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IEEE Signal Processing Magazine

Special Issue on Recent Advances in Synthetic Aperture Radar Imaging

This Special Issue seeks to review progress in synthetic aperture radar imaging which has been made possible through new algorithms and enabling hardware. It serves to capture the approaches propelling recent cutting-edge research and scholarly activities in SAR Imagery.

SAR has become a valuable tool for civilian remote sensing applications as well as for military surveillance and reconnaissance. SAR operations can take place in all weather and times. SAR data can provide key information about the scene which can be extracted e.g. from the polarimetric features, the phase variation over time, and the reflectivity dependency on frequency. A wide variety of air- and space based sensors for long and short range operation has been realized, operating at frequencies extending from VHF to the upper millimeter wave region. Spectacular missions like the Shuttle Radar Topographic Mission, the TanDEM-X satellite pair and the COSMO/SkyMed constellation have underscored the unique and important role of SAR. In addition to the basic SAR modes, across- and along track interferometry have been established. Multi-band operations and the full polarimetric scattering matrix have been effectively utilized.

We encourage paper submissions that highlight recent trends and applications of SAR imaging. We welcome contributions showing the marked improvements in SAR imaging and the attributes of efficient data acquisition, fast image computations, high image resolution, and effective image segmentations. This Special Issue aims to present the new developments in radar imaging related to polarimetry, bi- and multi-static sensors including MIMO architectures, novel focusing techniques and algorithms, compressive sensing and sparse imaging reconstructions, and other forthcoming radar imaging techniques. Air- and spaceborne SAR systems and techniques will also be considered.

The topics of interest include, but are not limited to

- Recent advances in SAR polarimetry
- Multiple Pass differential interferometry
- SAR tomography, three and multidimensional SAR imaging
- Compressive sensing for radar imaging
- SAR surveillance of urban areas
- Bistatic SAR
- MIMO SAR

The articles covering any of the above topics or others should be tutorial, provide comprehensive surveys, and appeal to a broad audience. Prospective authors should provide comprehensive and balanced coverage of all important issues related to the topic, rather than only focusing on their own work.

Timeline for the Special Issue

Schedule

- White paper due: July 15, 2013
- Invitation notification: August 7, 2013
- Manuscript due: October 15, 2013
- Acceptance notification: November 31, 2013
- Revised manuscript due: December 30, 2013
- Final Acceptance notification: January 31, 2014
- Final manuscript due: February 25, 2014
- Publication data: July 2014

Submission

White papers, limited to four double-space pages, should summarize the motivation, the significance of the topic, a brief summary, an outline of the content, and key references. Prospective authors should use the web submission system at: http://mc.manuscriptcentral.com/spmag-ieee.

Guest Editors

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