

Assignment 6

(10 Points)

To be treated in the week starting on Monday, June 13, 2011, 12:00

This assignment sheet is to be solved during the lab session on June, 15th which takes place in **OH16/U09** at **12:15** or **14:15**, respectively.

6.1 In the disco ... (4 Points)

Extend your robot by an acoustical sensor and a lamp. Create a program to move your robot in forward direction. On the occurrence of a loud noise (like clapping hands), the robot shall take different actions:

1. When clapping, the robot shall turn around its vertical axis by an angle of 360° .
(*Hint*: Utilize a motor component that takes an angle as its input.)
2. While turning, the robot shall play a sound file. On the NXT block, multiple sound files (*.rso) can be found, that can be played back via the built-in speakers.
3. While turning, the robot shall make its lamp blink multiple times.
4. After this procedure, the robot shall continue on its way.

6.2 ... and on the golf course. (6 Points)

Enable the robot to play with a ball. The test setup looks as follows:

1. Place both pedestals in a distance of approximately 60cm and place a red and a blue ball onto both of them.
2. The initial placement of the robot shall be in between the two pedestals such that it aims at one of the two balls.

Now create a VI which show the following behavior:

1. From its initial position, the robot shall drive in forward direction until it gets so close (*ultra-sonic sensor*) to the ball that its color can be determined with a *light sensor*.
(*Hint*: Determine the proper sensor-values for this operation in simple experiments.)
2. From the current position, the following behavior should be shown:
 - If the blue ball has been detected, it shall be hit with the "golf club" attached to the robot.
 - If the red ball has been detected, the robot shall turn around, find the other pedestal and do the same.

General notes:

Dates and additional information can be found at <http://ls12-www.cs.tu-dortmund.de/en/teaching/courses/ss11/cpsf/>. The assignments will be published **Tuesdays** on a weekly basis and have to be solved until the next **Monday**. Drop your sheets into the mailbox in OH16 right across the secretariat (E22) or send an e-mail to your tutor. In the latter case, the submissions must be of either **PDF** or **PS** format. To pass the labs, a minimum of 50% of the total points must be achieved.