SSID Protocol for Data Collection of Urban Soundscapes: In situ audio-video recordings & questionnaires

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Abstract: A protocol for characterising urban soundscapes for use in the design of Soundscape Indices (SSID) and general soundscape research as implemented under the ERC-funded SSID project is described in detail. The protocol consists of (1) audio-visual recordings for use in virtual reality-based laboratory experiments, and (2) in situ soundscape assessments via a questionnaire method paired with acoustic data collection. The data collected under this protocol will form a large-scale, international soundscape database.

Keywords: Soundscape; SSID; binaural recordings; ambisonic recording; ISO12913

Introduction

The following protocol has been conceived and implemented within the SSID framework to collect data about urban soundscapes for use in general soundscape research and toward the design of Soundscape Indices.

Purpose

This protocol was designed to achieve two primary goals: (1) reproduce the audio-visual environment of a location in a laboratory setting for conducting controlled experiments on soundscape; (2) gather in situ soundscape assessments from the public, which can be further analysed and utilized in designing a soundscape index.

Method Overview

The first goal was achieved by making first-order ambisonic recordings simultaneously with 360° video which can be reproduced in a virtual reality environment. It has been shown that head-tracked binaural and multi-speaker ambisonic reproduction of recorded acoustic environments recorded in this way have high

ecological validity, particularly when paired with simultaneous head-tracked virtual reality video [1].

The second goal was achieved by conducting in situ questionnaires using a slightly altered version of Method A (questionnaire) from Annex C of the ISO 12913-2:2018 standard [2] collected either via handheld tablets or paper copies of the questionnaire. Typically, a minimum of 100 responses were collected at each location during multiple 2-5-hour sessions over several days. During the survey sessions, acoustic data was collected via a stationary Class 1 sound level meter running throughout the survey period and through binaural recordings taken next to each respondent. These acoustic data and response data are linked through an indexing system so that features of the acoustic environment can be correlated with individual responses or with the overall assessment of the soundscape, as required by researchers.

References

[1]   J. Y. Hong *et al.*, "Quality assessment of acoustic environment reproduction methods for cinematic virtual reality in soundscape applications," *Build. Environ.*, vol. 149, no. May 2018, pp. 1–14, 2018.

[2]   International Organization for Standardization, "ISO/TS 12913-2:2018 Acoustics - Soundscape - Part 2: Data collection and reporting requirements," ISO, Geneva, 2018.