

OpenAirInterface for LTE Sidelink Multihop D2D Communication

Context

Device-to-Device (D2D) communication can be instrumental in solving societal issues such as emergency and disaster scenarios (flooding, earthquake, hostage-taking situation, etc.) where the traditional infrastructure is (partly) damaged or not available.

The OpenAirInterface (OAI) Software Alliance (OSA) provides open source software and tools for 5G wireless research and product development [1]. Recently, researchers of Thomas Johann Seebeck Department of Electronics have initiated activities for demonstrating LTE Sidelink multihop D2D communication based on the source code provided by OAI [2]. This consists of an initial setup consisting of two user equipment (UE) devices. This MSc thesis topics aims at extending the existing setup with up to 10 devices.

Objectives

- Understand the existing setup, software, and hardware, including the C source code and the software-defined radio (SDR) platforms consisting of PCs and FPGA-based SDR boards
- Evaluate the existing setup according to several performance metrics
- Develop software for extending the existing setup
- Evaluate the extended setup according to the several performance metrics

Prerequisites

- Excellent C programming skills
- An understanding of and deep interest for wireless communication
- Self-motivation and the ability to work independently

References

[1] OpenAirInterface website. Online, available: <https://www.openairinterface.org>. Date accessed: 26-08-2019.

[2] LTE-sidelink branch of OAI Gitlab repository. Online, available: <https://gitlab.eurecom.fr/oai/openairinterface5g/tree/LTE-sidelink>. Date accessed: 26-08-2019.

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Thomas Johann Seebeck Department of Electronics support equal opportunities; female students are particularly encouraged to contact us.