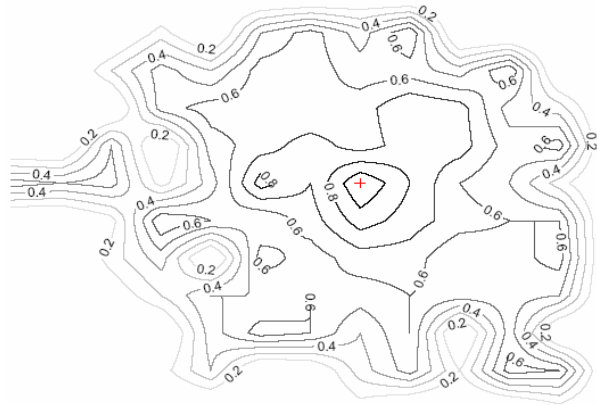


Semester Thesis “Link Layer Measurements in Wireless Sensor Networks”

Recent advances in wireless networking and microelectronics have led to the vision of sensor networks consisting of hundreds or even thousands of cheap wireless nodes—each equipped with some memory, a processor, a power unit, and a short-range radio—covering a wide range of application domains. The most popular network model (a.k.a. Unit Disk Graphs) assumes that two nodes are only able to communicate directly with each other if they are within a certain distance—the transmission radius of the wireless device.

Although this network model has led to many theoretical results it seems to be too idealistic in practice. We therefore seek after more realistic network models that are more adequate to represent real network conditions. We are particularly interested in metrics such as packet reception rate with respect to distance or radius coverage in regard to radio transmission power setting.



In this thesis we will first develop a set of metrics that will help us understand the basic link characteristics in wireless sensor networks. Afterwards, a test bed should be established using available ScatterWeb sensor nodes in order to obtain meaningful measurements.

The goal of this thesis is to set up a sensor node test bed using ScatterWeb sensor nodes and to develop a code framework to facilitate subsequent link layer measurements in the test bed. Another important aspect of this thesis is the analysis of the gathered measurements in order to obtain new insights for a more realistic network model.

Required

- Basic C programming skills
- Interest in working with an embedded platform

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