Robotics project

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1 Hardware

- Lego mindstorms robots
    - probably two robots
- Each robot should have:
    - motors (constant number, depends on final design)
    - color sensor
    - 1-2 touch sensors
    - ultrasonic sensor
- Control from central computer

2 Problem

- square or rectangle field bounded by black line
    - Robot is allowed to go across the line, e.g. to follow the line, but must not cross it with its whole volume
- obstacles in form of bottles, bricks etc.
    - detectable by ultrasonic sensor
- robots should find red point somewhere in field
- robots should create a map of the field
- two robots can cooperate to create map and find the point or contest against each other
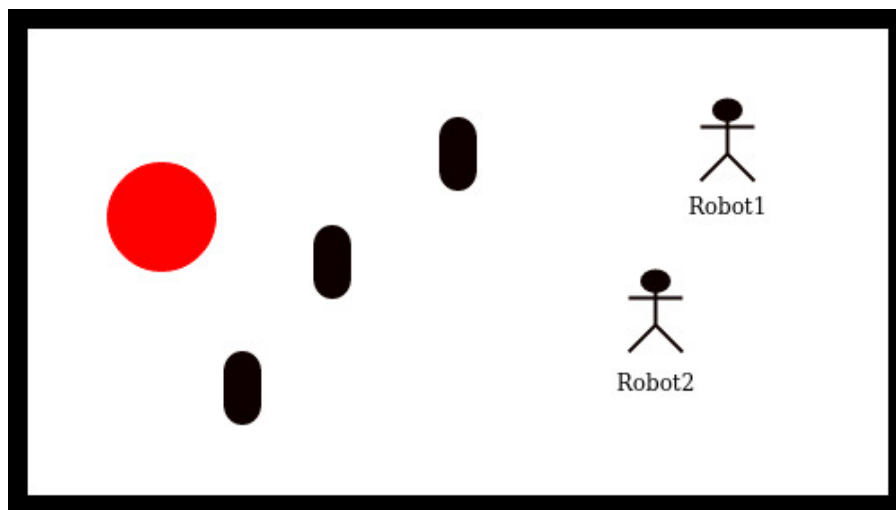
Example of world can be seen in Figure 1.

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 robots (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:

    - change mode (contest of two robots, cooperation . . .)
    - switch to manual control
    - maybe more