Audio-visual scene analysis in reverberant multi-talker environments - DTU Orbit (09/10/2019)

Audio-visual scene analysis in reverberant multi-talker environments

Normal-hearing subjects are accurate in localizing sound sources even in reverberant multi-talker environments (e.g., Kopčo, 2010; Weller, 2016). Weller et al. (2016) showed that subjects can accurately analyse reverberant multi-talker scenes with up to four simultaneous talkers. While multi-talker scene analysis has mainly been investigated with only auditory information, the addition of visual information might influence the subjects’ perception. To investigate the visual influence, audio-visual scenes with a varying number of talkers and degrees of reverberation were considered in the present study. The acoustic information was provided using a spherical loudspeaker array and the visual information was provided using head-tracked virtual reality glasses. The visual information represented various possible talker locations and the subjects were asked to identify the number of talkers and their specific locations. For the identification of talkers, subjects had to label visual locations with headlines from the talker’s speech topic. It was hypothesized that the addition of visual information improves subjects’ ability to analyse complex auditory scenes, while the amount of reverberation impairs the overall performance.

General information
Publication status: Published
Organisations: Hearing Systems Group, Department of Health Technology, Department of Electrical Engineering
Contributors: Ahrens, A., Lund, K. D., Dau, T.
Pages: 3890-3896
Publication date: 2019

Host publication information
Title of host publication: Proceedings of the 23rd International Congress on Acoustics
Publisher: Deutsche Gesellschaft für Akustik e.V.
ISBN (Print): 978-3-939296-15-7
Keywords: Auditory Scene Analysis, Speech Perception, Virtual Reality
Electronic versions:
Fulltext
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2019 › Research › peer-review