Karlsruhe Institute of Technology

Communications Engineering Lab (CEL)
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Implementation and Test of a SDR Joint Communication and Sensing OFDM-Systems

Bachelor's Thesis

Project

Joint Communication and Sensing (JCAS) will become an essential part of future wireless communication systems such as the next generation of mobile communications 6G. For this purpose, novel JCAS systems must be compatible with state-of-the-art waveforms used for wireless communications such as OFDM.

The main goal of this work is to design and implement an efficient JCAS system using software-defined radio (SDR). The system should be tested through realistic measurements using USRP devices and the results might give valuable insights into the actual performance of the systems in realistic scenarios with limited hardware resources time time-varying channels.

Tasks

1. Literature review on modern mobile communication systems and sensing Methods
2. Design of OFDM-JCAS system through extensive simulation (Matlab or Python)
3. Implementation with software-defined Radio
4. Evaluation of the performance on realistic scenarios with USRP measurements.

Requirements

- ✔ Basic programming experience
- ✔ Communications Engineering 1

Institute

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