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Lego 2014

Thursday, February 6, 2014

Week2

Date: 6/2

Duration: 11-15

Group members: Henrik, Jakob, Jesper

Goals:

- Get bluetooth to work for all machines
- Do this week's exercises

Results:

Getting bluetooth to work in linux mint:

install package libbluetooth-dev

connect using "bluez-simple-agent hci# [address]

nxjbrowse now works

Exercise 1 (with floodlight):

red 60

blue 44

grey 54

dark green 40

light green 51

white 63

black 35

(first three results taken in one lighting condition on semi-glossy paper, last four in another on matte felt)

The threshold can be computed as the average of the white and black light levels.



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Week2





Exercise 2 (without floodlight):
(same lighting conditions, still different surface types)

red 30
blue 29
grey 29
white 32
black 22
l.green 30
d.green 29



**Exercise 3 (with floodlight enabled):**

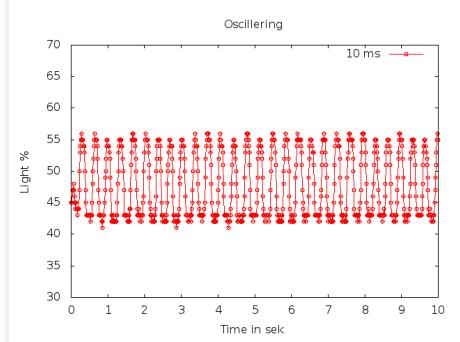
- 10ms: the robot follows the line with ease.
- 100ms: still follows the line, although the robot has gotten tipsy.
- 500ms: the robot zigzags so much it crashes into a wall, now drunk.
- 1000ms: the robot can barely stand up, completely wasted.

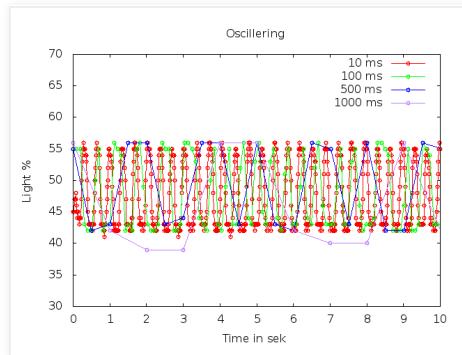
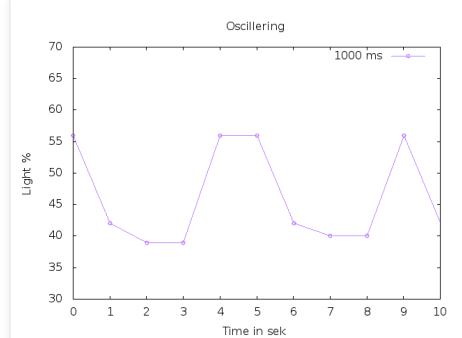
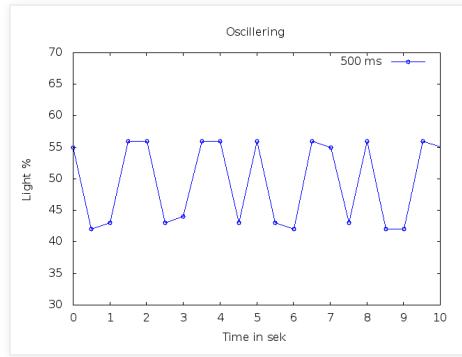
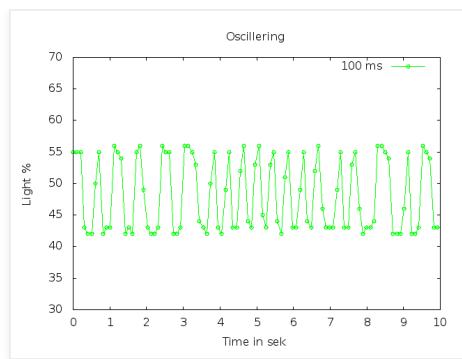
As the robot reacts slower, it cannot update in time to follow the line, and therefore it starts zigzagging

500ms recording**Exercise 4:**

- 10ms: it oscillates roughly 3 times per second, 3Hz
- 100ms: about 2Hz
- 500ms: 0.5Hz
- 1000ms: 0.2Hz

Graphs made using GNUpplot



**Exercise 5:**

Using variables:

free memory slowly ticks down from 56k to 40k, then jumps back up to 56k

Using strings directly:

free memory quickly ticks down from 56k to 40k, then jumps back up to 56k

With variable references, a reference is used in the method call every 10ms, whereas using strings directly handles each method call as a different input, and has to save all of

them. This eats memory much faster.

Conclusion:

All PCs now have bluetooth connectivity with the NXT, and all exercises have been solved.

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