

# AUDIO ANALYSIS LAB

## AUDIO FOR GOOD HEALTH AND WELL-BEING



### THE AUDIO ANALYSIS GROUP AT AALBORG UNIVERSITY

DEPARTMENT OF ARCHITECTURE, DESIGN AND MEDIA TECHNOLOGY  
TECHNICAL FACULTY OF IT AND DESIGN

How audio processing can be used to solve problems important to the health and well-being of people in their daily lives.

### RESEARCH

#### KEY RESEARCH AREAS

The Audio Analysis Lab at CREATE, Aalborg University conducts research in audio and acoustic signal processing for good health and well-being.

The research focuses on how audio processing can be used to solve problems important to the health and well-being of people in their daily lives. These include reducing the influence of noise on our lives and extracting useful information from degraded acoustic signals for biomedical purposes.

We thus work on a wide range of research topics, such as noise reduction, sound zones, active noise cancellation, voice analysis, and spectral analysis.

We are also in new emerging areas such as robot audition, wireless acoustic sensor networks, and privacy-preserving audio processing.

#### WHAT WE DO

- › Methods for diagnosing illnesses from voice signals
- › Methods for automatically assessing the quality of biomedical signals and cleaning them up
- › Noise reduction for hearing aids
- › Sound zones for hospitals, retail, live music, cars
- › Technology for headphones/headsets

### EDUCATION

#### STUDY RELATED ACTIVITIES

- Teaching in B.Sc., M.Sc., and Ph.D. programs at AAU.
- › Machine learning
  - › Statistical signal processing

- › Audio and acoustic signal processing
- › Speech processing
- › Signal and spectral analysis
- › Acoustic array processing

### COLLABORATION

#### WHO BENEFITS FROM OUR RESEARCH

Industries: hearing aids, healthcare technology, professional audio, Hifi, music industry and automotive.

#### EXTERNAL PARTNERS

GN Resound, GN Audio (Jabra), Dirac, AceZone, B&O, KU Leuven, Lund University, University of Quebec, Bar-Ilan University, Delft Technical University, Northwestern Polytechnical University, Harbin University.

### PUBLICATIONS

#### IMPORTANT PUBLICATIONS

- › [Sparse linear prediction and its applications to speech processing.](#)
- › [Multi-pitch estimation](#)
- › [Model-based speech enhancement for intelligibility improvement in binaural hearing aids](#)
- › [Nonlinear least squares methods for joint DOA and pitch estimation.](#)
- › [Noise reduction with optimal variable span linear filters](#)



**AALBORG UNIVERSITY**  
DENMARK

### KEY PROJECTS

#### SIGNAL PROCESSING FOR DIAGNOSIS OF PARKINSON'S DISEASE FROM NOISY SPEECH

Independent Research Fund Denmark, 2015-2019. Methods for diagnosis of Parkinsons from degraded voice signals.

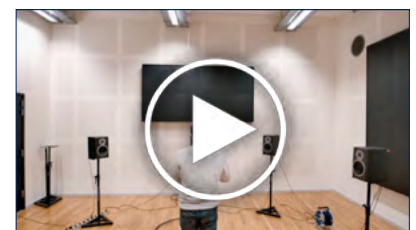
#### SIGNAL PROCESSING FOR DETECTING THE COCKTAIL PARTY PROBLEM AND METHODS FOR ENHANCING LISTENING IN NOISY SITUATIONS (COCKTAIL)

Innovation Fund Denmark, 2014-2018. Enhancement of signals for hearing aids under very adverse conditions.

#### SPATIO-TEMPORAL FILTERING METHODS FOR ENHANCEMENT AND SEPARATION OF SPEECH SIGNALS

Villum Foundation Young Investigator Programme, 2012-2015. Model-based multi-channel methods for modeling and enhancing speech signals.

### VIDEO PRESENTATION



### CONTACT

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