LUND SUMMER COURSE 2007

SIM ROBOTS, NOW IN THE SPACE!

Brief presentation of the participants

Stijn Van Goethem (Belgium) - Ghent University - Computer Science Engineer
Raffaele Petteruti (Italy) - University of Rome "Sapienza"- Computer Science Engineer
Adriana Arroyo (Spain) - Carlos III University of Madrid - Telecommunication Enginnering

Robot

- Name : PsychoBot

- Physical description (number and colocation of the motors and sensors, and reasons, tracks/wheels, and why)

In order to build our robot, we needed both motors. At the first time, we tried to do it only by using one of them, but it was more difficult to turn, thus we preferred to use two. They are on the side of the robot, and pass their traction to the wheels with the aid of gearing. We realized the gearing was necessary in order to overcome the friction produced by the contact with the ground.

As for the sensors, we use two touch sensors, in a structure similar to arms, that helps to push them when the robot find a obstacle. We also needed the light sensor, that is one of the most important devices in our robot. We placed it behind the touch sensor structure, so it is safe of the obstacles.

- Program description(implementation, code description, tasks that the robot is able to do, and how it does)

In order to get the contest, we implement our program with modulation. We reused many subroutines. Every assignment is implemented as a separate task, which allows for great flexibility in the solving of the sub-problems. We also have a few routines that can ignore all other tasks and force a certain behavior for a certain amount of time. This has proven to be extremely useful.

- Problems during these two weeks

The main problem we had this week related to the robot was the calibration of the light sensor. The calibration changed every day, depending on the darkness or lightness. Because of this, we had to changed our parameters a lot of times. We found difficulties too in detecting the black spots, maybe because of this daily variation. The Sensor had to be as close to the ground as possible to increase reliability, but this

made a lot of assignments more difficult/impossible.

It was also only until late during the second week that we realized how difficult the reliable detection of the black spots, needed for the competition, was, so a lot of time and energy had to be used to fix this, which made for less time that could be used to solve the assignments. It would have been better if this problem had been brought up during the first week.