

Multistatic Joint Communication and Sensing (JCaS) using Deep Learning

Master's Thesis

Project

6G shall not only provide communication but integrated sensing infrastructure as well. We work on joint learning of neural networks that provide functions of communication systems and also radar sensing systems. The main radar tasks are object detection and object tracking. In multistatic sensing, the transmitter(s) and the sensing receiver(s) are different devices at different locations. This leads to more unknown sending parameters at the receiver but enables detection without forcing a full-duplex transceiver operation.

Tasks

1. Implement a JCaS system using deep learning to implement detection
2. Choose and implement a suitable radar detection benchmark
3. Optimize training parameters
4. Implement a precoder for beamforming using deep learning

Requirements

- ✓ Programming experience in Python (+ Pytorch or TensorFlow)
- ✓ Machine Learning
- ✓ Communications Engineering I & II

Institute

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