Cs 171 artificial intelligence (russell and norvig)

AIStudy of systems that:

- think like humans

- act like humans

- think rationally

- act rationallu

Turing testTest for intelligent behavior

System providing answer passes the test if interrogator can't tell whether the answers come from a person or not

Think like humansSystem that can:

Formulate a theory of mind/brain

Express the theory in a computer program

Cognitive science and psychologyApproach to creating a system that thinks like a human by testing or predicting the response of human subjects

Cognitive neuroscienceApproach to creating a system that thinks like a human by observing neurological data

Think rationallySystem that can solve problems using " laws of thought" (syllogisms, notation and logic, etc.)

RationalIdeal intelligence (in contrast with human intelligence)

Act rationallySystem that carries out actions to achieve the best outcome

AgentAnything that perceives and acts on its environment

AIStudy of rational agents

TRational agents carry out an action with the best outcome after considering past and current percepts (T/F)

a = F(p)p = current percept

a = action carried out

F = agent function

Agent functionFunction that maps from percept histories to actions

f = P* ➡ A

TAgent = architecture + program (T/F)

Performance measureP in PEAS

Captures agent's aspiration

EnvironmentE in PEAS

Context, restrictions

ActuatorsA in PEAS

Indicates what the agent can carry out

SensorsS in PEAS

Indicates what the agent can perceive

Fully observableEnvironment where everything an agent requires to choose its actions is available to it via its sensors

vs. Partially observable

DeterministicEnvironment that is predictable, follows a sequence

Ex. In a sequence of 1, 2, 3, 4, 5, 5 happened because of 1-4

vs. Stochastic

StochasticEnvironment where events that occur now may be direct consequence of past events

EpisodicEnvironment where choice of current action is not dependent on previous actions

vs. Sequential

SequentialEnvironment where all previous choices are taken into account. Current choose will affect future actions

vs. Episodic

StaticEnvironment that does not change

vs. Dynamic

DynamicEnvironment that changes

vs. Static

DiscreteEnvironment where past events do not affect what happens next

vs. Continuous

ContinuousEnvironment that is like a sequential environment

vs. Discrete

Single agentAgent operating by itself VS multiagent - many agents working together

Reflex agentAgent given percept and stimulus, will respond (given A, will give B)

Reflex agent with stateReflex agent knows its state

Goal based agentAgent that has a goal and makes choices to improve its state

Utility based agentAgent that also considers a " happiness factor" aside from goal state

Learning agentAgent with a performance element. Its learning element modifies performance element

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