Semi-formal model specification for the multiagent system simulated at

https://www.red3d.com/cwr/steer/Doorway.html

Specification of the structure and dynamics of the environment

The structure: walkable yellow area with the dimensions as in the video; non-accessible grey area with the dimensions as in the video

Dynamics: the environment is static.

Specification of agent types and their characteristics

All agents are of the same type, they are proactive.

Agent characteristics = {colour = green, vision = n patches, vision angle = m degrees }

Specification of cognitive properties of agents

LP1: (LP is a local property)

For all agents at the first time point after the agent is generated it has the goal to pass through the door.

LP2: (goal persistence property)

For all time points

If the agent has the goal to pass through the door

and the agent didn't observe that it passed through the door

then at the next time point the agent will have the goal to pass through the door

LP3:

For all time points

If the agent has the goal to pass through the door

then at the next time point the agent moved towards the door

Specification of behavioural properties of agents

LP4:

For all time points

If the agent observed another agent within its vision

then at the next time point the agent slowed down

Specification of interaction between agents and the environment

IP5: (interaction property)

For all time points

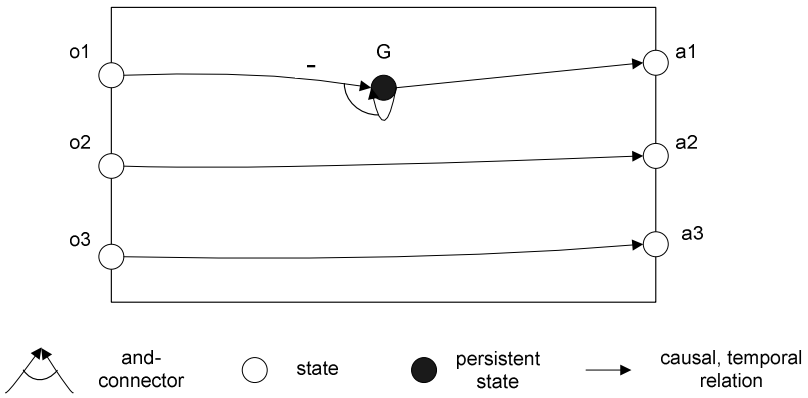
If the agent observed a grey area within some small distance from itself

then at the next time point the agent kept the distance from the grey area

Specification of interaction among agents

No

A graphical representation of the model



G: the goal to pass through the door

o1: observed that it passed through the door

o2: observed another agent within its vision

o3: observed a grey area within some small distance from itself

a1: moved towards the door

a2: slowed down

a3: kept the distance from the grey area