

# Social Intelligence • 2007, Semester B

## Assignment 2

### To be done

Time: Thursday, 28. Feb, 15:00

**Motto:** further XGrabtor/XRaptor usage

**Preliminaries:** If you did not do it last time, to run `xgrabtor`, you need to boot Linux on the PCs. make sure the `xgrabtor` program is in your path by typing

```
export PATH=${PATH}:/home/voll/msc_ai/Soft/bin/xgrabtor/  
export LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:/home/voll/msc_ai/Soft/lib
```

into the command line of your `xterm` application or into your `.bashrc` file. Activate it by logging out and in.

### Assignment 2.1

Do the tasks from last week which you did not cover yet. In particular:

### Assignment 2.2

Make the agents go for the food and eat it, but only if they are sufficiently hungry.

### Assignment 2.3

Make the agents go for the food and eat it, then, after some time regurgitating it.

### Assignment 2.4

Can you make the agents return to the starting point after an eating spree? (For that experiment, you may want to limit the agent number in the simulation to 1).

### Assignment 2.5

Let queen generate children. Try to prevent self-destruction.

### Assignment 2.6

Can you have the ant turn around towards its queen once it has had eaten a fixed amount of food particles?

### Assignment 2.7

Send an ant to foraging, then returning to the queen and regurgitating food.

### Assignment 2.8

Try to push food towards a desired direction. Ideally, try with a very small ant population. How do you handle two ants close to the same piece of food?

### Assignment 2.9

Try to get your ants move clearly outside the distance where it can see the queen and then turning around and return.

### Assignment 2.10

Get ants to push food towards the queen. Prevent them from interfering with each other.

### Assignment 2.11

Communicate with the other ants with pheromones and encode signals as

1. to go to forage together;
2. to return to the queen together;
3. to push food back to the queen;
4. to disperse;

**Assignment 2.12**

Experiment with the *publishing* and *tournamenting* feature of XGrabtor.

**Assignment 2.13**

Build a team whose ants collide with ants from the same team.

**Assignment 2.14**

Build a team whose ants attack ants from other teams.

**Assignment 2.15**

Build a team whose ants avoid colliding with ants from other teams (runaways).