Bachelor Thesis Proposal

Topic: Sparse Nonlinear System Identification

Description: Nonlinear distortions caused by loudspeakers, e.g., as the ones seen in the figure, are viewed as a serious challenge for current Acoustic Echo Cancellation (AEC) systems. Often, these distortions are approximated using parametric basis functions, e.g., Volterra filters, Legendre polynomials, or Power filters. However, a necessary step before the application of a nonlinear AEC algorithm is to determine the order and number of basis functions used. In this thesis, partial update sparse system identification [1] should be investigated as an adaptive basis functions selection approach for nonlinear AEC.

Implementation and evaluation should be done in MATLAB.

Prerequisites: Course ‘Digital Signal Processing’, MATLAB experience.

Supervisor: M.Sc. Mhd Modar Halimeh
(Cauerstr. 7, room 5.13, mhd.m.halimeh@fau.de)

Professor: Prof. Dr.-Ing. Walter Kellermann

Available: Immediately