Mansoura University
Faculty of Computers and Information
Department of Computer Science
First Semester: 2020-2021

[CS324P] Artificial Intelligence - 1 : INTELLIGENT AGENTS

Grade: Third Year (Computer Science)

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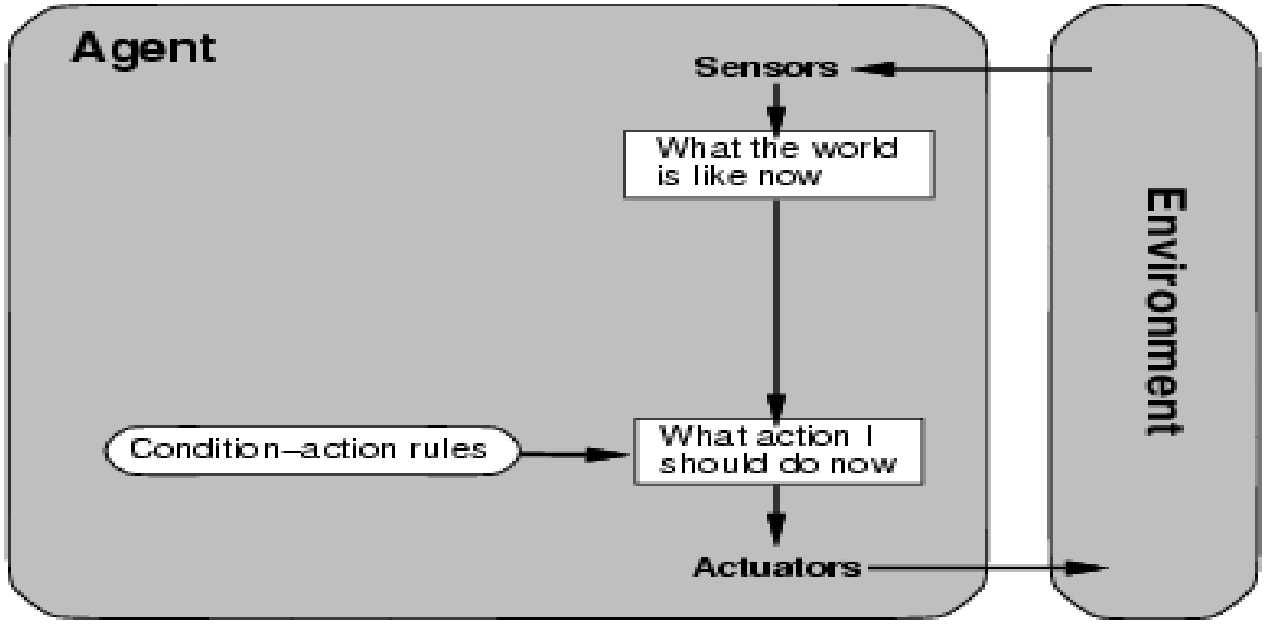
Agents Types

Agent Basic Types:

- Simple reflex agents
- Model-based reflex agents
- Goal-based agents
- Utility-based agents

Agents Types

Simple reflex agents



- Choose actions only based on the current percept
- Ignore the precept history (no memory)
- Use condition-action rule

Very simple !

Image Credit: Artificial Intelligence A Modern Approach *Second Edition by* Stuart J. Russell and Peter Norvig by 2010.

Agents Types

Simple reflex agents: (dis-advantage)

- The agent will work only if the correct decision can be made on the basis of the current percept that is only if the environment is **fully observable**
- Infinite loops are often unavoidable – escape could be possible by randomizing

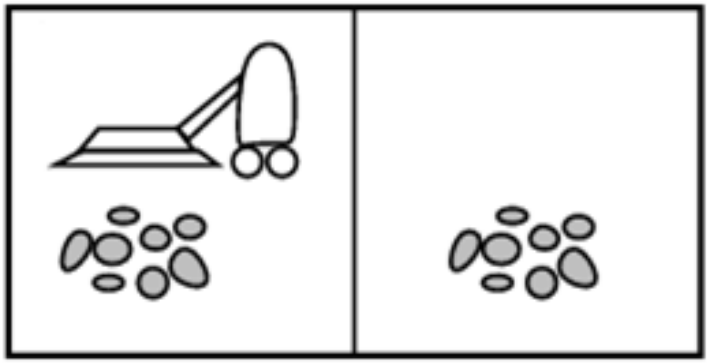
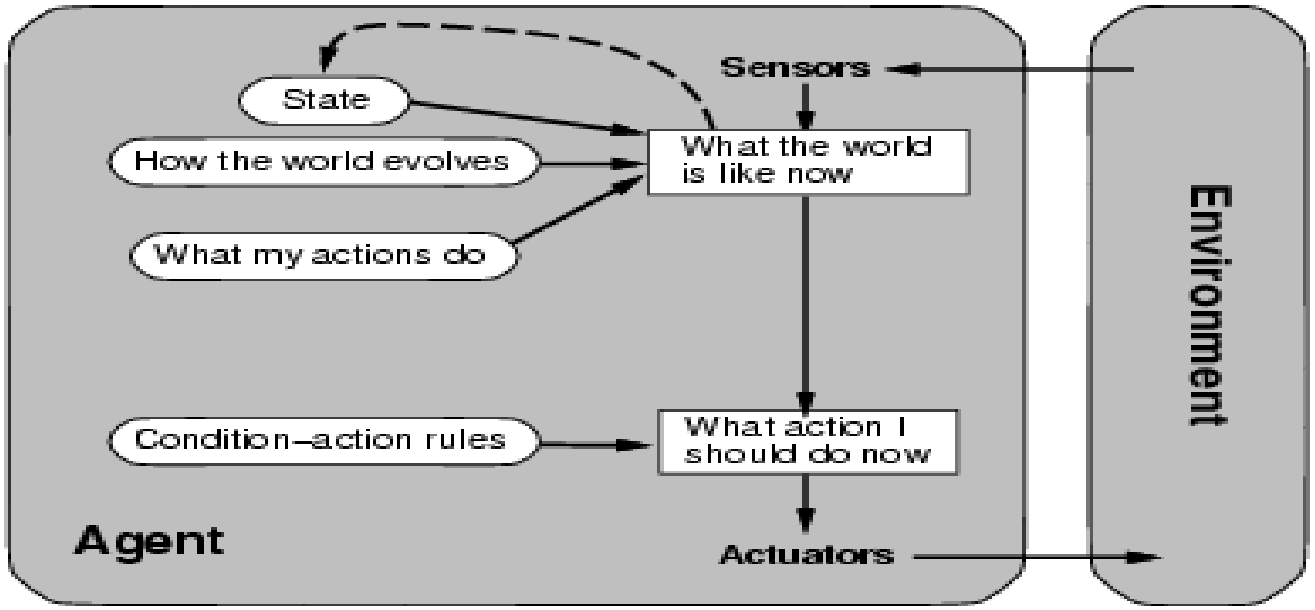


Image Credit: Artificial Intelligence A Modern Approach *Second Edition by* Stuart J. Russell and Peter Norvig by 2003.

Agents Types

Model-based reflex agents



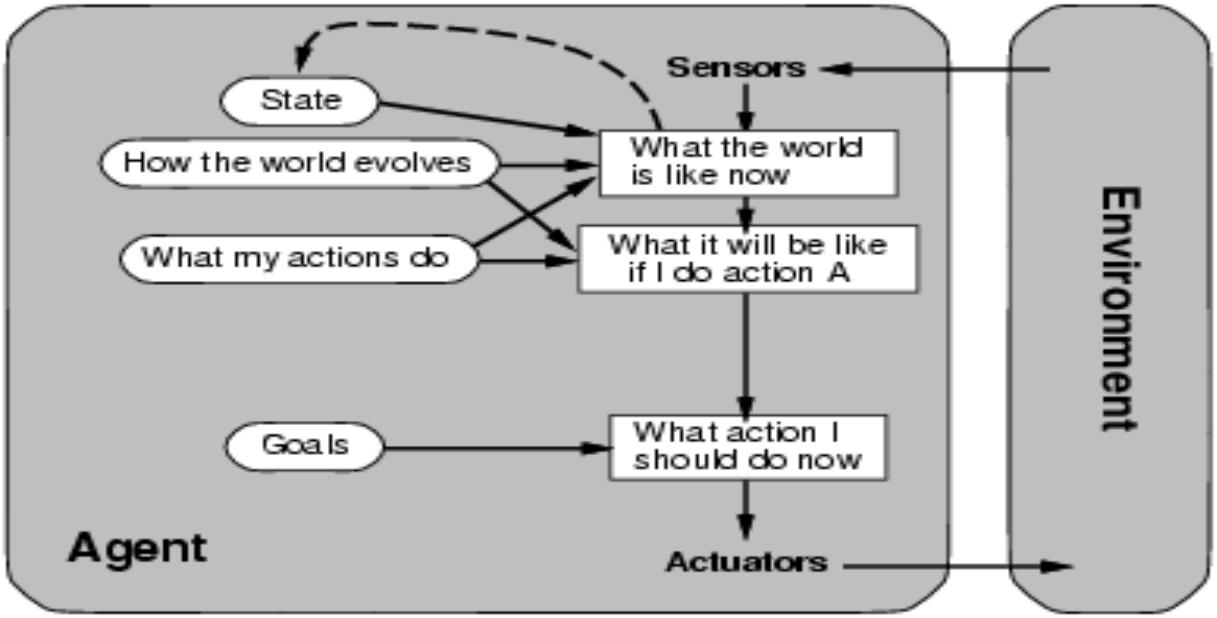
- Action depend on history or unperceived aspects of the world
- Need to maintain internal world model (state)

Without clear goal it is unclear to know what to do!

Image Credit: Artificial Intelligence A Modern Approach *Second Edition by* Stuart J. Russell and Peter Norvig by 2010.

Agents Types

Goal-based agents



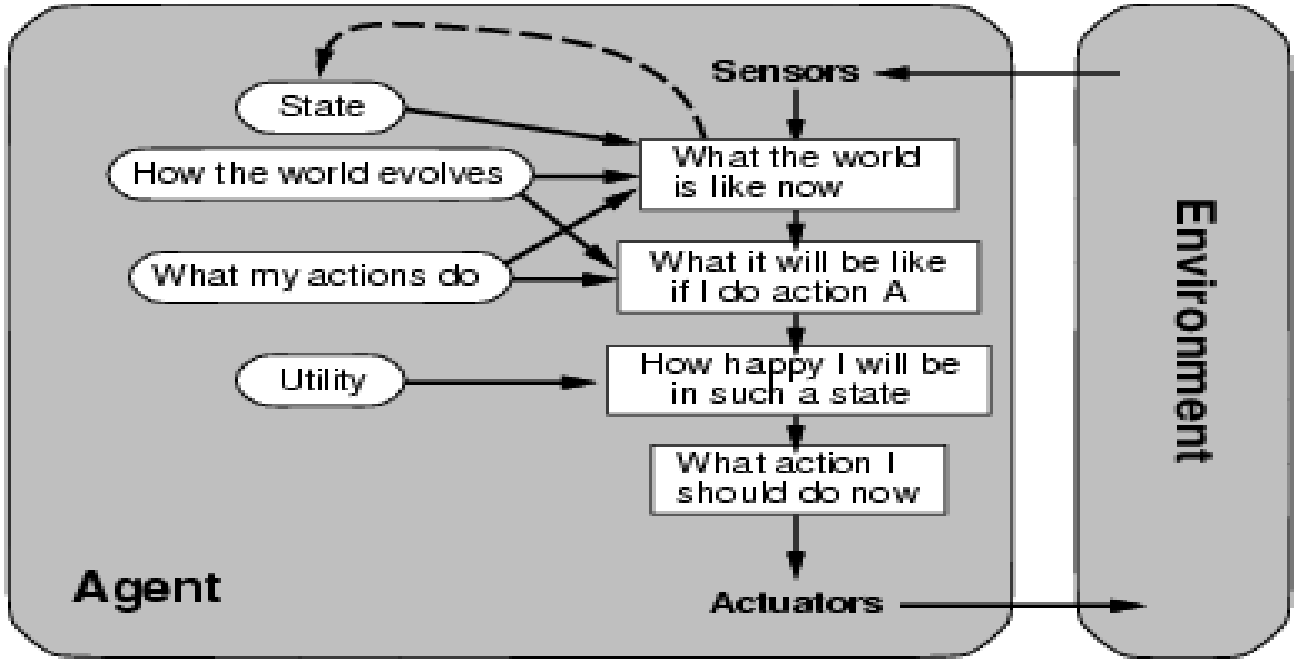
- Agents of this kind take future events into consideration
- Agent has some goal information, choose actions according to goal

Some solutions to goal states are better than others!
What happed if we have conflicting goals!

Image Credit: Artificial Intelligence A Modern Approach *Second Edition by* Stuart J. Russell and Peter Norvig by 2010.

Agents Types

Utility-based agents



❖Try to Maximize agent expected happiness

Image Credit: Artificial Intelligence A Modern Approach *Second Edition by* Stuart J. Russell and Peter Norvig by 2010.

Learning agent

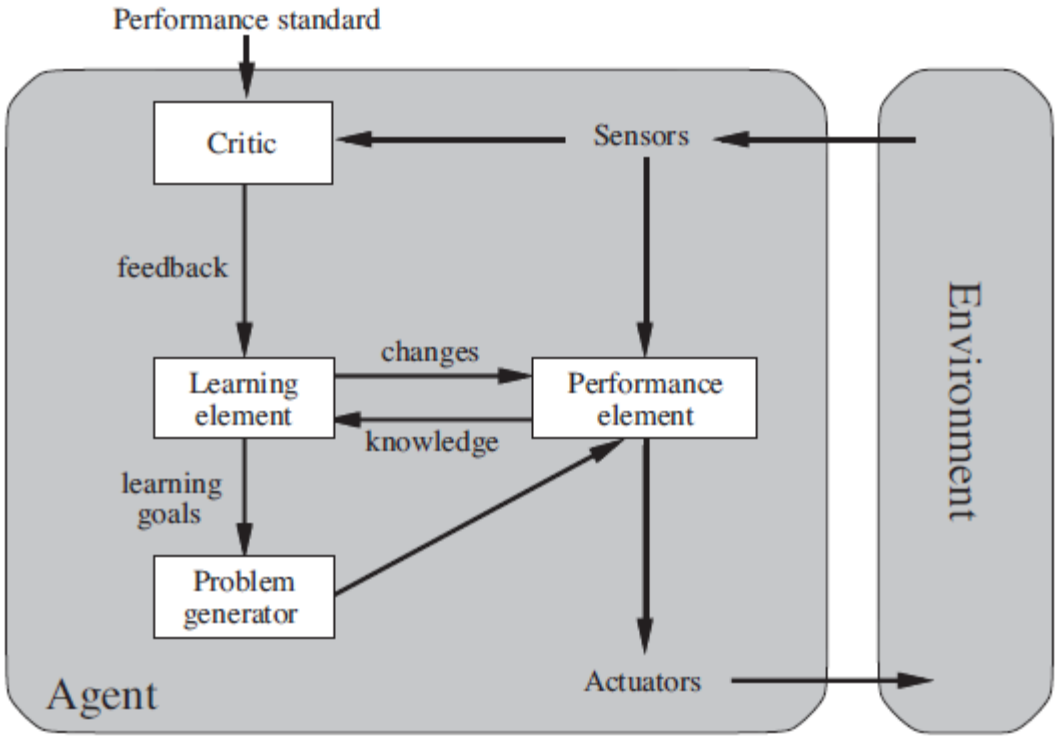


Image Credit: Artificial Intelligence A Modern Approach *Second Edition by* Stuart J. Russell and Peter Norvig by 2010.

Agents Types, example

Consider a chess playing agent, What sort of agent would it need to be?

Simple-reflex agent:	If yes? but some actions require some memory (e.g. castling in chess)
Model-based reflex agent:	If yes? but needs to reason about future
Goal-based agent:	If yes? but what about confliction goals?
Utility-based agent:	Might consider multiple goals

Agents Types

Assignment (3)

Describe the agent type for your project?

Simple-reflex agent? Why? Why not?
Model-based agent? Why? Why not?
Goal-based agent? Why? Why not?
utility-based agent? Why? Why not?


Thank You !