

Bachelor's / Master's Thesis

Evaluation and Improvement of Software Defined LoRa

Abstract

LoRa gained a lot of popularity in the last years in the IoT domain, especially due to the deployment of the LoRaWAN infrastructure.

However, LoRa is a proprietary communication technology by Semtech.

Effort has been done in the last years to reverse engineer the technology and different public available implementations are around.

While they provide detailed insights into the technology, they can also be used by software defined radios (SDR) to communicate with commodity LoRa hardware.

A performance study, however, has shown that the receiver might have limits compared to LoRa hardware.

Content

Aim of this thesis is to study the performance of the different publicly available LoRa SDR receivers.

This includes hardware measurements with SDRs in our lab.

The study should show under which conditions the different libraries fall short.

Next, improvements to the libraries shall be introduced and studied.

Requirements

- * Interests simulations and experimental work
- * Interests in MATLAB and Python
- * Interests in LoRa
- * Interests in signal processing
- * Interests in statistics
- * Scientific work