# Self-fit generation of the wide range compression parameters in hearing aids

Apurba Bose[1], Ziqi Gan[1], Harinath Garudadri[2]

[1]ECE Department, University of California, San Diego
[2]Qualcomm Institute of Calit2, University of California, San Diego

**Abstract:**

Open-Source Speech-Processing Platform (OSP) is an open source software executing the real time signal processing algorithms with reduced latency between the input and the output signals. In this abstract, we elaborate on a hearing aid fitting algorithm, which tunes the Wide Dynamic Range Compression (WDRC) algorithm parameters through a A-B comparison test. The following approach is adopted-The left and the right audiogram values are clustered using the Gaussian Mixture model. A value is assigned to more than one cluster with a probability. The cluster labels are assigned according to the model yielding the maximum log likelihood-The best fit for the audiogram values of user is used to calculate the WDRC parameters. Recording the audiogram values of individual user and tuning the parameters by the audiologists can be a cumbersome task. Web-app is implemented to present A-B comparison to the users to determine the best fit audiogram values. The Open Speech Platform (OSP) comprises of Embedded Web Server (EWS) presenting the web-app. It guides the user to determine the best fit through a AVL tree based binary search algorithm. The device aims to determine the best fit in reduced number of steps, post which the WDRC parameters are determined through the NAL-NL2 libraries. This search algorithm for each user, and listener's feedback on the success of the fit using the ecological monetary assessment (EMA) app, with the environmental sound data logging can be leveraged further to create auto fit algorithms in dynamic environments using MCTS in reinforcement learning.