



CALL FOR PAPERS

IEEE Transactions on Signal Processing

Special Issue on Signal Processing Aspects of Brain Imaging

Recent developments in measurement devices have made it possible to monitor very small time varying physiological changes in the working human brain using dedicated sensitive physical measurement principles. These devices include EEG/MEG, EIT, fMRI and PET, as well as combinations of EEG/fMRI, EEG/PET. These techniques have tremendously increased our knowledge of the human brain and provided new diagnosis techniques in clinical applications. They have also given rise to new fundamental problems in statistics and signal processing, which commonly exist in the different imaging modalities. Examples of the earliest solutions that originated from the signal processing community are MUSIC,

beamforming techniques and (non-linear) parameter estimation algorithms.

A similar scientific and technological development can be depicted for other physiological measurements, using the same equipment. We solicit papers dealing with brain imaging aspects using different modalities and signal processing solutions. Papers dealing with other physiological signals are also encouraged. The goal is to extract the most reliable and relevant information from the raw data given hardware specifications.

The list of topics includes but is not limited to:

- Reconstruction or source localization problems.
- Integration of results obtained with different techniques into a single model.
- Modeling and estimation of phenomena like habituation effects, etc.
- The question of whether, where and when two time varying data sets are statistically significantly different (thereby accounting for the multiple comparison problem).
- Treatment of spatially and temporally correlated background noise.
- The question of whether different parts of the brain are (non-linearly) correlated.
- Computation of (non-linear) correlations between electric/heamodynamic brain sources.
- The problem of the physiological interpretation of these signals.
- Artefact removal problem.
- Time/frequency analysis.

Schedule

Opening manuscript submission	February 1, 2004
Manuscript submission deadline	September 30, 2004
Final manuscript decision	March 30, 2005
Final manuscript due	April 30, 2005
Tentative publication date	September 2005

Submission procedure

Authors must prepare their manuscripts according to the information for authors provided through the Manuscript Central on the web at <http://sps-ieee.manuscriptcentral.com>. When selecting a paper type, authors MUST click on "Brain Imaging 2005 Special Issue." In addition, the title "Signal Processing Aspects of Brain Imaging" should be entered in the field labeled "Please enter any additional keywords related to this submitted manuscript." This is so that the paper is properly assigned to a Guest Associate Editor. All requirements detailed in the information for authors shall be operative, including overlength page charges and color charges. Note that we require a complete copyright form to be signed and faxed to 1-732-562-8905 at the time of submission. Please write the paper number on the top of the page.

Guest Editors

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