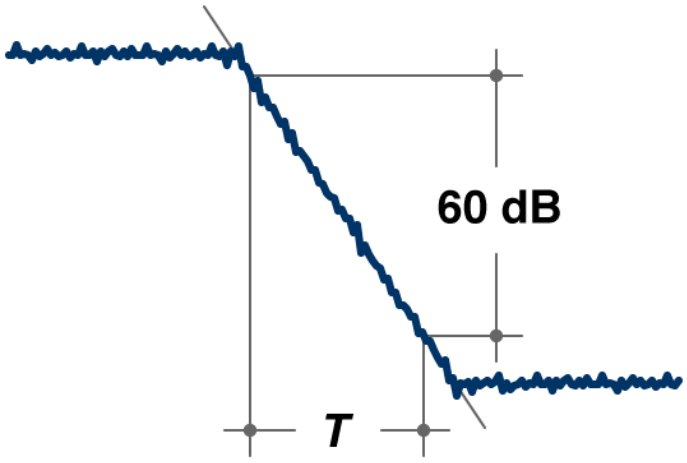
Lehrstuhl für Multimediakommunikation und Signalverarbeitung
Universität Erlangen-Nürnberg

Proposal for a Research Internship

Topic: **Decay Rate Classification for Blind Reverberation Time Estimation**

Description: The reverberation time, T60, is one of the most important quantities to describe the acoustical properties of a room. It is defined as the time interval in which the sound energy decays by 60 dB after switching off the exciting sound source and describes the amount of room reverberation. Knowledge about the reverberation time is exploited by various algorithms such as automatic speech recognition or speech dereverberation. As a consequence, numerous algorithms for the blind estimation of the reverberation time have been published in recent years, which are mostly considering single-channel recordings. Many algorithms for blind T60 estimation are based on a detection of segments with sound decays caused by reverberation, e.g., [1]. Accordingly, the detection of these segments, which is usually performed by observing the evolution of the signal energy, is crucial for the accuracy of the T60 estimation.

The aim of this work is to implement and evaluate machine learning-based decay rate classification schemes for T60 estimation for which a framework to generate a training and testing database with reverberant speech signals will be provided. The performance of the implemented learning-based T60 estimators should be compared with model-based approaches such as [1]. This research work requires basic knowledge about statistical signal processing and interest in machine learning.



https://www.hunecke.de/en/knowledge/room-acoustics/reverberation-time.html

[1] H. Löllmann, A. Brendel, and W. Kellermann: *Efficient ML-Estimator for Blind Reverberation Time Estimation*, EUSIPCO, Rome, Italy, 2018.

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Available: Immediately