

CALL FOR PAPERS

IEEE Signal Processing Society

Special Issue

IEEE SIGNAL PROCESSING MAGAZINE

Special Issue on "Signal Processing Techniques for Assisted Listening"

Aims and Scope

With the rapid advancement in microelectronics and parallel computing, significant computational power is nowadays readily available in ever smaller battery-operated consumer electronics devices. This has paved the way for applications such as active noise cancellation (ANC) headphones, hearing protectors, communication headsets, 3-D glasses, to name a few. In addition, hearing aids have also experienced large advances in electronics and functionality. To a large extent this rapid development can be attributed to the popularity of mobile phones, as these devices are no longer used merely as a communication tool but are multi-media and gaming platforms. Accordingly they require sophisticated processing for augmented reality in which the virtual listening world can be combined conveniently with situational acoustical awareness. The same can be said for assistive listening devices (ALDs), including hearing aids, personal sound amplification devices, and related audio capture accessories. Here the challenge is to render the sound as accessible as possible in order to provide hearing support in challenging acoustical situations. All aforementioned applications are underpinned by fundamental signal processing problems related to sound capture and sound rendering. On the one hand, for sound capture problems such as sensor technology (microphones, accelerometers etc.), acoustic scene analysis, audio signal enhancement, noise suppression with single and multiple sensors, feedback suppression and de-reverberation need to be considered. On the other hand, sound rendering involves problems such as active noise cancellation, loudspeaker equalization (for mimicking or adapting outer-ear characteristics), 3-D audio rendering, acoustic scene visualization, automatic mixing and psycho-acoustical processing.

This special issue focuses on technical challenges of assisted listening from a signal processing perspective. Prospective authors are invited to contribute tutorial and survey articles that articulate signal processing methodologies which are critical for applying assisted listening techniques to mobile phones and other communication devices. Of particular interest is the role of signal processing in combining multi-media content, voice communication and voice pick-up in various real-world settings.

Tutorial and survey papers are solicited on advances in signal processing that particularly apply to the following applications:

- Assistive listening devices, hearing aids and personal sound amplifiers
- Communication devices
- Hearing protection and active noise control
- Navigation systems

These can include the following suggested topics as they relate to the above applications:

- Signal processing for robust sound acquisition:
 - o Speech enhancement / intelligibility improvement
 - o Speech separation / separation of non-stationary signals
 - o Reverberation reduction
 - o Array signal processing, and distributed sensors
 - o Multi-modal acquisition methods
- Signal processing for acoustic rendering:
 - o Signal spatialization / 3D sound / automatic mixing
 - o Motion compensation (head tracking, gps systems)
 - o Environment-sensitive intelligibility improvement
 - o Techniques for natural sound in headphones

Submission Process

Articles submitted to this special issue must contain significant relevance to advanced acoustic signal processing enabling assisted listening. All submissions will be peer reviewed according to the IEEE and Signal Processing Society guidelines for both publications. Submitted articles should not have been published or be under review elsewhere. Manuscripts should be submitted online at <http://mc.manuscriptcentral.com/sps-ieee> using the Manuscript Central interface. Submissions to this special issue of the IEEE SIGNAL PROCESSING MAGAZINE should have significant tutorial value. Prospective authors should consult the site <http://www.signalprocessingsociety.org/publications/periodicals/spm/> for guidelines and information on paper submission.

Important Dates: Expected publication date for this special issue is **March 2015**.

Time Schedule	Signal Processing Magazine
White paper (4 pages) due	February 10, 2014
Invitation notification	February 24, 2014
Manuscript submission due	May 15, 2014
Acceptance notification	July 8, 2014
Revised manuscript due	August 20, 2014
Final acceptance notification	September 20, 2014
Final material from authors	November 8, 2014 (strict)
Publication date	March 2015

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