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Hearing-screening tests based on filtered sounds and on
speech-in-noise intelligibility tests

Bozena Kostek^a, Andrzej Czyzewski^a, Lukasz Kosikowski^a, Krzysztof Kochanek^b and Henryk Skarzynski^b

^aGdansk University of Technology, Multimedia Systems Department, 11/12 Gabriela Narutowicza Street,
80-952 Gdansk, Poland

^bThe Institute of Physiology and Pathology of Hearing, Pstrowskiego 1, 01-943 Warsaw, Poland

A hearing-screening system dedicated to small-children in pre-schools and primary schools is described in the paper. It uses as a hardware a palmtop computer supplemented with a small sound calibrating device. The described application provides tests that employ automatic questionnaire analysis, audiometric test procedures, and assessment of speech intelligibility in noise. In the speech-in-noise intelligibility tests, pictures are used for young children, and the screening tests are supervised by adults. Apart from the standardized audiometric tests, the screening tests employ environmental sounds filtered in audiometric frequency bands and calibrated as to their levels. When all the testing is completed, the system automatically analyzes the results for each child examined. The decision is made automatically by the expert system taking into account the number of incorrect answers. Children whose hearing impairment is confirmed are referred to treatment in rehabilitation centers. The project presented is a part of the large-scale "I can hear..." screening tests program carried out in Poland for the last few years. This may help to increase awareness and inspire action against noise at a very early age. The methods employed for filtering and calibration environmental sounds and results achieved are presented in the paper.