EMC 2016
Tooling and Infrastructure

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April 20, 2016

Introducing PICO

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  - Robot type: Jazz

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- Computer:
  - Intel I7
  - Running Ubuntu 14.04

The Assignment

- Let PICO navigate through a maze and find and go to the exit.
- You have to:
  - try to be as fast as possible
  - deal with dynamics in the environment (a moving door)
- You can use:
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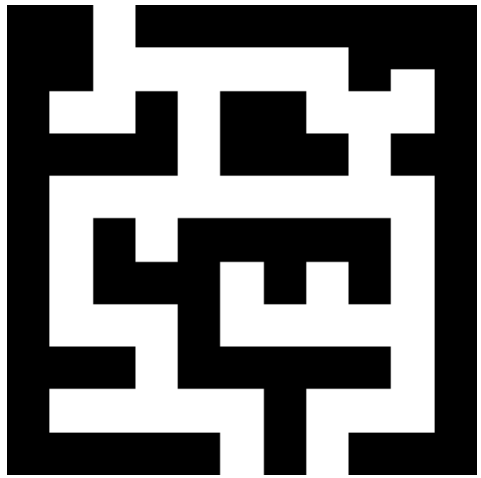
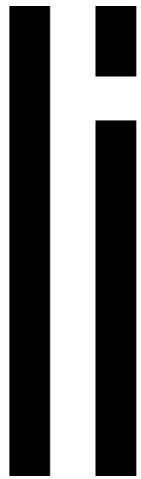
- Final presentations: June 1
- Competition day: June 8



Intermediate Assignment

- Corridor Competition: Let PICO drive through a corridor and take the first exit.
- You have to:
  - try to be as fast as possible
- You can use:
  - The Laser Range Finder to detect walls
  - The encoder data from the wheels
- Competition day: May 18



Ubuntu

- Linux-based operating system
- Use version **14.04** (not 14.10!)
- 32- and 64-bit (64-bit recommended)
- Easy dual boot installation with *e.g.*, Windows
- Download: `www.ubuntu.com`
  - Any problems? → Check the wiki.
  - No info? → Ask the ICT Servicedesk or contact us.

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- However, you are still allowed to use ROS!

C++

- We will use C++ as programming language
- C++ is object-oriented C
  - "C with Classes"
  - Encapsulate data and functionality within objects
- It is a powerful but complex programming language.
- However, we provide a software framework to get you started

Creating code: Qt Creator

- Integrated Development Environment
  - Advanced code editor
- Many advantages over 'simple editors':
  - Syntax highlighting
  - Code completion
  - Visual compiler feedback
  - Static code checking
  - Refactoring tools
  - Parenthesis matching
  - ...

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- More info on the Wiki

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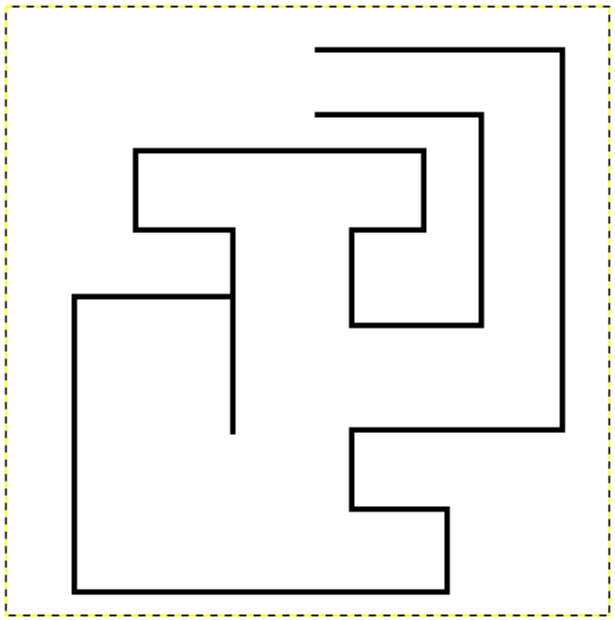
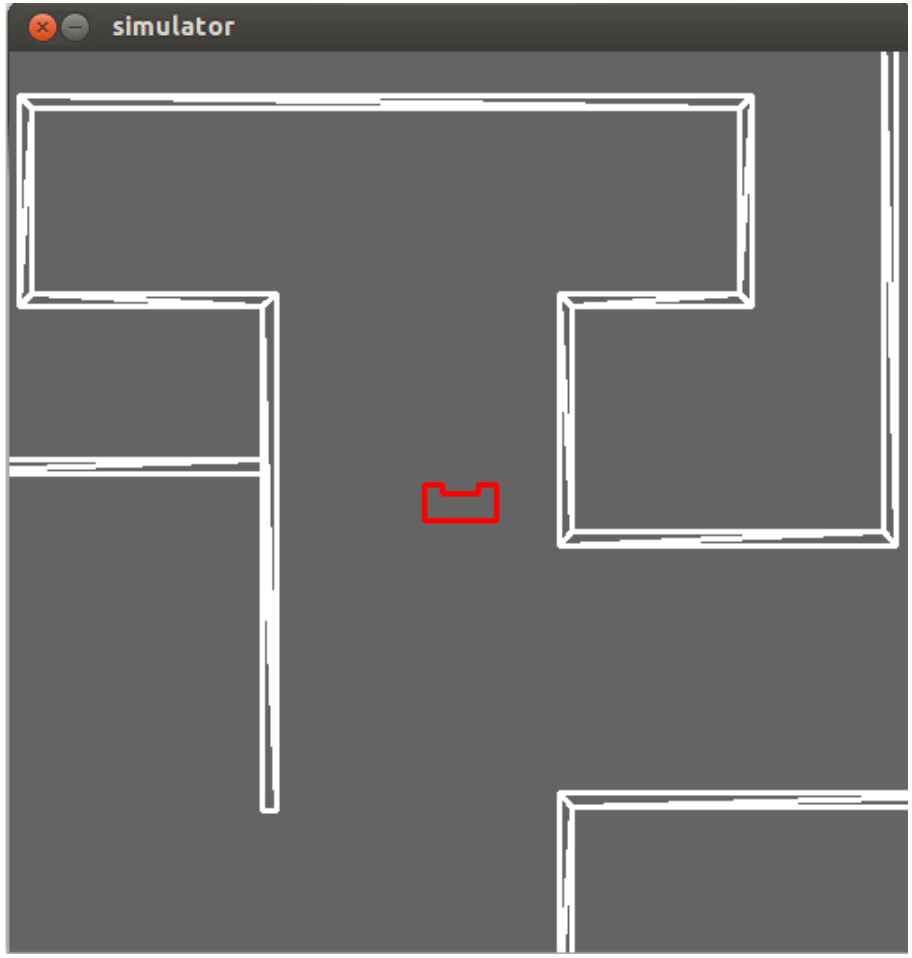
- Can easily create test environments using height maps
- Integrates well with our provided software
  - If your software runs in the simulator, it runs on the robot
  - This does not guarantee that it will also work...

You still need to test on the real system!

PICO Simulator





Wiki

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  - Each group gets its own page
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- Overall use:
  - Everyone can edit
  - If you see a mistake: correct it
  - If you had a problem and know how to fix it: add it

Recap

- Assignment: solve maze with PICO robot

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- OS: Ubuntu 14.04
- Programming language: C++
- Code editor: Qt Creator
- Version control: git
- Simulation: PICO simulator
- Documentation: Wiki

Getting Started

- Check the wiki:
  - http://cstwiki.wtb.tue.nl /index.php?title=Embedded_Motion_Control
- Follow the tutorials on the wiki:
  - Ubuntu
  - C++
  - Qt Creator
  - Simulator
  - Software framework
  - git

Tutor name will be sent to you

It is *your* responsibility to get in touch with your tutor