

1 Intelligent Systems Lab Assignment — Reactive Agent Design

In this lab you will implement a behaviour based agent. For this you will use the SB Maze package downloadable from the student portal. This is a (rather dated) java package and should run on any platform.

Included in the zip file you can find a README.txt that will tell you how to start the software and a manual that will tell you a lot about the possibilities you have in the software to adapt agents' behaviours.¹

The first environment represents a patrol task and was designed to get you started. You can load it as a simulator world: `patrol_task.sbw`. This will automatically include a starting agent that needs to be adapted. Your task is to get the robot to drive around the small area while avoiding collisions with the dark brown objects. For this you will need to adapt the AVOID behaviour. To edit this, click edit under the agent header and then double click the AVOID rectangle. Further information and hints, you can find in the included manual. (See footnote 1.)

The second task `mars_rover_task.sbw` is a bit more challenging and will require you to design the control level of a behaviour based agent. Besides copying your obstacle avoidance behaviour changes from the task above, you will need to implement the subsumption architecture of the 6 defined behaviours, so that the agent will efficiently collect the red resource dots spread through the environment. For inspiration, you can read page 25-28 of the Intelligent Agents chapter of Michael Wooldridge that accompanied the slides of last lecture.

You will have to add a number of **suppress**-modules to the agent. For an extra challenge, try and see if you can make the collection strategy work with several agents.

Handing in

Those of you who choose to earn their daily work points through this as one of two lab assignments: please upload your agents and short report (in PDF format only; don't zip this file and upload separate from your code) through the Student Portal to get credit for your work. You should upload in pairs and clearly mention who you cooperated with. I have foreseen 6 hours per person per assignment outside of class. It should not take that long to make a high quality report on this. The report should include a visual representation and verbal discussion of your solution to the Mars rover problem. Also discuss how you approached the assignment, i.e. I would like you to show a more scientifically motivated approach than random guessing. :-)

For those of you who don't want to get graded on this assignment, please upload your agents only, preferably today.

¹RTFM!