Institut für
Kommunikations-
Technik

Leibniz
Universität
Hannover

Bachelor Thesis-Proposal:

Channel Estimation/Prediction Techniques based on AI or Deep Learning for an OFDM based Wireless Communication System

DECT-2020 NR is a Radio Interface Technology (RIT) designed to provide a slim but powerful technology foundation for wireless applications deployed in various use cases and markets. It is an OFDM based RIT designed for URLLC and mMTC according to 5G (IMT-2020) requirements. It is also a promising candidate for future wireless communication. Big challenge as an uncertainty in a wireless environment is the wireless channel itself. The excellent estimation or prediction of the wireless channel is necessary to have a reliable communication system. Considering the role of DECT-2020 NR in URLLC requiring use cases, this thesis aims to investigate the concepts AI or deep-learning for ultra-reliable estimate of the wireless channel.

Tasks:

- Literature research on Deep learning or AI based channel estimation/prediction techniques.

- Performance analysis and comparison of different chosen techniques for DECT-2020 NR

- Analysis of techniques in the case of SISO and MIMO systems

- Development of methods for the estimation/prediction of radio channels (Master)

- Evaluate the results in term of Bit error rate and Packet error rate

Requirements:

- Programming skills in Matlab or C++ are desirable.

- Good knowledge of wireless channel, signal processing and digital communication

- Very good knowledge of OFDM

- Good knowledge of Probability, stochastic and random processes etc.

If you are interested, please contact:

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