ETH
Eidgenössische Technische Hochschule Zürich
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Distributed Computing Group

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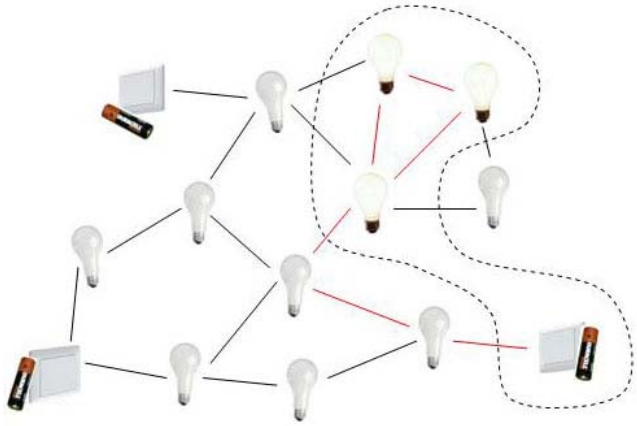
Semester/Diploma/Master's Thesis "LightNet"

Building automation is one of the hot topics in the field of wireless sensor network applications. In building-automation applications, running the control wiring for lighting is very expensive. Replacing conventional controls with wireless ones eliminates this cost while providing a degree of flexibility that previously was impractical. For example, changing the position of a light switch is as easy as sticking it on another wall.

In this thesis we will consider a lighting system that is controlled over wireless links. That is, there are no control wires from a light switch to the corresponding lamps. The whole system thus establishes a wireless sensor network where messages are routed in a multi-hop manner. Starting from a theoretical view of the problem, robust algorithms for the management and operation of the network should be designed. This also includes the consideration of semantic aspects of the application as well as guaranteeing a consistent state of the network. This thesis features many interesting theoretical problems that could be investigated, such as reliable routing, synchronization, distributed consensus, and security.



Once the problem is theoretically well understood, a sample application should be implemented. TinyOS and the mica2 motes will thereby serve as an implementation platform.

Required

- Interest in designing and analyzing algorithms.
- Basic C programming skills.

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