



## Advertisement

# Jitter buffer influence on speech transmission quality

## *Bachelor/Master/Diploma Thesis*

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### Description

Jitter is one of the IP-packet transmission parameters influencing perceived quality of Voice over IP (VoIP) and Voice over LTE (VoLTE) services. It is defined as a variance of packet transmission delay. In a real time service as VoIP/VoLTE, jitter often translates to packet loss due to the packet drops in queuing mechanisms. Such mechanisms, so-called, jitter buffers can be implemented in many different manners. They can vary in size and the way how they react for different network conditions. Moreover, the inclusion of the jitter buffer into the speech processing chain introduces transmission delay. A tradeoff between low packet loss and low delay needs to be preserved in order to obtain acceptable speech transmission quality.

The goal of this study is to revisit different approaches for jitter buffer implementation and investigate their influence on the perceived VoIP/VoLTE quality. The preliminary plan looks as follows:

1. Literature review and implementation of different jitter buffers in Matlab/C
2. Simulation of the operation of the buffer under different network conditions
3. Analysis of resulting packet traces in terms of packet loss distribution and delay
4. Analysis of the quality scores obtained with speech quality assessment algorithms (PESQ/POLQA)

### Requirements

- Course of study: Electrical Engineering, Computer Science or similar
- Good programming skills in Matlab/C
- Good problem-solving skills
- Good communication skills
- (optional) Fundamentals of VoIP technology

### Literature

- ITU-T Rec. P.862 - perceptual evaluation of speech quality (PESQ): An objective method for end-to-end speech quality assessment of narrow-band telephone networks and speech codecs
- ITU-T Rec. P.863 - perceptual objective listening quality assessment (POLQA)
- Lopez et al., "Classical Playout Buffer Algorithm Revisited", 2011

### Contact

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