Tutorial - 1

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Aim:- To understand the concept of Agent + Abstraction by studying definition of Rational Agent, Agent environment, Task environment Description, environment type

Theory:- An Artificial Intelligent (AI) System is composed of an agent and its environment. The agent act is their environment. An Agent is anything that can perceive its environment through sensor and act upon that environment through effector This can't be Clearly seen in fig 1.

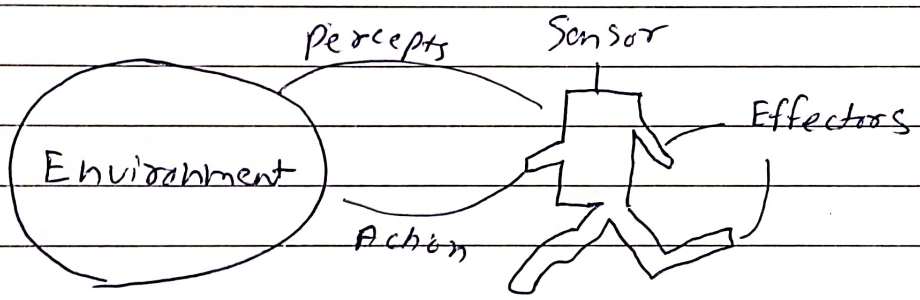

fig. AI Agent with environment

Human Agent:- has Sensory organs such as eyes, ear nose, tongue & skin parallel to the Sensor, other organ such as hands, legs, mouth for effectors

Robotic agent:- replace cameras and infrared range finder for the Sensor, and various motor and actuators for effector.

As Seen in fig2 Simple Reflex agent choose action only based on the correct percept only. They are rational only if correct decision is made only the base of correct people. Agent environment of Such agent is fully observable. Model Based Reflex Shown fig2 use model of the world to choose their action. They maintain an internal State as a persisted information. Here the model mean knowledge about how the thing happen in the world that is representation of unobserved aspect of current State depending on percept history. goal is discription is explicity modeled thereby allowing for modification. goal Show in fig. 2d action based on a preference (utility) for each state.

An AI agent is refered to as Rational Agent. A rational agent always performance action, where right action mean the action that causes the agent to be most Successful in the given accept percept Sequence. the agent Solve is Characterised by performance measure, environment Actuator & Sensors (PEAS). These are collectively refered to as PEAS descriptor for the agent task environment.

Another important piece of information is task environment properties while analyzing task environment the agent architect need to Consider following properties

1) Discrete or continuous:-
If there are limited number of distinct clearly defined, state of the environment, the environment is discrete (for example chess) otherwise it is continuous (for example automated driving).

2) observable or partially observable:-
If there is possible to determine the complete state of the environment at each time point from the percept it is observable; otherwise it is only partially observable.

3) Static or Dynamic: If the environment does not change while an agent is acting, then it static otherwise dynamic.

4) Determine or Non-determinister:-
If the next state of the environment is completely determined by the current state and the action of the agent, then environment is deterministic otherwise it is non deterministic.

5) Episodic or Sequential:-
If an episodic environment, each episode of event consist of Agent perceiving and then acting. The quality of its action depend just on the episode itself. Subsequence episode do not depend on the actions in previous episode.

6) Single agent or multiple agent :-
The environment may contain single agent or other agent which be of the same or different kind as that of the agent. These agent may be cooperating or competing with each other.

7) Accessible or Inaccessible :-
If the Agent sensory apparatus can have accss to the complete state of the environment then the environment is accessible to that agent.

Working
Search intenet for AI based application in following scenarious and identify who is agent for that application. further list out PEAS descriptor for agent environment in each of the case. finally try to classify task environment propentres like of attribute from list of 7 task environment propentie
1. Autonomous Lunar Rover
2. Deep Blue Chess playing computer program
3. Eliza the natural language processing computer created from 1964 to 1966 at MIT Artificial Intelligane laboratory by Joseph weizenbaum
4. Automatic portfolio management
5. Sophia is a social humanoid robot developed by Hong Kong based company Hanso Robotics
6. Alpha Go is a computer program that play the board game Go. It was develop by Alphabet Inc Deepmind & lab in London.

7.) Apple virual assistance Siri
8) Endurance A companion for Dementia patient
9) Casper · helping Insomniacs get Through the night
10) Marvel · Guarding the Galaxy with Comic Book Crossover
11) Automated Cross word Solver.