

First experiments with robot simulator ARGoS: Discussion

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Abstract model of the robot

- The robot is programmed by implementing specific functions.
- The most important one is `step()` which is called every *tick*.

→ Therefore, we have to think the robot program in terms of actions which have to be taken every tick and not as a sequence of actions in time for all the robot's life.

Abstract model of the robot

Questions:

- What are the advantages of this model?
- What are its disadvantages?
- What if we want a more complicated behaviour?

Different ways to achieve the same behaviour

Example: phototaxis

- If light is in front then go ahead; else turn.
- Find sensor with highest value and act on wheels so as to turn the robot accordingly
- Estimate light on the left and on the right and control the wheels proportionally (left wheel–right light, right wheel–left light). And variants...
- ...

Different ways to achieve the same behaviour

Two general approaches can be often observed:

- ① Analogic approach, i.e., signals and wires
- ② if-then cascades

- 1) effective, but sometimes provides only basic behaviour
- 2) more fine-tuned, but often error prone

Considerations on approaches observed

- Implicit requirements are often posted (e.g., merit factors on speed)
- Sometimes, awkward code for simple task (too much *symbolic?*)
- Importance of **noise** both as a way to avoid canyoning and deadlock, and to dramatically perturb the behaviour
- Sometimes the availability of too much perceptions make the programming more difficult
- Interesting way for combining behaviours: higher priority task may override wheel control (towards the subsumption architecture...)