

Semester/Master Thesis

Frequency-Hopping Schemes for Sensor Networks

Sensor nodes are equipped with a radio module to communicate with neighboring nodes over the air. Wireless sensor networks operate in a limited frequency spectrum which has to be shared with other applications (e.g., WLAN, Bluetooth). Interferences caused by other radio signals may result in packet loss. Frequency-hopping schemes try to mitigate the impact of interferences from other signals by permanently switching the communication frequency which leads to a better utilization of the available bandwidth and makes the system more robust against jamming.

In this thesis, we are interested in implementing a frequency-hopping scheme for sensor nodes. You should come up with an idea how to switch the communication frequencies between two or more sensor nodes in a coordinated manner. The proposed solution should then be implemented and evaluated on real sensor node hardware (Tinynode platform).

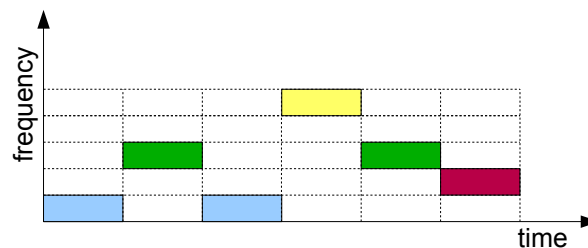


Figure 1: Frequency-hopping scheme

Required Skills

You should already have some skills in software development and you should be familiar with the C and JAVA programming language.

Are you interested? Please contact us by email or phone.

Advisors

Philipp Sommer	sommer@tik.ee.ethz.ch	044 632 7838
Roland Flury	rflury@tik.ee.ethz.ch	044 632 0896
Roger Wattenhofer	wattenhofer@tik.ee.ethz.ch	044 632 6312