ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Distributed Computing Group

**Prof. Dr. Roger Wattenhofer**
http://www.dcg.ethz.ch

## Semester Thesis "A Display for TinyOS"

Debugging applications on sensor nodes is a cumbersome task because the interface between the programmer and the node is limited to at most 3 LEDs on today's state-of-the-art sensor platforms. In a time where small LCD displays are used in all kinds of electrical gadgets, this is rather uncomfortable. Since the sensors offer an interface for external hardware, it is desirable to have more advanced tools to display the state of an application running on the node.


In this thesis we will connect a display to a mica2 sensor node. You will first evaluate possible displays and then buy and assemble the required hardware. When the hardware is ready to use, a small software library needs to be created. This library is written in nesC, the programming language used by TinyOS which the de facto standard operating system for embedded sensor nodes. Using this library, each application can send data to the display.

The goal of this thesis is to build the hardware and write a software library required to control the display. Special attention should be paid to an efficient implementation that allows debugging even with tight time constraints. Additionally, the display including its drivers should be easily adoptable to new sensor platforms.

### Required

- Autonomous work.
- Advanced C knowledge.
- Interest in working with an embedded platform.

### Contacts

- Yves Weber, weber@tik.ee.ethz.ch, ETZ G63, phone 24448
- Michael Kuhn, kuhnmi@tik.ee.ethz.ch, ETZ G64.1, phone 27730
- Roger Wattenhofer: wattenhofer@tik.ee.ethz.ch, ETZ G61.4, phone 26312