Computer Engineering Department
ROBOTICS
LIST OF HOMEWORKS AND THEIR SOLUTION
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Homework No 2 (Due on March 29, 2008)

Design of a simple reactive bahavior using SimRobot

Simrobot is a simulator that allows simulating an autonomous robot operating in defined field. Simrobot allows programming the use of geometric modeling to define the scene, the field which the robot moving area, the robot, and other field features and objects. A demo was presented to you regarding the Simulator with a simple reactive behavior. The demo was about a moving robot which senses its collision with an obstacle and the robot bounces back whenever its sensor detects such a collision. The robot controller was about moving in one direction and when a collision is predicted through sensor data, then it reverses its direction of motion. Note that the controller describes one iteration of the above behavior and it is assumed that the iteration is repeated for ever.

In this homework the student is requested to build up on the above demo and design a reactive controller.

Answer each of the following questions:

1. Study the provided program on WebCT, both the scene description and the controller (C++) code. Write a short description of the program and comment on the parts you find it difficult to understand.

2. Create your own robot of type "VEHICLE" and use a cylinder object to represent it with the following specification: height of 15 and base diameter of 30. The color should be yellow.

3. Use of C++ code to program the controller, when it finds an obstacles it goes back (bouncing or reversing direction) for about 50 points and then starts rotating to avoid the obstacle. You can create your own obstacle as a test bed of your program.

4. Design the ball to move when the robot hits it, or use another type of sensor and reads the data and implement some action, or any other type of improvements. Explain your idea and testing results in the homework.

5. Submit a short report describing the experiment and your code to the instructor and to the WebCT.