Continuous real-time rating of auditory perception using the emoTouch Web research system

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Abstract

Auditory perception is a dynamic phenomenon that evolves and changes over time during the listening process. Therefore, the study of such a dynamic phenomenon also requires dynamic research instruments that make the development processes observable continuously and in real time. This requirement for a valid research approach for time-bound phenomena is basically similar to the situation in other fields, e.g. music, theater, dance, or sports.
To meet the need of different disciplines for an up-to-date, easy-to-use research tools for real-time research we developed 'emoTouch Web', a web-based research system for continuous real-time evaluation of videos, music or live events of any kind. The development at Osnabrück University (Germany) was funded by the Volkswagen Foundation. The system is available free of charge for scientific purposes.

The system turns any networked smartphone and tablet as well as any desktop computer into a flexibly configurable and easy-to-use tool for real time research. For example, the audience of a lecture can participate in a previously designed continuous evaluation study just by accessing a website with the smartphones they carry anyway ('Bring-Your-Own-Device'). This makes it possible in a simple way to comprehensively conduct studies at live events with possibly hundreds of participants at the same time. However, it is of course also possible to conduct studies with desktop computers in a laboratory setting or as an online real-time survey.

emoTouch Web was originally designed and developed for empirical audience research in the field of music psychology. However, the system is completely flexible and freely configurable and thus not limited to a specific research question or discipline. In the graphical editor of emoTouch Web, the study layout can be freely designed with numerous interactive elements (e.g. horizontal and vertical sliders, 2D rating areas, categorical scales, images, videos). The layouts dynamically adapt to the various mobile devices. The execution of a study can be controlled, monitored and observed by the researcher in real time. For the evaluation of the collected real-time data, coordinated tools for graphical and numerical analysis as well as interfaces to the scripting languages Python and JavaScript and flexible export options are integrated. At https://www.emotouch.de, a demo study shows the various possibilities of the study layout. Via a test access, the system can be tried out and own test studies can be designed, conducted and evaluated.
The poster presentation shows the possibilities of emoTouch Web by means of selected pilot studies and explains possible application scenarios in hearing-related research, e.g. the continuous evaluation of the intelligibility during an evolving sound environment.

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