

Signal Processing Seminar

Title: Statistical reverberation model based Expectation-Maximization Beamforming

Speaker: Lae-Hoon Kim
Grad Res Asst, Supercomputing Applications
PreDoc Fellow, Electrical & Computer Eng
University of Illinois-Urbana/Champaign

Date: October 8, 2008

Time: 4:00 - 5:00 pm

Where: 4269 Beckman Institute

Abstract: In this talk, we envision a new probabilistic framework on which the speech enhancement based on beamforming followed by conventional one-channel speech enhancement technique has been unified from the stage of estimating the source position to the ultimate goal of the optimal speech enhancement. We propose a multi-microphone joint optimal estimation of the source position and the source signal through newly introduced EM beamforming under the statistical room reverberation model. This produces a posteriori PDF for source position. By taking the position producing maximum value of it, we could achieve a reasonable source position estimation accuracy under different signal to noise ratio and signal to noise ratio conditions. Also, by taking MMSE post filter on to the output of EM beamforming, we could obtain a realizable MMSE optimal source speech estimate given the multi-channel measurements.

**** This is joint work with Professor Mark Hasegawa-Johnson (University of Illinois) and Dr. Vit Libal (IBM T.J. Watson Research Center). ****