

Auralization of an orchestra using multi-channel and multi-source technique.

Michelle C. Vigeant, Lily M. Wang

Architectural Engr. Prog., Univ. of Nebraska - Lincoln, Peter Kiewit Institute, 1110 S. 67th St., Omaha, NE 68182-0681

Jens Holger Rindel

Acoustic Technology, Oersted-DTU, Technical University of Denmark, Building 352, DK-2800 Kgs. Lyngby, Denmark

Previous work has shown the importance of including source directivity in computer modeling for auralizations. A newer method to capture source directivity in auralizations is the multi-channel technique, which uses multi-channel anechoic recordings. In this study, five-channel anechoic recordings were obtained for every orchestral part of two symphonies at the Technical University of Denmark. Five-channel auralizations were then created for each instrument, located at its typical position on-stage in a concert hall, by convolving five impulse responses from sources that each represent approximately one-fifth of a sphere with the corresponding anechoic recording channel and mixing these together. The multi-channel auralizations from each instrument were subsequently combined to produce a full multi-channel auralization of the entire orchestra. The results from listening tests will be presented, illustrating the perceived changes in realism, source width and depth, and source separation between the output of this full orchestral mix of multi-channel auralizations and other auralization methods, including the following: (i) a mix of single channel auralizations from each instrument; and auralizations made with a single channel orchestral anechoic recording using (ii) a surface source and (iii) a single omni-directional source. [Work supported by the National Science Foundation.]

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