

1.4 Types of Agents



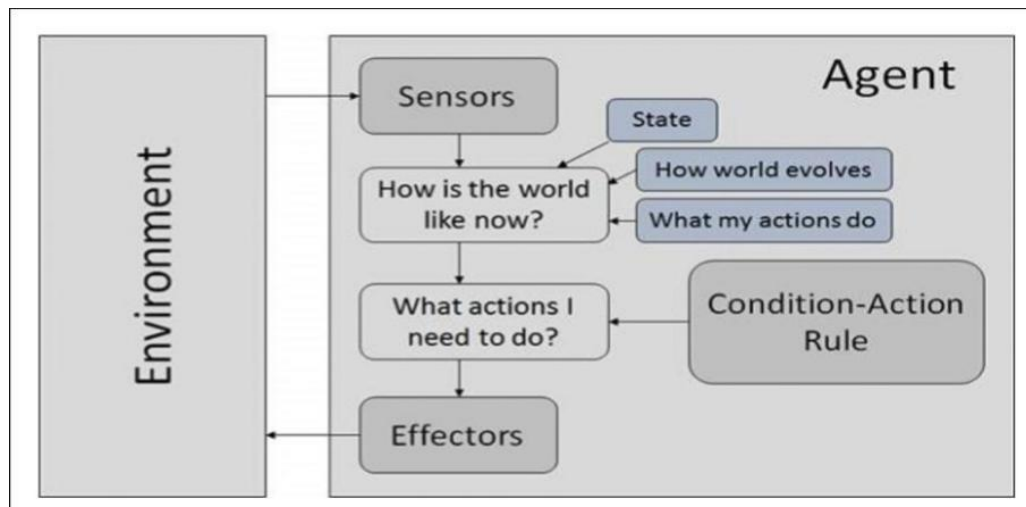
AI agents: functions, types, real world examples and benefits. The four main types of AI agents are simple reflex, model-based, goal-based, and utility-based agents, which are categorized by their increasing complexity in decision-making. Simple reflex agents use condition-action rules based on the current state, model-based agents maintain an internal world model to track history, goal-based agents select actions to achieve specific objectives, and utility-based agents choose the action that maximizes overall happiness or success.

1.Simple Reflex Agents

How they work: These are the most basic agents that make decisions based solely on the current state of the environment using simple “if-then” rules.

Limitations: They cannot consider past history, so they may not be effective in complex situations.

Example: A thermostat that turns on the heat only when the current temperature falls below a set point.

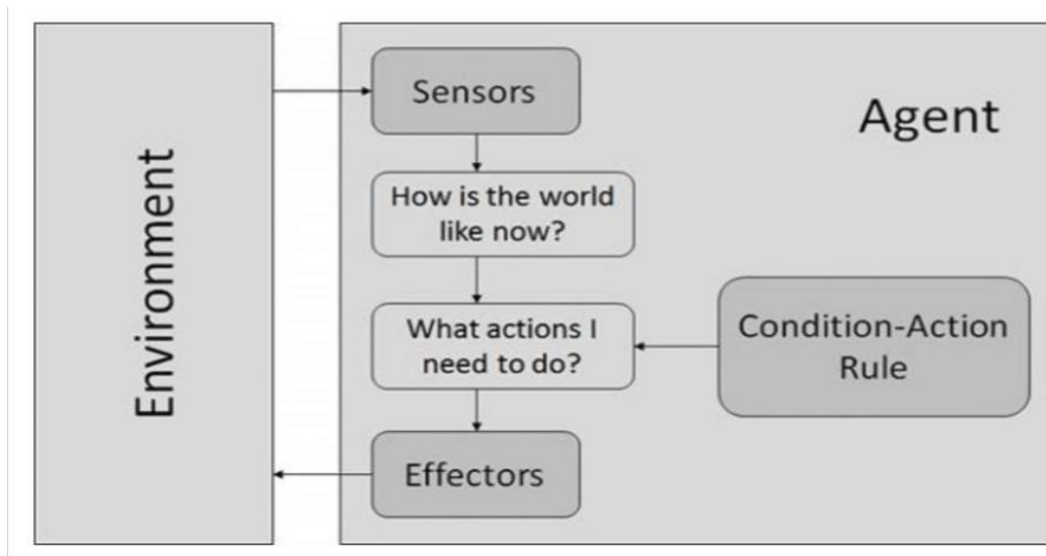


2. Model based agent

How they work: They maintain an internal model of the world to track the history of the environment and how it works. This allows them to handle situations where the current perception isn't enough to make a good decision.

Limitations: They rely on the accuracy of their internal model.

Example: A self-driving car that uses its internal model to understand how other cars will move and to plan its own path accordingly.

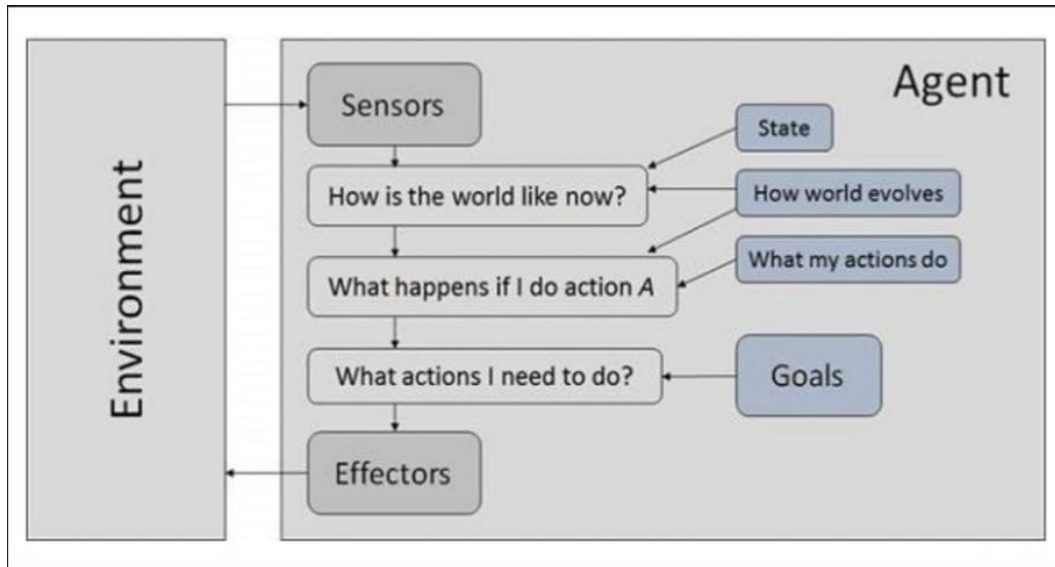


3.Goal-Based Agents

How they work: These agents have a specific goal they are trying to achieve. They use their model of the world to think ahead and choose actions that will lead them closer to that goal.

Limitations: They can be less efficient if there are many possible paths to the goal

Example: A GPS navigation app that finds the most efficient route to a user-specified destination.



4.Utility-Based Agents

How they work: This is an extension of goal-based agents. When multiple paths can achieve the goal, a utility-based agent chooses the one that is “best,” defined by a “utility function” that measures happiness or success.

Limitations: Developing a precise utility function can be complex.

Example: An airline’s flight booking system that considers factors like price, time, and comfort to recommend the most “useful” flight, not just one that arrives at the destination.

