

Active Control for Outdoor Noise using an FXLMS Approach

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ABSTRACT

This study describes the comparison of noise suppression performances at different locations of two error microphones in active noise control (ANC) for outdoor applications. For this study, 12 different locations were predefined to decide best locations for error sensors in terms of suppressing noise. As shown in Fig. 1, the ANC system with one primary loudspeaker, two secondary loudspeakers and two error microphones is operated by a filtered-x LMS (FXLMS) algorithm which is implemented in a TI 6713 DSP board and Realsys 4713 AD/DA Extension board.

The noise for the primary source is a typical road noise measured at a highway roadside. The lengths of adaptive filters of W_1 and W_2 are varied from 32 to 128 respectively. An intensive computer simulation was accomplished before outdoor ANC experiments. It is expected from the simulation results that the ANC performances are very much dependent upon the locations of the two error microphones.

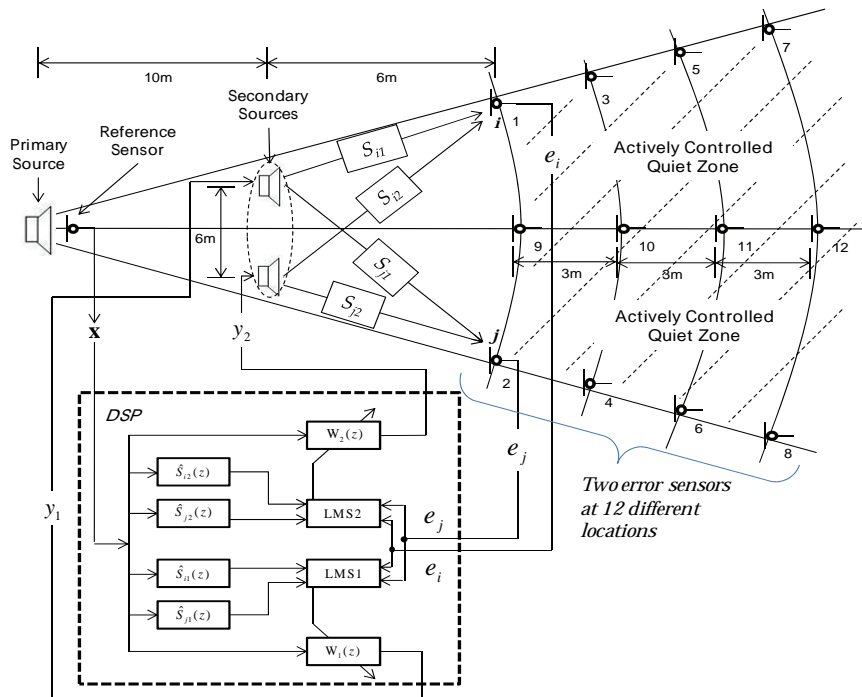


Fig. 1 Various locations of two error sensors for an outdoor ANC system with 1x2x2 FXLMS algorithm

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