

Master Thesis / Internship in

Complexity Reduction of Deep Neural Networks in Audio Processing

Description

In recent years, the use of deep neural networks has vastly increased. However, when used on mobile and embedded devices, the model complexity and the size of updates become important factors. Memory, runtime and ultimately power consumption can be optimized. For this, new methods have to be developed.

You will be optimizing existing applications for speaker localization, sound classification and speech enhancement. This will include a thorough investigation of the effect of different deep compression methods such as pruning, quantization of weights, dimensionality reduction. You also have the opportunity to port an existing project to an Android phone using an accelerator library.

Related topics

- Deep Neural Networks
- Deep Compression
- Limited Resource Computing
- Acoustic Signal Processing
- Speaker Localization
- Pattern Recognition

Recommended prerequisites

- Programming experience in Python
- Basic experience with a Deep Learning framework such as Tensorflow/Keras
- Interest in signal processing or pattern recognition research

Supervisor

Dr.-Ing. Axel Plinge

Professor

Prof. Dr. ir. Emanuël Habets