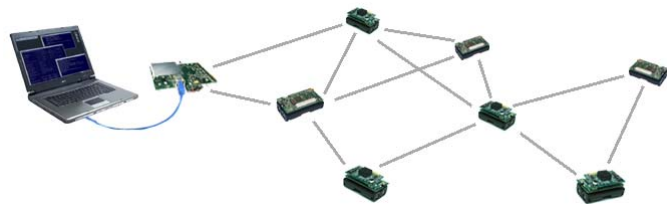


Diploma/Master's Thesis "Updating Wireless Sensor Networks"

Recently, increasing research attention has been directed toward wireless sensor networks. Large numbers of small, inexpensive devices that integrate sensing, computation and communication will be monitoring environmental changes, water contamination, seismic activity etc. These sensor nodes exhibit multiple constraints such as limited CPU power, narrow bandwidth, and limited energy budget.

There are many reasons nodes occasionally have to be reprogrammed. An important one is that applications go through a number of design-implement-test iterations during the development cycle. It is clear that it is highly impractical to physically reach all nodes in a network, so wireless updating scheme is required.



In this thesis we will develop a new update mechanism, aimed at the requirements and restrictions specific to wireless sensor networks. In general, such an updating procedure consists of three steps: encoding, dissemination and decoding of a new program code. We will consider all three steps in detail to come up with a tailored solution. In a second step the proposed update protocol will be implemented for the mica2 motes. These quasi-standard sensor nodes run TinyOS, an operating system for highly constraint embedded platforms.

The goal of this thesis is to design and implement a new wireless updating scheme for sensor networks. The solution should take the specific characteristics of such networks into account. Secondly, the obtained solution should be implemented for the TinyOS platform. Finally, we are interested in comparing this solution with already existing work in this field.

Required

- Advanced Programming skills.
- Basic C knowledge.
- Interest in designing and implementing new protocols on an embedded platform.

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