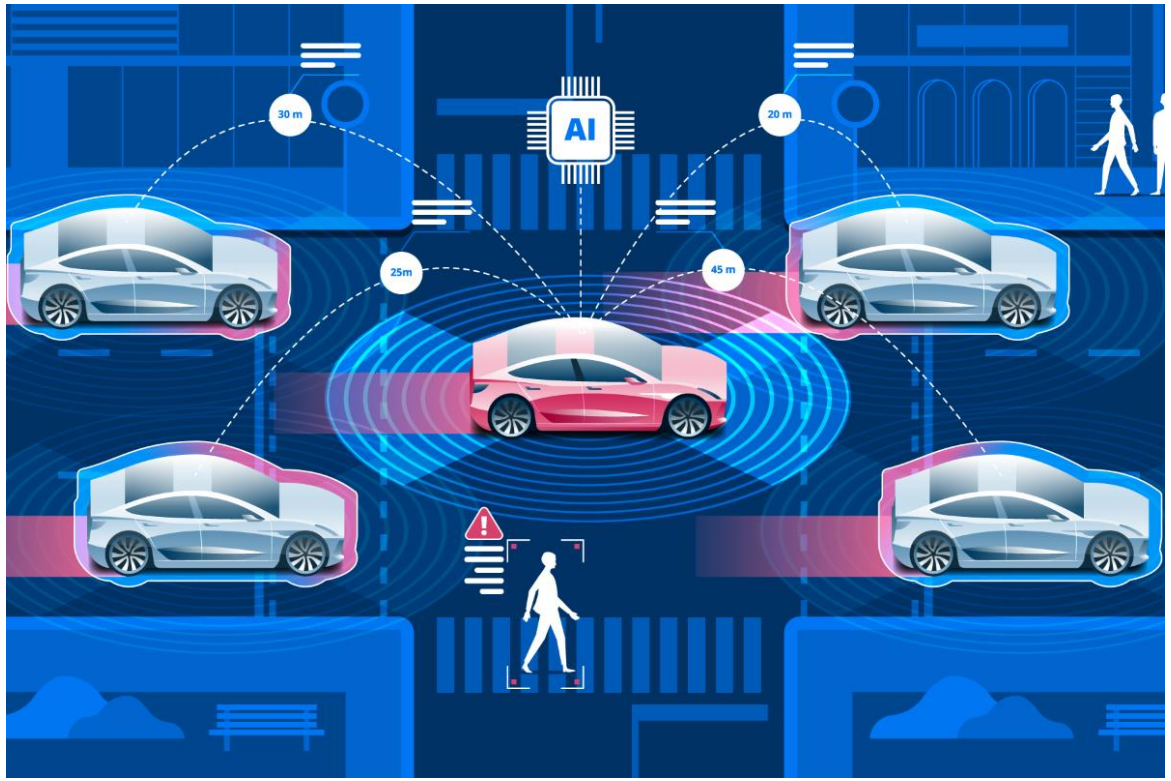
A **Learning Agent** is one that reads **observations** about the world, processes them, builds a **model**, and uses it to **improve** its future performance .

Learning Agents are used to solve complex tasks when designers cannot list all **percept possibilities** and the **corresponding actions**, and cases in which the agent needs to adapt to changing input.

Predicting Stock Changes & adapting to changing conditions.

Auto-driver handling endless possibilities



Three ways to build Learning Agents, based on the feedback it gets:

Supervised Learning

Unsupervised Learning

Reinforcement Learning

Supervised Learning

Agent reads in data in the form <input, output> pairs. It learns a model or function to map the input to the output.

This model is later used with new input to make predictions about the output.

Input can be percepts, and output can be rational actions.

Unsupervised Learning

There is no notion of feedback. Agent is programmed in a way that learns a model about the input in a certain way.

There isn’t really a way to validate the learned model.

Reinforcement Learning

Agent takes in feedback through a series of reinforcements which can be rewards or punishments.

Agent tries to select actions that maximizes reward and avoids punishment.