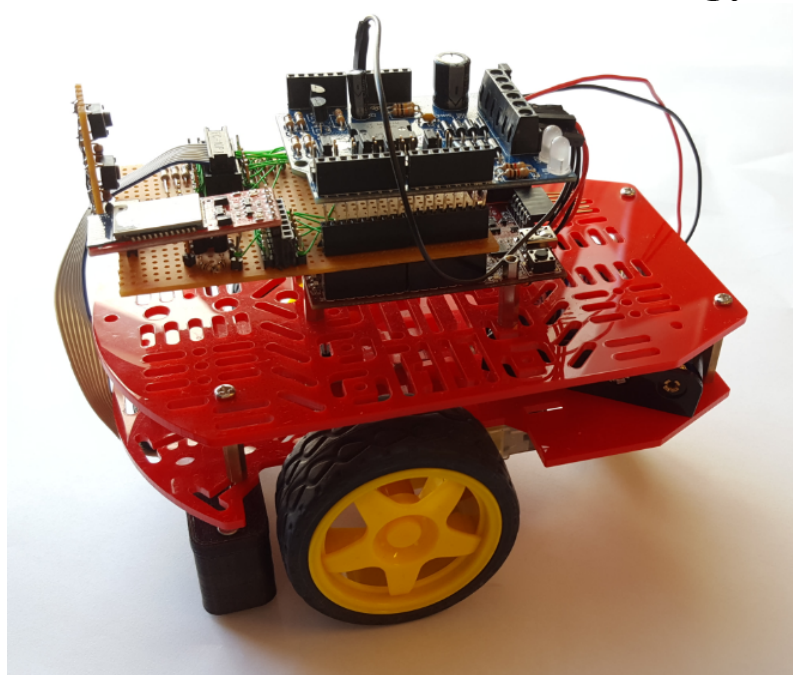


Fall Semester 2015

Line following robot

Group 2

2. Semester IT-Technology



Group members: Benjamin Nielsen - Henrik Jensen - Martin Nonboe - Nikolaj Bilgrau

Supervisor: Jesper Kristensen - Steffen Vutborg

Title:

SICK PEW PEW robot

Project Period:

3. Semester | Spring semester 2016

Projectgroup:

Group 2

Group participants:

Benjamin Nielsen

Henrik Jensen

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Supervisors:

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Pages:

Appendices:

Completed:

Preamble

This project was written by group 2, for the second semester on the IT-electronics education at university college Nordjylland, Sofiendalsvej 60. The project goal is to make a line following robot.

Benjamin Nielsen

Henrik Jensen

Martin Nonboe

Nikolaj Bilgrau

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3D print 3-Dimensional printing

Introduction 1

Indledning til afsnittet af analyse

2.1 Problemstilling

The problem presented to the group is how to make a robot move from point A to point B, with the help of different sensors, including ultrasound and infrared, and to make use of autonomous maneuvering to avoid obstacles.

Kortproblemstilling

Problemstilling:

- Bot should be able to move from A to B.
- Should be able to stop at B
- Maneuverer around obstacles
- Optimize speed of bot to life battery

2.2 Problem analysis

Requirements specification 3

Beskriv section [1]

Hardware section 4

Beskrivelse af afsnit

4.1 Hardware diagram

Beskrivelse af hardware diagram

4.1.1 Sensor choice

4.1.2 Another sensor choice?

4.2 Analog-to-digital converter

ADC diagram

This products usage of ADC

4.3 The chipKIT Uno32 board

4.4 The motor shield - PKA03

4.4.1 The H bridge

4.5 The Bluetooth transceiver

Software section 5

Beskriv Software section

5.0.1 Software diagram

5.1 Analog to digital conversion

5.2 PID controller

5.2.1 Proportional control(P)

5.2.2 Integral control(I)

5.2.3 Derivative control(D)

5.2.4 Loop tuning

5.2.5 Steady-state error

5.2.6 Stability

Table manual explained

5.2.7 PID Implementation

5.3 Pulse-width modulation

5.3.1 Duty cycles

5.4 The interface

Test 6

Beskriv test section

6.1 Unit Testing

6.1.1 Sensor

Setup

Results

6.1.2 DC Motors

Setup

Results

6.1.3 H-Bridge

Equipment

Setup

Results

6.1.4 PWM

Equipment

Setup

Results

6.1.5 ADC

Equipment

Setup

Results

6.2 Integration Testing

6.2.1 PWM motor control

Equipment

Setup

Results

6.2.2 Robot to Interface communication

Equipment

Setup

Results

6.3 System Testing

Equipment

Setup

Results

Conclusion 7

Skriv en fucking Conclusion!!

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8.1 Group collaboration agreement

8.1.1 Contact Information

Table 8.1: Contacts

Benjamin Nielsen	Tlf: 30427645	@: yipiyuk5@gmail.com
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8.1.2 Workflow

8.1.3 Deadline

8.1.4 Milestones and goals

Gerne en kalender der viser dage arbejdet!

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10.1 C code

main.c:

ADC.c:

10.2 C# code - interface

Bibliography

- [1] placeholderAuthor. *placeholderTitle*. 2016. URL: <http://www.ucn.dk>.