FAI: lecture 2 (agents)

agent

perceives (sensors), acts (actuators)

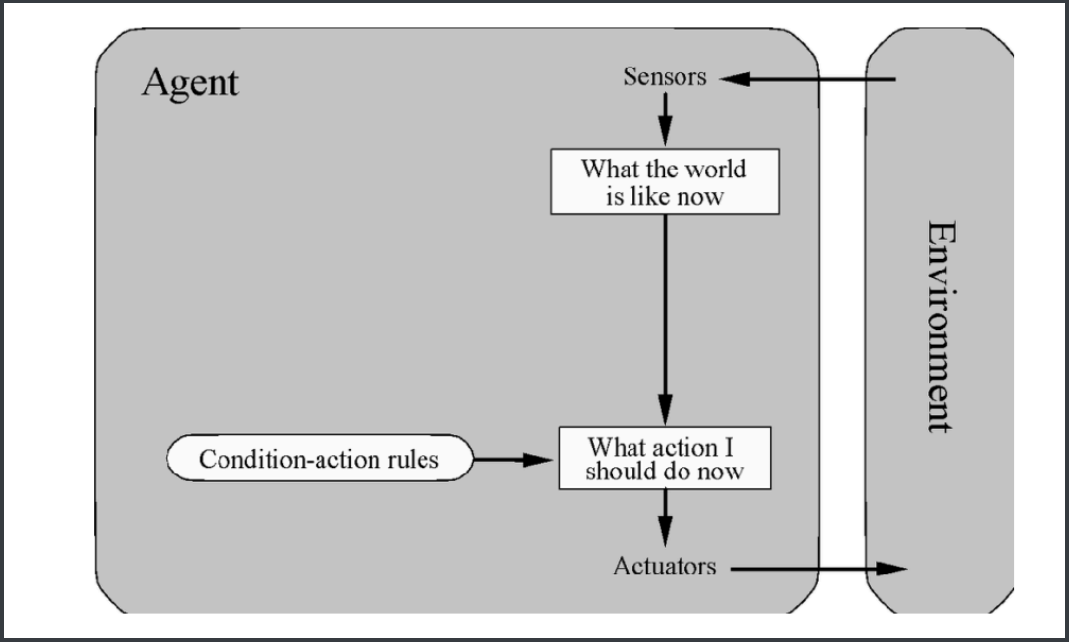
rational agent: maximizing utility

- environment types
  1. Fully / partially observable (memory?)
  2. Deterministic / stochastic (prepare for contingencies?)
  3. Static / dynamic (has time to compute?)
  4. Discrete / continuous (controller?)
  5. Single / multi agent (may need to behave randomly?)
  6. known / unknown physics (need for exploration?)
  7. known / unknown evaluation measure

Environment types

	Pacman	Backgammon	Diagnosis	Taxi
Fully or partially observable	F*	F	P	P
Single-agent or multiagent	M	M	S	M
Deterministic or stochastic	D	S	D*	S
Static or dynamic	D	D	S	D
Discrete or continuous	D	D	C	C
Known physics?	Y	Y	N	Y
Known perf. measure?	Y	Y	N	Y*

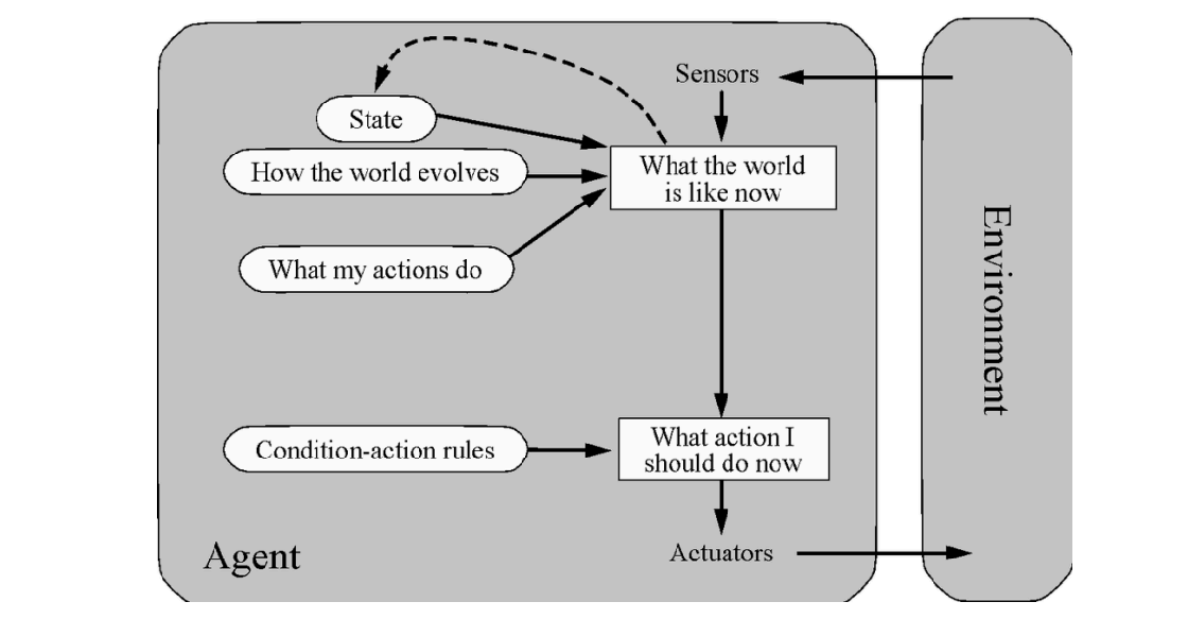
- Example agent designs
  1. simple reflex agents



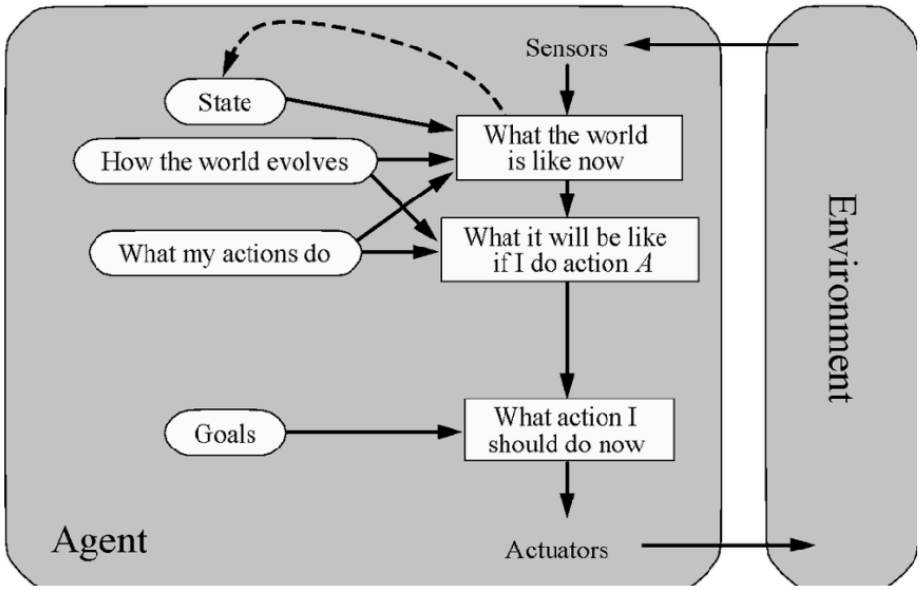
(*) does not keep track of the past. only possible if environment is fully observable

(*) simple design, but the rules need to cover all cases

2. Model-based agents



3. Goal-based agents


Sensors
State
What the world is like now
How the world evolves
What my actions do
What it will be like if I do action A
Goals
What action I should do now
Agent
Actuators
Environment