

Pathfinder Rantanplan

Course: Embedded Software Engineering
LV-911.192

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Rantanplan

- pathfinder robot
- moveable sensor that keeps track of the path
- ability for handling barriers

Hardware NXT

- 32 bit ARM7 Atmel microprocessor
- running at 48 MHz
- 256 KB of non-volatile flash memory
- 64 KB of RAM

NXC

- Not eXactly C (NXC) is a high level language, similar to C
- NXC is built on top of the NBC (Next Byte Code, an assembly language) compiler

Sensors

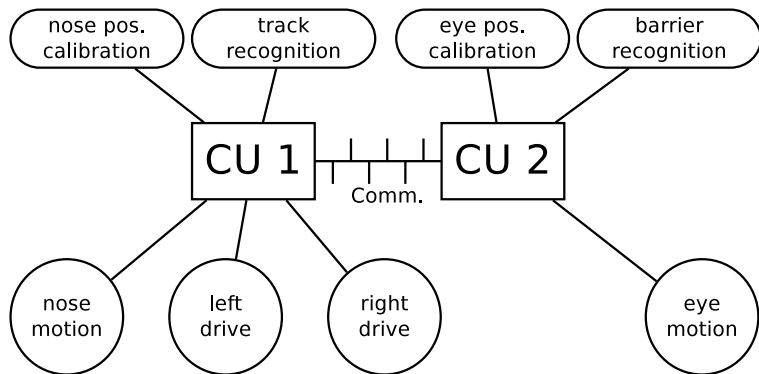
- Color Sensor, for path detection
- Ultrasonic Sensor, for measuring distance
- Touch Sensor, for calibrating position of sensors

Communication

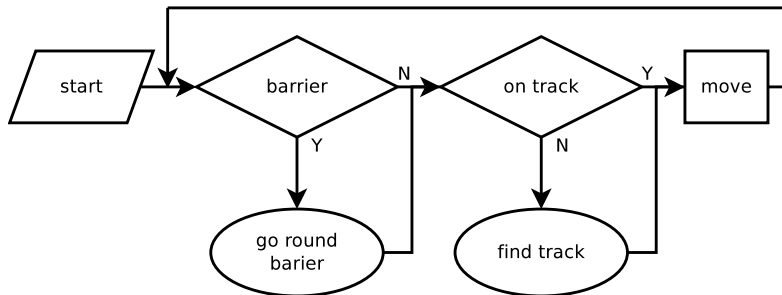
Ability to send messages from the NXT to other devices:

- Bluetooth
- I²C
- RS-485 serial port

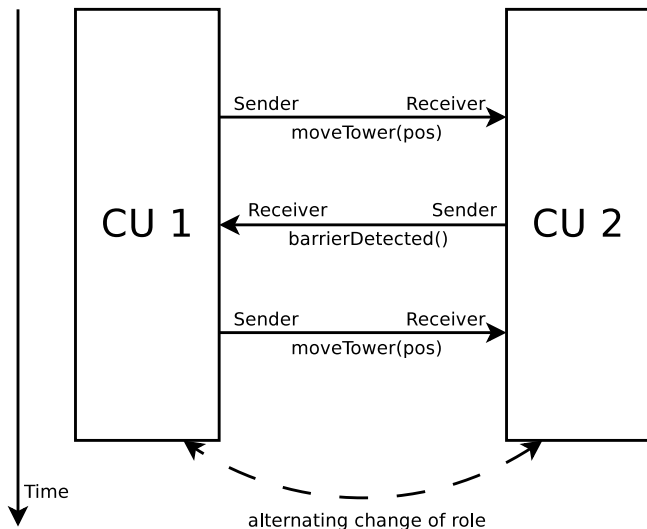
Concept



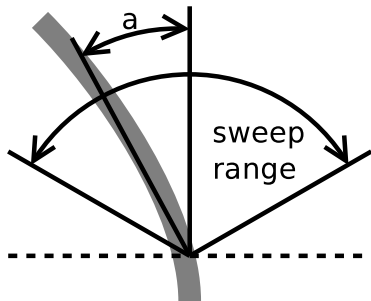
Flow-Chart



Communication



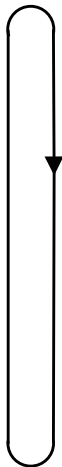
Sweeping



a: correction angle

Plausibility

Ultrasonic Sensor Values



read sensor values and write them into an array



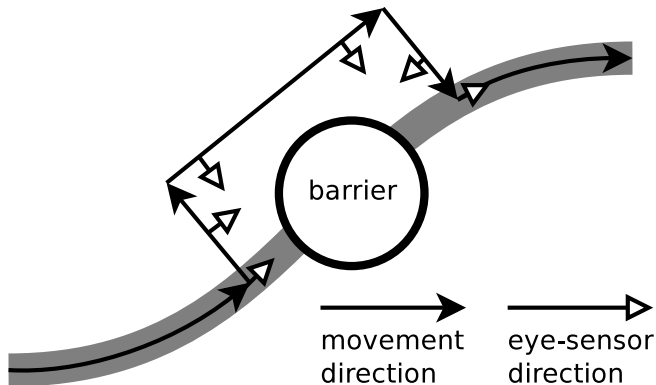
if number of valid entries $>$ defined border

use barrier detection

else

try next iteration

Obstacle Avoidance



End

Thank you!
let's give it a try...