

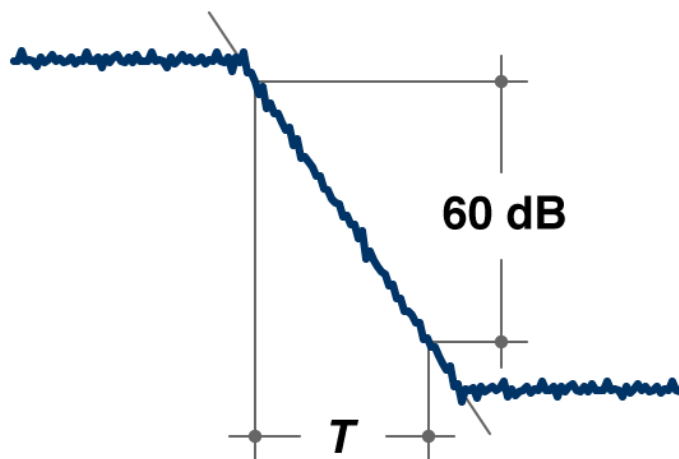
## Proposal for a Research Internship

**Topic:** Evaluation of Algorithms for Blind Reverberation Time Estimation

**Description:** The reverberation time,  $T_{60}$ , 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 for speech and audio signal processing, e.g., in the context of automatic speech recognition or speech dereverberation. As a consequence, numerous algorithms for the blind estimation of the reverberation time from a noisy and reverberant speech signal have been published in recent years, which are mostly considering single-channel recordings, e.g., [1].

The variety of proposals motivates a thorough performance evaluation of different algorithms for  $T_{60}$  estimation. The aim of this work is to implement state-of-the-art algorithms for blind  $T_{60}$  estimation and to evaluate their estimation accuracy for different scenarios (noise level, room reverberation etc.) by means of the evaluation dataset and measures used for the ACE Challenge [2]. This investigation should reveal the pros and cons of different approaches and to provide hints for possible improvements.

This research work requires basic knowledge about statistical signal processing and MATLAB programming skills.



<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.

[2] J. Eaton and P. A. Naylor: *Estimation of Room Acoustic Parameters: The ACE Challenge*, IEEE/ACM Transaction on Audio, Speech, and Language Processing, 2016.

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**Available:** Immediately