Reflex based agents

In this type of agents a action is performed based on the feedback given by the system i.e sudden response to the present condition. Input to the agent is received from its surrounding environment through sensors and certain action is performed based on the mapping of condition action rule by controlling the actuators. Fig 1.1 shows the simple reflex agent. Let us take a example of a autonomous car which need to stop ones the car in front of it applies brake. Through the car's camera sensor the image is obtained and checked for the condition whether the back light of a car in front of it is in on condition or not. Based on the computation result actuation is given to the effectors.

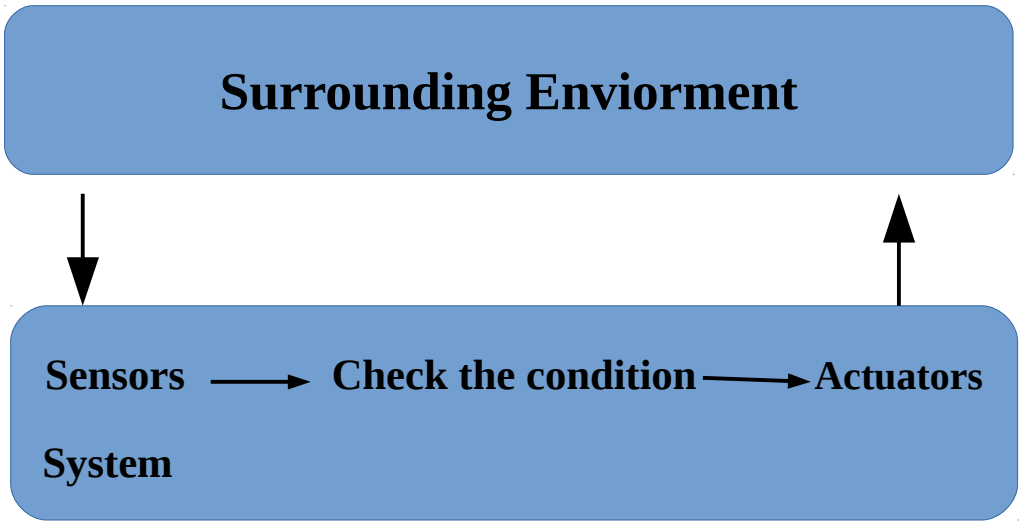
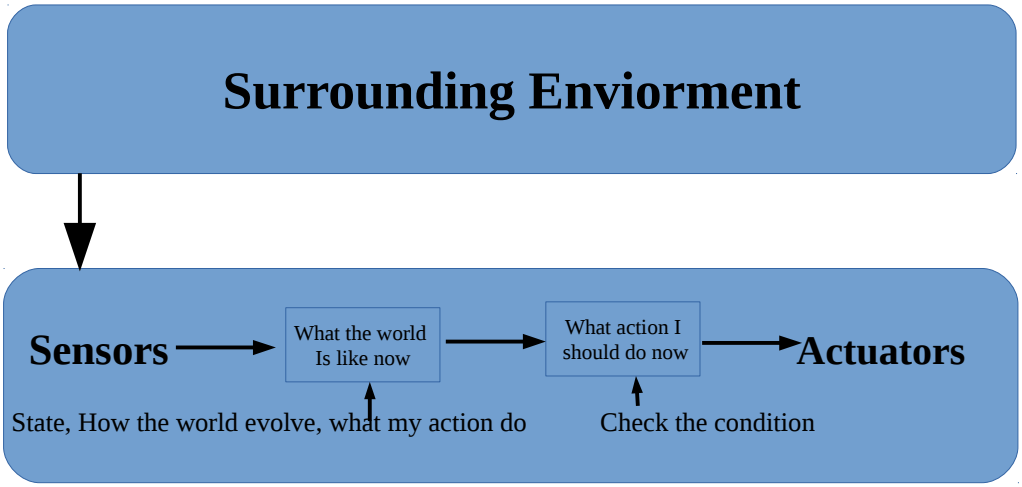


Fig 1.1

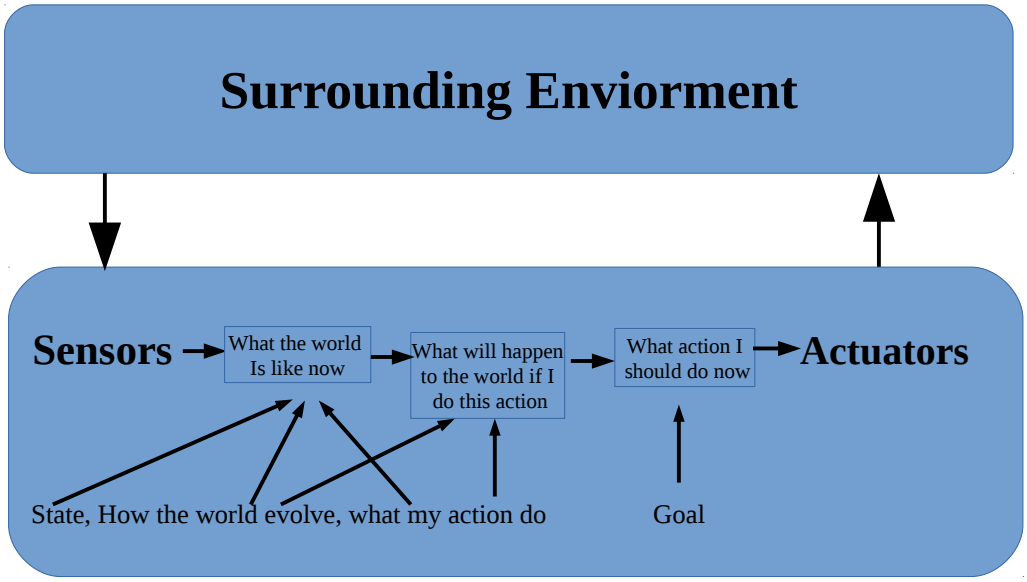
Model based agents

Model based agent can handle a partially visible surroundings to do some action by maintaining a internal state inside the agent by taking data from percept history for a surrounding which is not visible to the agent. This agent model the world around it by some kind of structure based on the internal state that is why the name model based agent. Updating the internal state require two kind of information. Firstly, we need information about the world which changes independently of the agent. Secondly we need to have information about world response for the agent action.



Goal based agents

In a environment it is not enough to just do some action but it's necessary to reach a target by doing a action. This is where goal based agent comes into picture. Here it needs to choose one action from list of possible action to reach a goal. A action is performed based on the sequence generated by search and planning. When a car sees the brake light in front of it, it can achieve the goal of not hitting the car by applying the brake. And it can update the correct environment condition to look for a new action which makes the agent reach it's goal.



Utility based agents

Goal can be achieved in multiple way but the goal achieved is with high safer, quicker , reliable and cheaper way? This is where utility based agent comes into picture. A agent which achieve the goal by choosing a action from the list of possible action such that it result in a quicker, reliable and cheaper way is said to have high utility fro the agent. This agent choose action based on a preference for each possible state. A utility maps the perception into a action such that the it achieve high degree of utility.