The role of spectral detail in the binaural transfer function on perceived externalization in a reverberant environment - DTU Orbit (09/11/2017)

The role of spectral detail in the binaural transfer function on perceived externalization in a reverberant environment

Individual binaural room impulse responses (BRIRs) were recorded at a distance of 1.5 m for azimuth angles of 0° and 50° in a reverberant room. Spectral details were reduced in either the direct or the reverberant part of the BRIRs by averaging the magnitude responses with band-pass filters. For various filter bandwidths, the modified BRIRs were convolved with broadband noise and listeners judged the perceived position of the noise when virtualized over headphones. Only reductions in spectral details of the direct part obtained with filter bandwidths broader than one equivalent rectangular bandwidth affected externalization. Reductions in spectral details of the reverberant part had only little influence on externalization. In both conditions, externalization was not as pronounced at 0° as at 50°. To characterize the auditory processes that may be involved in the perception of externalization, a quantitative model is proposed. The model includes an echo-suppression mechanism, a filterbank describing the frequency selectivity in the cochlea and a binaural stage that measures the deviations of the interaural level differences between the considered input and the unmodified input. These deviations, integrated across frequency, are then mapped to a value that corresponds to the perceived externalization.

General information

State: Published
Organisations: Department of Electrical Engineering, Hearing Systems, GN ReSound A/S
Authors: Hassager, H. G. (Intern), Gran, F. (Ekstern), Dau, T. (Intern)
Pages: 2992-3000
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information

Journal: Journal of the Acoustical Society of America
Volume: 139
Issue number: 5
ISSN (Print): 0001-4966
Ratings:
BFI (2018): BFI-level 2
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 1.83 SJR 0.749 SNIP 1.27
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.802 SNIP 1.437 CiteScore 1.77
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.788 SNIP 1.423 CiteScore 1.8
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.705 SNIP 1.966 CiteScore 2
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 0.763 SNIP 1.622 CiteScore 1.75
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.695 SNIP 1.642 CiteScore 1.68
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.754 SNIP 1.528
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.783 SNIP 1.717

Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.848 SNIP 1.633
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.865 SNIP 1.647
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.752 SNIP 1.559
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.954 SNIP 1.749
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.77 SNIP 1.787
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.882 SNIP 1.712
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.87 SNIP 1.501
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.719 SNIP 1.467
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.621 SNIP 1.411
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.591 SNIP 1.319
Original language: English
Acoustics and Ultrasonics, Arts and Humanities (miscellaneous)
Electronic versions:
1.4950847.pdf
DOIs:
10.1121/1.4950847
Source: FindIt
Source-ID: 2304689350
Publication: Research - peer-review › Journal article – Annual report year: 2016