Assignment 5
(6 Points)

To be solved in the weeks starting on Monday, June 20, 2016

5.1 Line follower (6 Points)

Your NXT robot is now equipped with two downward-facing light sensors. Using them, the robot should now be programmed to follow an arbitrarily-shaped black line.

1. Determine the range of sensor values when a light sensor is moved over a dark or a light surface. This value also depends on the ambient light. Hint: You can use the “Try me” option in the menu on the NXT brick to check the sensor readings without writing a VI.

2. Design a VI that allows the robot to follow a black line. The robot will initially be placed so that the black line is already between the two sensors and the sensors themselves can see just a white background.

Hint: For debugging, it can be useful to show the current sensor reading on the NXT brick’s display. To show arbitrary numbers on the display, the number first needs to be converted to a string, which can be accomplished with the “number-to-text” block (figure below, left). This string can then be displayed with the “display text” block (figure below, right).

Figure 1: two Labview icons

General notes:

Dates and additional information can be found on the lecture website. The assignments will be typically be published Tuesdays on a weekly basis and have to be solved in the lab session of the following week. To pass the labs, a minimum of 50% of the total points must be achieved in the first half and the second half, respectively.