Robotics project

Lukas Rustler, Martin Sramek, Cemre Eren

January 2020

1 Hardware

- Lego mindstorms robot
- Robot should have:
    - motors (constant number, depends on final design)
    - color sensor
    - 1-2 touch sensors
    - ultrasonic sensor
- GUI on computer

2 Problem

- square or rectangle field bounded by black line
- obstacles in form of bottles, bricks etc.
    - detectable by ultrasonic sensor
- robot should find red point somewhere in field
- robot should create a map of the field
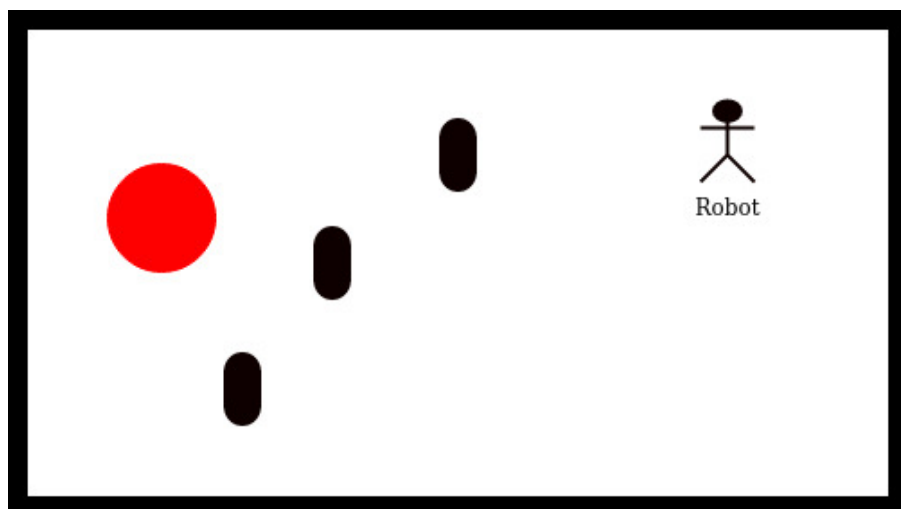
Example of world can be seen in Figure 1.

Figure 1: Example of world

3 Expected approach

- create main interface (Python)

- create at least prototype of robot with placement of sensors

- create reasoning layers for robot (Python)

- test in simulation (V-rep, py-game)

  - in case of need edit robot design, reasoning layer etc.

- create communication with robot (directly with Python/Bluetooth)

- test on real robot

- create an user interface, which will allow:

  - see map "real-time" map of the field
  - switch to manual control
  - maybe more