Lehrstuhl für Multimediakommunikation und Signalverarbeitung
Universität Erlangen-Nürnberg

Proposal for a Master Thesis

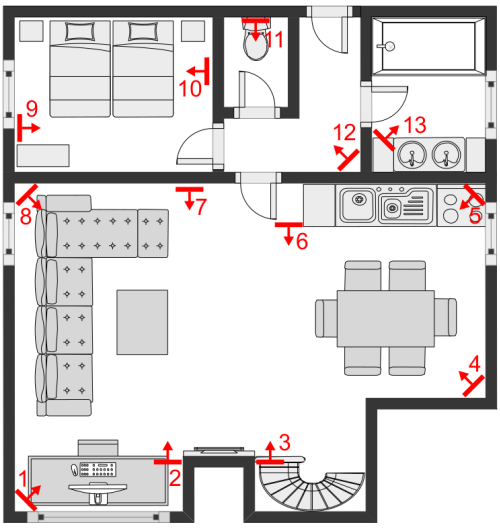
Topic: **Scene Analysis in Acoustic Sensor Networks**

Description: Acoustic Sensor Networks (ASNs) consist of sensor nodes distributed over the area of interest, and thus provide different perspectives on the acoustic scene. An important application of ASNs are smart home systems which are developed to assist the resident in his daily life. Typical applications are acoustic source localization and tracking as well as speech enhancement and signal extraction.

In recent years, much research work has been dedicated to single channel acoustic event detection, i.e., the classification of sounds in recordings. However, the spatial properties of the acoustic source, e.g., static or dynamic sources, may yield valuable side information for classification of the acoustic scene. To provide the opportunity to investigate this research problem in detail, a publicly available database of sound recordings in a smart home environment has been released [1].

The aim of this thesis is to implement and evaluate algorithms for acoustic scene classification based on spatial features. This may also include localization and tracking algorithms.

As prerequisites, the student should have MATLAB programming experience and an affinity to math.



[1]: Dekkers, Gert et al. "The SINS Database for Detection of Daily Activities in a Home Environment Using an Acoustic Sensor Network." In Proceedings of the Detection and Classification of Acoustic Scenes and Events 2017 Workshop (DCASE2017).

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Available: Immediately