

Here are the answers of some questions related to communication between agents and differentiating the obstacle and real agent

- 1) Is obstacle detection there in the code?

Ans: yes, it is in the code.

Example: (In Case if you are using this code into your program) let's suppose agent is moving on the path according to the instructions/routine. And when your code detect that there is something/someone in front of him then your code calls my code to communicate with it (assuming it another agent) but what if in meanwhile that obstacle/someone disappear in air/go somewhere suddenly? Then in this situation, there will be no body for communication. So, to tackle this kind of temporary situation of appearance of obstacle on the path of agent, I am using obstacle detection once again to confirm it whether someone is still there or not(without knowing about it whether it is really somebody or obstacle)? This is the one purpose of using the detection code of obstacle. Second purpose is described down.

- 2) What happens when an agent tries to communicate and there is none to communicate with? Message expires?

Ans: In this case, it will tell you that there is nobody with whom it can communicate.

- 3) If message expires, what is the return value?

Ans: when there will be nobody for communication then it will return "1".

In fact, it will return three values according to the scenario and fourth one in exceptional case.

1 → there is nothing, agent can keep following the path or it has gained permission from the other agent to keep going or using the path means other agent let this agent to go (in case if there is a bridge and both agents want to cross it but that one of them will gain the right to cross it after deciding about who is the nearer to the destination).

0 → there is real obstacle. Means there is not an agent for communication. In this case, you can modify your code to handle this kind of scenario.

-1 → Agent will return this value after communicating with the other agent. Showing that it has to step back for letting other agent to go or allowing him to continue his routine/task.

- 4) What is the meaning of the parameter "number"? Number of nodes to the goal position? If yes, what if you receive higher number from communication partner, then what will you return?

Ans: yes, meaning of parameter is the remaining number of nodes to destination. Keeping the limitation of hardware and programming language in mind, we can't process number greater than 127 and smaller than -127. Hence we must be careful about this case. Communication function simply receives any number ranging from 1-127 (definitely remaining number of nodes will be greater than negative number and will also be not equal to zero because zero means it is already reached at destination and there is no more node left behind to visit).

5) What if both agents have the same number of nodes to the goal position?

Ans: In this kind of unique case, communication function will return 5.

Solution proposal: However there are some possibilities to deal with such type of problem but One can be that agents will move back let's say three nodes and then they will wait random amount of time separately there and then will start again to keep following the path.

Note:

This code is for one agent. For other agents you need to change the value of 'X'. The agent with smallest value will continue path following after communicating with the other agent while the other agent with bigger value will turn back after communicating with the first agent and letting the first agent to follow his path. If you want to use this Communication feature into your code then just copy the communicate + obstacle detection function into your program and pass any number ranging from 1-127.