



EEI-Kolloquium

Modeling Spatial Information for Source Separation and Extraction: From Model-based Prior Information to Deep Generative Models

Dr. Andreas Brendel

Fraunhofer IIS, Erlangen

Donnerstag, den 27.07.2023, 16:00 Uhr

Live: AudioLabs Seminar Room (3R4.04), Am Wolfsmantel 33, 91050, Erlangen

Online:

<https://us02web.zoom.us/j/88157654238?pwd=d2JxUTF3ZFoyR2FORjNkL0pZcE9HUT09>

Typical acoustic scenes consist of multiple superimposed sources, where some of them represent desired signals, but often many of them are undesired sources, e.g., interferers or noise. In this talk, we treat the problem of acoustic source separation and extraction by Independent Vector Analysis (IVA), an unsupervised learning technique.

This multi-channel signal processing technique requires only a minimal number of assumptions about the acoustic scene and, hence, generalizes well to unseen conditions. However, knowledge about the acoustic scenario is often available and can be exploited to increase the performance of the source separation algorithm, e.g., the directions of arrival of the desired source signals relative to the observing microphone array.

We will present a framework for semi-supervised source separation and extraction, i.e., source separation/extraction, that is supported with prior knowledge from a maximum a posteriori perspective. We demonstrate the use of this framework by incorporating spatial prior knowledge that enables a solution to the outer permutation ambiguity and allows to address underdetermined problems. In addition to using classical model-based approaches, we also give an outlook on using deep generative modeling as spatial priors.