Tutorial No. 01

Tutorial No:- 01

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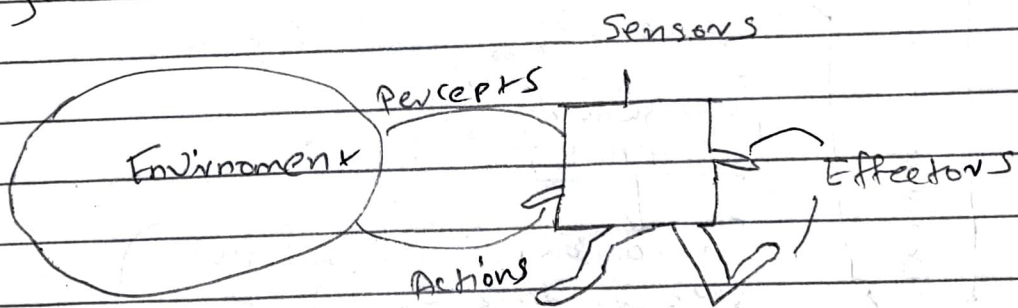| D.O.P.	D.O.C.	Marks	Sign

Tutorial No:- 1

Module 1

Tutorial 1: Design of Intelligent Agent

Aim:- To understend the concept of Agent Abstraction by studying definition of Rational Agent, Agent environoment, Task Environoment Descriptors, environoment types.

Theory:- An Artificial Intelligent (AI) System is composed of an agent & its environoment. The agents act in the environoment. An Agent is anything that can perceive its environoment through sensors & acts upon that environoment through effectors. This can be clearly see in fig.

Sensors

Percepts

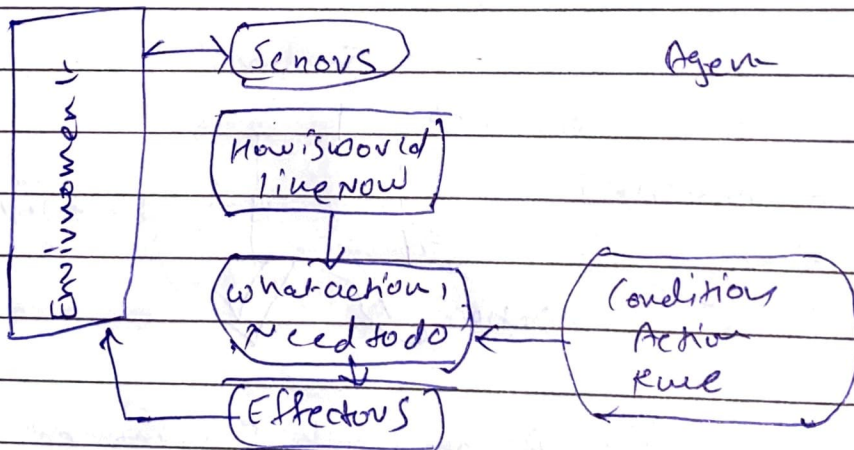Environoment

Effectors
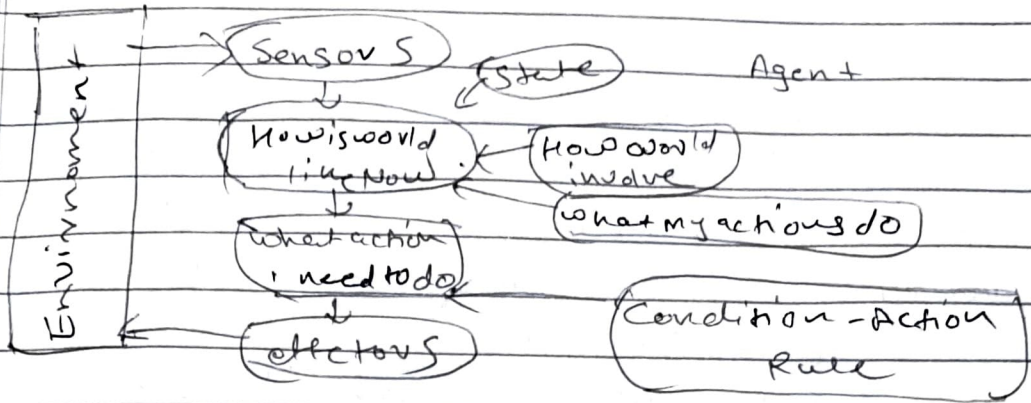
Actions

AI Agent with Environoment.

Human Agents has sensory organs such as eyes, ears nose, tongue & skin parallel to sensors & other organs such as hands, legs, mouth for effectors.

- Robotic Agents replaces Cameras & infrared range finders for the sensors & Various motors & actuators for effectors.
- Software Agents has encoded bit strings as its program & Actions
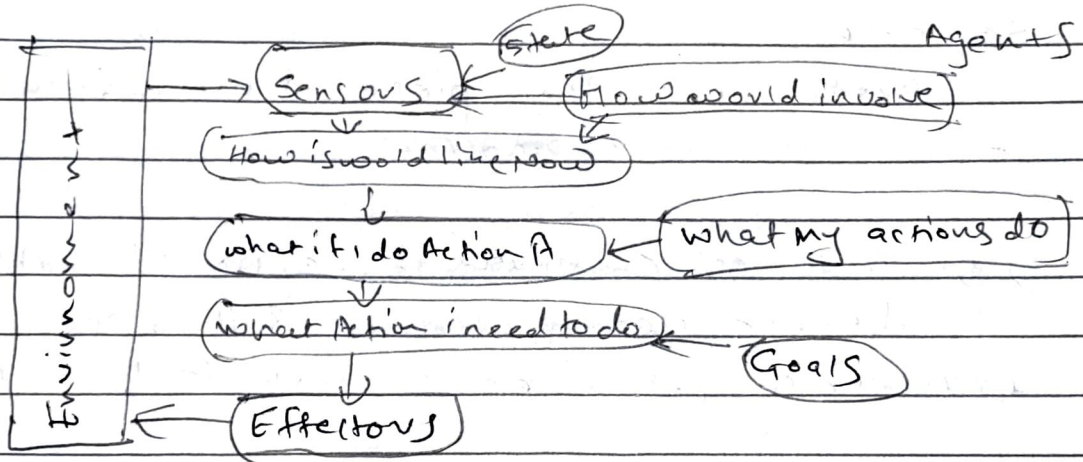
Agent Structure Can be viewed as a Combination of Agent architecture & Agent program refers to the machinery that An agent executes on wheras Agent program is implementation of an Agent function.
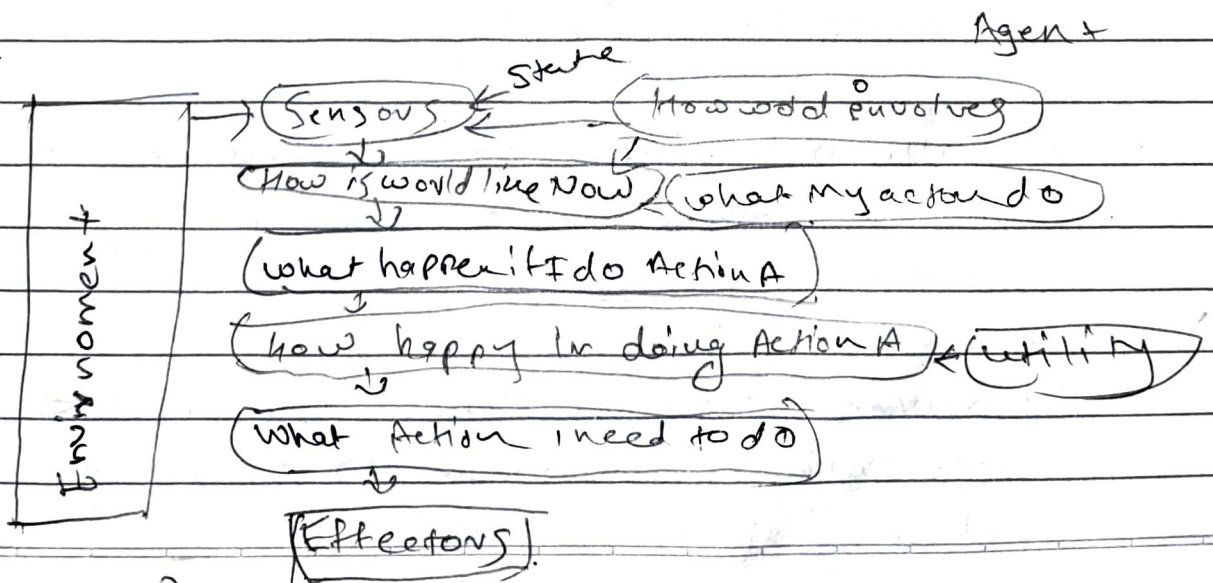

a) Simple Reflex Agent

b) model Based Reflex Agent

Diagram — Model Based Reflex Agent:
- Environment → Sensors → State (Agent)
- How is world like Now ← How world involve
- What my actions do
- what action I need to do
- Condition–Action Rule
- effectors → Environment

c) Goal Based Agents.

Diagram — Goal Based Agents:
- Environment → Sensors → State (Agents)
- How would invole
- How is world like Now
- what if I do Action A ← what my actions do
- what Action I need to do ← Goals
- Effectors → Environment

d) Utility Based Agent.

Diagram — Utility Based Agent:
- Environment → Sensors → State (Agent)
- How world envolves
- How is world like Now ← what my action do
- what happen if I do Action A
- how happy In doing Action A ← utility
- What Action I need to do
- Effectors → Environment

As Seen in fig, Simpler Reflex Agents choose Actions only Based on the Current pecept only. They are rational only if a correct decision is made only on Basis of Current percept Agent environment such agent is fully Observable

An AS Agent is refered to as Rational Agent. A Rational Agent always purfourms right Action. where the right Action near the action that the agent to be not ✗ Successful in given a percep² sequence.

Another important piece of information is fast environment properties.

1) Discrete or Continuous If the united number of distinct clearly define, Stetes of environment, the environment is discrete,

2) observable or partically observable it is possible to determine complete state of environment of each time point for percept is observable,

3) Static or Dynamic, if the environment does not change while our agents is acting with Static.

4) Deterministic or Non-Deterministic if the next state is environment is Completely Determing by Current State.

6) Single Agent or multiple agents the environment may Contain Single agent other agents which may be of the same different kind as that of Agent

7) Accessible or inaccessible if the Agent Sensory apparatus Can have access to Complete state or may be same.

Working Search internet for AI based application in following scenario & identify who is agent for that Applications.

1) Autonomous Lunar Rover

2) Deep Blue chess playing Computer program.

3) Eliza the natural language processing Computer program. Created from 1964 to 1966 at MIT AI Lab by Joseph Weizenbaum.

4) Automatic portfolio management.

5) Sophia is social humanoid robot developed by hongkong based Company Hanson Robotics

6) Alphgo is computer program that plays the board game.

7) Apples virtual Assistence siri

8) Endurance: A Companion for Dementia patients.

9) Casper: Helping Insomnias Get through the Night

10) Marvel: Guarding Galaxy with Comic book

11. Automated Crossover Solver