

Master/Semester Thesis Project Proposal

Extending the FlockLab Testbed Across Campus

The FlockLab testbed is our main development tool for sensor network research. Additionally this testbed is also popular with many other researchers from all over the world who can work remotely on our testbed installed at ETHZ. On FlockLab you can remotely program, debug, profile digital IO's and profile power with very high accuracy. Currently FlockLab is being extended to cover larger distances with nodes being installed across the whole ETHZ campus.

In this thesis we want to develop a new FlockLab testbed node based on the RocketLogger also developed here. The RocketLogger is based on a more modern embedded Linux platform (Beaglebone) and offers increased performance but as is, the RocketLogger cannot be used to program target devices. The main part of this work is to define and design an interface between target devices currently used in FlockLab and the RocketLogger platform. Also, the necessary control and logging software needs to be ported or developed. As an extra bonus we want to explore if/how we integrate high-end debugging and profiling methods using JTAG or SWD on an ensemble of FlockLab nodes simultaneously to debug and low-level profile hard to find debugging problems in a better.

Requirements

- HW/SW design and implementation
- Programming (C, Python)
- Embedded systems (test and development, debugging)

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References:

<http://www.flocklab.ethz.ch>

<https://rocketlogger.ethz.ch/>