Writing a GUI for the E-Puck Robot

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1 What is an E-Puck?

As you can see in Figure 1, an E-Puck is a miniature mobile robot with a functionality similar to larger robots used in research and education. Its main features are: two controllable stepper motors, eight proximity as well as ambient light sensors, several LEDs, Bluetooth communication and a camera.

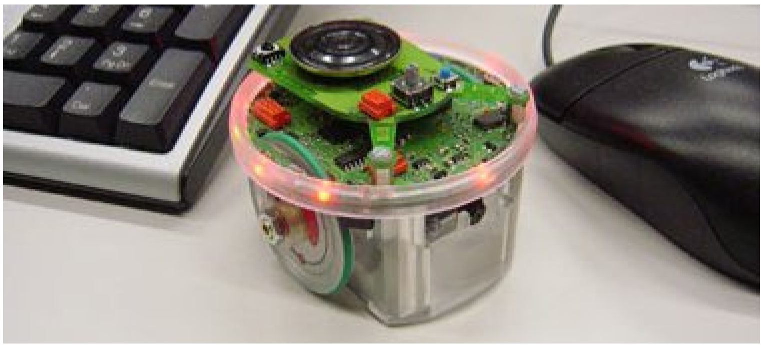

Figure 1: The epuck robot.

2 What can I do with an Epuck?

Download the E-Puck Class Files from the GUI homepage[1]. and extract the file `Epuck.zip` into your home folder. It contains the interface to the robot, as well as a simple test program and a `makefile` to compile it.

[1] `http://www.amd.e-technik.uni-rostock.de/ma/rs/lv/lvgui.html`

3 Getting Started with the Epuck

1. Communication with an E-Puck requires a Bluetooth connection.
   a) Plug a Bluetooth adapter into the computer!
   b) Open a Terminal!
   c) The graphical bluetooth-agent is broken. So we use a command line tool: `bluetoothctl`.
   d) On bluetoothctl's command line, activate the agent: `agent on`
   e) make it the default agent: `default-agent`
   f) now you can run your E-Puck program.
   g) When you finished using the E-Puck, type `quit`!
2. Before you try to establish a Bluetooth connection, turn the mode selector in position 3, counted clockwise starting at 0! If you do not know what the mode selector is, this is the right time to ask. Then, start the robot.
3. In order to test the connection, compile and run the test program:
   a) Open another terminal!
   b) Unless you already did. unzip the E-Puck Class Files `unzip EPuck.zip`!
   c) Change into the newly created directory!
   d) Compile the test program: `make`!
   e) Run the test program `./epuck <robot number>` with your robot's number (e.g. 2477) as the first parameter!
   f) The test program automatically creates a Bluetooth connection to the robot. The Bluetooth agent in the other terminal will ask you for a PIN. Type the robot's number (e.g. 2477).
4. Have a look at `test.cpp`, how to use the E-Puck classes. The file `EpuckInterface.hpp` provides a virtual class used as interface. If you are curious about the implementation, look at the other files.

4 Further E-Puck Documentation

Unfortunately their seem no sufficient information available on the interpretation and valid ranges of the E-Puck commands, parameters, return values, timings, etc. So, you have to play around with it and find out yourself.

Some details of the Epuck's serial interface can be found at
`http://www.amd.e-technik.uni-rostock.de/ma/hinki/cpp/epuck.html`.

Sparse information can be found in the sections of
`www.e-puck.org->Robot`.

More information is available at
`http://www.gctronic.com/doc/index.php/E-Puck`

Others, who use an E-Puck
`http://en.wikibooks.org/wiki/Cyberbotics'_Robot_Curriculum`

5 Need help? Criticism? Want the robots?

Ask Matthias (Room 1212, phone 7282). Keep in mind: We need your feedback to know what we can do better next year.

Have fun, Ralf, Peter & Matthias