Evaluation of wireless link models in opportunistic network simulations

Prerequisites:	- Basic knowledge of wireless communication protocols
	- Basic knowledge in C programming
Level:	This topic is appropriate for Master Students
Language:	German or English

INTRODUCTION

Opportunistic Networks (OppNets) forward messages between mobile devices without using any infrastructure, instead the messages are transferred whenever two devices meet by chance. ComNets develops simulators for OppNets using the OMNET simulation tool. These simulations currently use only a simple model for the wireless links with fixed delay and no packet loss. Real devices run direct wireless communication using e. g. Bluetooth or WiFi interfaces which have specific transmission characteristics, dependent on the number of devices which meet and the amount of data they are transferring.

PROJECT DESCRIPTION

The objective of this work is to enhance the model for the wireless link to reflect more realistic conditions. The transmission properties of wireless interfaces such as the delay or packet loss can be mathematically described which is widely investigated in the literature. In this project, mathematical models from the literature are adapted to the OppNet environment and implemented in the OMNET simulator. The simulation results are compared with the existing simple approach. Furthermore, the simulation runtime including the mathematical model is compared against the runtime achieved with the simple model.

This project can be arranged as a student's project or Master thesis.

WORK PACKAGES

- Study existing literature about mathematical models for wireless interfaces.
- Adapt and implement a mathematical model in the OMNET simulator.
- Run simulations with the new mathematical model and the existing simple model.
- Evaluate the simulation results as well as the simulation run time.
- Documentation and presentation of the work.

CONTACT

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