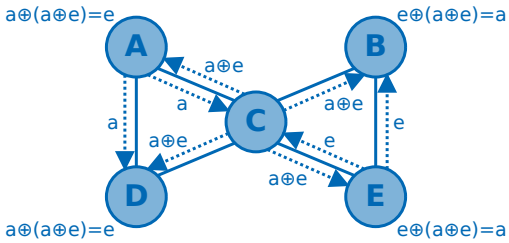
OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG | INF | FACULTY OF COMPUTER SCIENCE | Communication and Networked Systems

Master Thesis
Scalability and Performance of Network Coding in Wireless Multi Hop Networks

In "XORs in The Air: Practical Wireless Network Coding" from 2006, Katti et. al. [1] demonstrated the feasibility of network coding for wireless multi hop networks and studied the performance in a testbed of 20 nodes. The results of the paper are promising and support further studies in this area.
Network coding is based on the idea of combining several messages through the xor linkage. As a result, a sender no longer has to send the individual messages, because it is sufficient to transmit the result of the linkage. Then the recipients of the message can extract the desired message by skillfully linking received messages. In the context of 5G development, network coding is receiving a lot of attention and could contribute to the performance enhancement of wireless networks.
Katti et. al. have implemented network coding for their study in the framework Click Router and implemented it for practical use.
The objective of the thesis is to analyze the scalability and performance of network coding for wireless multi-hop networks. For this purpose, the MIoT-Lab [2] of the working group ComSys can be used.



Goals

- Getting familiar with network coding
- Review of the original implementation from the paper [1] (availability and executability)
- Implementation of network coding for the MIoT-Lab [2]
- Design of test and experimental scenarios to investigate scalability and performance

References

[1] Sachin Katti et. al. XORs in The Air: Practical Wireless Network Coding. SIGCOMM'06. September 11–15, 2006. Pisa, Italy.

[2] Communication and Networked Systems (ComSys). MIOT-Lab. `http://www.comsys.ovgu.de/MIOT_Lab.html`

Project type	Master Thesis	Contact	Kai Kientopf
Duration	1 Semester	E-Mail	kai.kientopf@ovgu.de
		Room	G29-314