Thesis M.Sc.

Reproducible Wireless Experiments

Motivation

In contrast to wired networks, measurements in wireless networks are prone to changes in the environment. To circumvent this issue, we plan a novel testbed. This testbed should simulate wireless measurements by representing the wireless broadcast medium through cables. Environmental noise and interference is injected into that medium by Software Defined Radio (SDR) devices. Hence, this noise is reproducible. We like to measure various different hardware devices like IEEE 802.11 WLAN adapters and IEEE 802.15.4 embedded motes, e. g. OpenMote [1]. As SDR hardware we have the USRP B210 [2] and HackRF [3] available. All this hardware should be combined into different test setups which are then measured with a test framework. Implementing the required test framework is also part of this thesis.

Your Task

- Evaluating useful network topologies
- Implementing a test framework
- Constructing noise samples
- Measuring different hardware devices
- Evaluating measurements

Prerequisites

- C and Python programming skills
- Firm Linux knowledge

References

[1] OpenMote: http://www.openmote.com/
[2] USRP: https://www.ettus.com/product/details/UB210-KIT
[3] HackRF: https://greatscottgadgets.com/hackrf/

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