Master Thesis

Cooperative Relaying and Resource Allocation for Wireless Sensor Networks

This is a topic jointly proposed by Anke Schmeink, RWTH Aachen, and Rodrigo C. de Lamare, The University of York, England. During the first few weeks, where the candidate becomes acquainted with the topic, the student will stay in Anke Schmeink's group. The core period of about 3-4 months will be spent in York under the supervision of Rodrigo C. de Lamare. The student will receive funding for his research stay in York. The final stage will be in Aachen.

Description: The aim of this project is to introduce the student to the area of wireless sensor networks, cooperative relaying and resource allocation, and their hardware deployment. In the proposed project, we will start by mathematically modeling a wireless sensor network and its transmission system using linear algebra and setting up simulation tools. We will then devise algorithms for relaying and allocating resources such as power levels, transmission rates and relays. The goal of the algorithms is to improve the performance of the networks and their battery life. A wireless sensor network kit will be made available for real-time implementation and testing of some of the algorithms. The system will be simulated using MATLAB and the student will be allocated a MEM SIC wireless sensor network kit for implementing the algorithms.

Course prerequisites:

- communications courses
- maths at advanced level, linear algebra, probability and statistics

Skills required:

- basic programming skills with C/MATLAB
- interests in signal processing and communications

Type of work: software + hardware

Supervisors:
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