

Decorrelating with the non-uniform DFT and applications in speech and audio coding

Speaker: Prof. Tom Bäckström, Audio Labs, University of Erlangen-Nuremberg

Abstract: The famous discrete Fourier and Karhunen-Loeve transforms are widely used in engineering applications where we require, respectively, a physical description of the signal or statistically optimal decorrelation. Though widely used, the two transforms have seemed mutually exclusive. In this talk I present a novel transform which has the desirable properties of physical interpretation and statistical decorrelation. The transform, known as the Vandermonde transform, is based on a non-uniform discrete Fourier transform which decorrelates the input signal. Application and recent advances in speech and audio coding are presented.



Hearing aid signal processing

Speaker: Prof. Mads Græsbøll Christensen, Audio Analysis Lab, Aalborg University

Abstract: Modern hearing aids are marvels of audio and acoustic signal processing. The conditions that hearing aids must operate under are often very challenging as they have to deal with complicated signals using quite limited resources (e.g., low latency, small size, low power). Hearing aid research is thus a particularly challenging (and fun) topic. Signal processing plays a key role in hearing aids and today's hearing aids use signal processing such as noise reduction, feedback cancellation, and beamforming. In this talk, I will give an introduction to hearing aid signal processing and highlight some recent advances, including some of the Audio Analysis Lab's work on the topic.



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