

Call for Papers

IEEE Signal Processing Magazine

Special Issue on Geophysical Signal Processing

Guest Editors

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Geophysical signal processing has a long and fruitful history: its beginnings can be found in early attempts at MIT to separate seismic signals from noise, inspired by the work of such early pioneers such as Norbert Wiener and Y.W. Lee. During the sixties and into the seventies there were many close contacts between geophysicists developing seismic SP technology and electrical engineers who, while concerned with quite different applications, nevertheless based their work on similar fundamentals. In more recent times, however, these close contacts appear to have been lost. The present special issue is an attempt to renew the “dialogue” between these two communities. We invite papers from both groups with a hopefully broad appeal to geophysicists as well as to the signal processing community at large.

Processing, analysis and interpretation of geophysical data in general and seismic data in particular is one of the key elements of exploration for new oil and gas fields as well as development and production of the existing fields. Many advances in signal processing techniques have made processing and manipulation of geophysical data more effective, and have led to more useful data. This special issue will highlight some of the recent successful applications of novel signal processing techniques to geophysical problems. We envision a group of contributions to provide overview tutorials of the current state of the art in geophysical signal processing.

This Call for Papers invites researchers and practitioners to contribute tutorial-style articles that cover a broad range of topics related to geophysical signal processing, with an emphasis on exploration geophysics. Example topics include but are not limited to:

- Seismic image processing
- 1D and 2D deconvolution
- Signal/Noise enhancement
- Linear and nonlinear inverse problems
- L_p Optimization methods
- Supervised and unsupervised neural networks
- Pattern recognition

- Seismic attributes and their relationship to subsurface features in the earth
- Radon transforms (called tau-p analysis in exploration geophysics)
- Inverse scattering approaches
- Attenuation of seismic reverberations
- Compressive sensing applications for data acquisition and simultaneous shooting
- Beyond alias regularization of multi-dimensional seismic wavefields
- Wavelet transform, data compression, data mining
- Signal processing for micro-seismic (earthquake) and other geophysical data

Submission Procedure:

Prospective authors should submit 4-page white papers to IEEE Signal Processing Magazine online manuscript submission website at <http://mc.manuscriptcentral.com/spmag-ieee>. Please follow the instructions on <http://www.signalprocessingsociety.org/publications/periodicals/spm/> when preparing the white paper.

Schedule:

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| • White paper due | February 15, 2011 |
| • Invitation notification | March 15, 2011 |
| • Manuscript due | June 15, 2011 |
| • Acceptance notification | November 15, 2011 |
| • Final manuscript due | December 15, 2011 |