ACOUSTIC FEEDBACK CANCELLATION FOR LONG ACOUSTIC PATHS USING A NONSTATIONARY SOURCE MODEL (ThuAmPO2)

Author(s) :

Geert Rombouts (KULeuven/ESAT−SCD, Belgium)
Toon Van Waterschoot (KULeuven/ESAT−SCD, Belgium)
Kris Struyve (Televic NV, Belgium)
Marc Moonen (KULeuven/ESAT−SCD, Belgium)

Abstract :

Several pro−active acoustic feedback (Larsen−effect) cancellation schemes have been presented for speech applications with short acoustic feedback paths as encountered in hearing aids, but these schemes fail with the long impulse responses inherent to public address systems. We derive a new prediction error method (PEM) based scheme (referred to as PEM−AFROW) which identifies both the acoustic feedback path and the nonstationary speech source model. A cascade of a short− and a long term predictor removes the coloring and periodicity in voiced speech segments, which account for the unwanted correlation between the loudspeaker signal and the speech source signal. The predictors calculate row operations which are applied to pre−whiten a least squares system, which is then solved recursively by means of e.g. NLMS or RLS algorithms. Simulations show that this approach is indeed superior to earlier approaches whenever long acoustic channels are dealt with.

Menu