

Bachelor's / Master's Thesis

When WiFi meets its friends in ns3: A simulative study on network coding in a mobile multi-RAT scenario

Abstract

Ns3 is a standard packet level simulator used for a high variety of research studies. There are several technologies implemented in ns3 like WiFi, Bluetooth, ZigBee, and LTE-U which operate on the same frequencies. These technologies come with their specific MAC and data link layer as well as their transmission characteristic on the channel. Nevertheless, multi-RAT (radio access technology) approaches are done so far in the combination of LTE and WiFi.

Simulative studies on multi-RAT and network coding (NC) have shown, that NC improves the end-to-end throughput drastically if an unreliable channel is considered. However, a study on a mobile scenario is missing so far.

Content

Aim of this thesis is to study a multi-RAT (Radio Access Technology) scenario in ns3. The technologies in use are WiFi, Bluetooth, (ZigBee) and others which operate in the 2.4 GHz band. The implementations of the different technologies have to be collected and put together in one ns3. The channel behaviour of the different technologies has to be studied next. Next, a NC encoder and decoder has to be implemented and the influence has to be studied in a mobile scenario.

Requirements

* Scientific work * Programming skills C/C++ and one data analysis tool (Python, Matlab, or R) * Interest in simulations

Literature

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