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DNN-Training - Practical considerations for directional algorithms

In recent years, the use of deep neural networks (DNNs) has become increasingly popular leading to advances in sound processing for hearing aids. DNNs are composed multiple layers of parameterized units that can learn complex patterns from data observed during a training stage. In contrast to classical signal processing algorithms that rely on oversimplifying statistical assumptions about the underlying data, DNN models can learn highly complex distributions from the data set. Hence, one key component of the design of DNN algorithm is choice of training data. To avoid common pitfalls like overfitting allow for generalization to unseen data, the training data needs to be representative of variability observed in the real world and hearing aid users' everyday environments. Such variability typically includes different speakers and speaking style, different noises and levels, different room acoustics and different microphone locations as well as variations caused by individual wearing styles. In this contribution we will discuss how the variability of the microphone arrangement can be incorporated into the training of a DNN-based directionality algorithm to ensure generalization across a real-world variability of custom devices.