Development and Evaluation of an Intelligent Wireless Resource Management for 5G/6G Downlink Channel

In this work, we will evaluate several additional techniques in 5G/6G toward reliability enhancements focusing on the Radio Access Network (RAN). The student is expected to first understand and evaluate the concept via simulations over MATLAB. Then, the techniques will be implemented in OpenAirInterface (OAI) [1] platform and we will evaluate the enhancements over our practical 5G testbed setup.

The initial setup will include a mobile robot, 5G Stand-alone communication, and a multi-access edge computing (MEC) system running a machine learning algorithm.

The expected outcome is to have improvements to the RAN of OAI including but not limited to wireless channel estimation and equalization, downlink reliability. More details will be provided after the first meeting.


Prerequisites

- Good C/C++ experience
- Good Matlab knowledge
- Medium knowledge on OFDM and Wireless Channel Estimation
- Good Python knowledge is a plus
- Machine Learning understanding is a plus

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