First experiments with ARGoS: Programming simple behaviours

– Observations –

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1 Phototaxis

Common solutions proposed by the class:

- "turn until light is in front and move straight", said more precisely: "if the light is in front then go straight, otherwise turn"
  - With this robot's model there is a continuous feedback, so this behaviour is robust against noise; otherwise it would be like the Dung beetle...
  - Several implementations: fixed angular velocity or depending on the angle of the sensor returning maximum value (why not the distance?); parsimonious solution: just check the frontal sensors to decided whether to turn or not, if nothing is perceived just turn
- Different choices on what to do when the light is not visible (RW, spiral, stand) and when the robot is in the proximity of the light (keep on moving in the neighbourhood, stop)

Observations

- Sensor angle is already available with `robot.light[i].angle`
- Thresholds are extremely critical: avoid using them as much as possible and always expose them as a parameter of the control software
- Selecting the sensor returning the highest value is a kind of post-processing of raw sensor readings. In BBR it is called *perceptual schema*.

2 Obstacle avoidance

Common solutions proposed by the class:

- "move forward; whenever a frontal proximity sensor returns a value above the threshold turn (on yourself) in the opposite direction until the obstacle is at the back"
  - This controller anyway attains a RW with collision avoidance
- Same scheme of phototaxis but reverted
  - this solution follows the "parsimony principle" and it may remind a kind of natural adaptation

Observations

- Some solutions take also into account moving objects, i.e. other robots
- In this case is mandatory to ask more than just avoiding obstacles, as a robot standing still would accomplish the task! So the task should be something like: go towards a direction and avoid collisions.
- You might have experienced deadlock situations: in this case, noise may be of help.