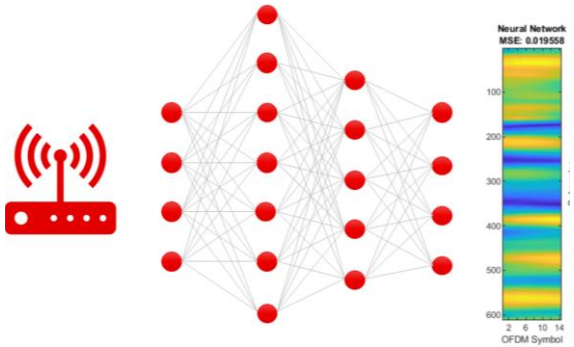
PADERBORN UNIVERSITY

Computer Science Department
Computer Engineering Group
Prof. Dr. Marco Platzner

Bachelor‘s Thesis / Master‘s Thesis

Exploration and Acceleration of DNNs for Radio Signal Processing

Deep neural networks can replace traditional algorithms for radio signal processing. Real-time inference in this “RadioML” domain is a demanding task that requires combined optimization of model and hardware accelerator, which we have already demonstrated for a basic modulation classification task. This thesis shall extend the RadioML approach to a new use case, such as transmitter identification or channel estimation. The use case will be decided after initial research and based on student’s preference. The project includes training, optimization, and the implementation of an FPGA-accelerated prototype using the Xilinx FINN framework.



Type of project

- Researching existing datasets and approaches for RadioML
- Training and implementing lightweight DNNs using high-level tools

Prerequisites

- Basic knowledge about ML/DNN and wireless communication systems
- Experience with Python, Pytorch, Matlab and Xilinx tools is helpful

Supervisor

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