SPOTLIGHT ISSUE: CALL FOR PAPERS

Insights and Opportunities in Ultrasound Imaging Algorithms

Submission Deadline: January 15, 2024

Ultrasound imaging has become increasingly important in the healthcare field as it enables accurate, non-invasive diagnosis and monitoring of diseases. Thanks to recent breakthroughs in imaging technology, machine learning, and artificial intelligence, research activities on ultrasound imaging algorithms have intensified at an unprecedented scale and this research topic is expected to have a growing impact on healthcare applications. To showcase the state of the art in ultrasound imaging algorithms, including image fusion techniques that involve integration of ultrasound with other modalities, a Spotlight Issue entitled "*Insights and Opportunities in Ultrasound Imaging Algorithms*" is being organized by the *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*. This issue aims to collect original research, tutorials, full-length reviews, and perspective papers (mini reviews) to promote the publication and dissemination of a wide range of technical knowledge on the theme of ultrasound imaging algorithms and its integration with other modalities.

This Spotlight Issue will focus on innovative data processing techniques and algorithms, integration of ultrasound imaging with other modalities, and quantitative analysis of ultrasound images for improved diagnosis and monitoring of disease. The processing and analysis of various forms of ultrasound data will be considered, including clinical ultrasound images, beamformed radiofrequency datasets, and pre-beamforming channel datasets. Specific topics of interest include, but are not limited to, the following:

1) **Innovative data processing techniques and algorithms:** deep learning-based approaches for segmentation and classification, reconstruction algorithms for ultrasound imaging, non-linear techniques for speckle reduction, Bayesian inference-based approaches for uncertainty quantification, virtual reality-based visualization and interaction techniques, etc.

2) **Integration of ultrasound imaging with other modalities:** ultrasound-based multimodal imaging techniques for improved anatomical and functional imaging, ultrasound-guided interventions using augmented reality, combined ultrasound and optical imaging for improved tissue characterization, etc.

3) **Quantitative analysis of ultrasound images for improved diagnosis and monitoring of disease:** automated measurement of tissue properties, ultrasound-based biomarker quantification for diagnosis and treatment monitoring, functional ultrasound imaging for brain activity mapping and monitoring, etc.

Original research manuscripts submitted to this Spotlight Issue are expected to be full-length articles that report new and significant research advances, with feasibility and advantages demonstrated experimentally. Manuscripts that only present theory and simulations without practical experimentation will not be aligned with the focus of this Spotlight Issue.

All contributions must be submitted online via https://mc.manuscriptcentral.com/tuffc-ieee, the Manuscript Central system of *IEEE Transactions on UFFC*. When submitting, authors must select the manuscript type as "Spotlight." The authors need to distinguish their manuscript from a regular submission. In the "Cover Letter" section, authors should state that the submission is intended for the Spotlight Issue on Ultrasound Imaging Algorithms, and they should highlight how their manuscript is topically aligned with at least one of the three sub-themes described above.

All manuscripts will be peer-reviewed. The submission deadline is January 15, 2024, with an expected publication date in the 4th quarter of 2024. Potential contributing authors are encouraged to contact the guest editors to propose specific submission topics that are aligned with the scope of this Spotlight Issue. The Guest Editors are:

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