Petralex: A smartphone-based real-time digital hearing aid with combined noise reduction and acoustic feedback suppression

Maxim Vashkevich [1],

Elias Azarov [2],

Nick Petrovsky [3],

Alexander Petrovsky [4]

2017

Department of Computer Engineering, Belarusian State University of Informatics and Radioelectronics 6, P. Brovky str., 220013, Minsk, Belarus

Keywords:

IEEE Keywords: Hearing aids, Auditory system, Noise reduction, Gain, Noise measurement, Estimation.

Author Keywords: Hearing aid, smartphone, acoustic feedback suppression.

Abstract: The paper presents an implementation of an improved smartphone-based hearing aid which originates from our free smartphone application “Petralex” released for iOS and Android devices. In the present contribution we develop a new processing scheme that decomposes the signal into perceptually matched sliding bands and implements combined noise reduction and acoustic feedback suppression (AFS). The proposed AFS algorithm is based on spectral subtraction rule.

The algorithm is robust to rapid changes in acoustic feedback path and considerably increases maximum stable gain.

Published in:

Signal Processing: Algorithms, Architectures, Arrangements, and Applications (SPA'2017): Proc. 21st Int. Conf., Poznan, Poland, September 20-22, 2017 / Poznan University of Technology – Poznan, 2017. – P. 249-254. – DOI: 10.23919/SPA.2017.8166873.

Internet link: http://ieeexplore.ieee.org/document/8166873/.