Design and Implementation with Microcontrollers

Content

This lab course is addressed to students who have successfully finished their Vordiplom. In this course, students will have the opportunity of getting familiar with the chair's field of research through practical experience.

In the context of this lab course, you will develop modules for velocity measurement having a connection to a CAN-bus for our model vehicle. These modules shall be implemented with an ATMEL (8bit RISC processor) ATmega16. A corresponding driver-unit kit will serve for the connection to the CAN-bus.

After you have implemented the functionalities successfully, you will go on and test the modules. An automated test-environment is required, since real-time requirements must be examined. We will provide a matrix of such a test-environment based on a FPGA which can be adjusted if necessary.

In order to give you an easier start into these two areas (MCUs and FPGAs), we will arrange a two-day-introduction before the actual practical starts. This will take place during the last week of the semester holidays (12.10. u. 13.10.2006, 8:30-13:00 each).

The participation in this course requires basic knowledge of the programming language C. Knowledge in the fields of microcontrollers and FPGAs is not a must, however you have to be willing to attend the introduction course including getting familiar with the topic.

Additionally, the lab course will take place in line with an experiment where the effects of the testing on software design will be studied. The attendance of this very experiment is no prerequisite for the attendance of the practical course as such.

At the end of the practical course, you will have to compose a documentation of 2 pages concerning the implemented functionality.

A template for the documentation can be downloaded here.

Dates

- Introduction course: 12.10. u. 13.10.2006, 8:30-13:00 each in room 2323 (attendance is a must)
- Weekly schedule: Mo 16:00 - 19:00 (4 SWS) room 2323

Miscellanous

- Maximum capacity: 24
- Language: German (knowledge of the english language is however indispensable for reading the documentations)
- Registration through the centralized allocation of seminars and lab courses

Links

- CAMPUS
- lab course FAQs
- Slides with a detailed step by step description of the design flow using WINAVR along with the AVR Studio can be found here (501kB). A short overview can be found here (10kB).

Tutor

- Dr.-Ing. Falk Salewski

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https://www.embedded.rwth-aachen.de/ - **Informatik 11 - Embedded Software**

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Last update: **2011/11/21 17:27**