IEEE Signal Processing Society

CALL FOR PAPERS

IEEE Signal Processing Magazine

Special Issue on Hypercomplex Signal and Image Processing

Novel computational signal and image analysis approaches based on feature-rich mathematical/computational frameworks continue to push the limits of the technological envelope, thus providing optimized and efficient solutions. This special issue seeks to offer broad coverage of the theme with an emphasis on techniques and applications – in any scientific field (mathematics, physics, computer science, engineering, chemistry, biology, medicine, etc.) – that focus on the analysis of signals and images in the hypercomplex domain, the advantages over conventional approaches, and related arising research questions. **Submissions of comprehensive reviews and tutorial articles of methodological advances are strongly encouraged**. **Contributions on the interface of methodological approaches and applications as well as purely application-oriented submissions are also encouraged**.

The **objectives** of the special issue are to: **a)** present theoretical and computational concepts from the hypercomplex domain related to signal and image processing in an accessible style, **b)** demonstrate the benefits of developing solutions in a unified framework for algebra and geometry utilizing hypercomplex numbers, **c)** be well-aligned with contemporary research paradigms on the interface of computer science, engineering, and mathematics, with the widest possible scope within the current trends in signal and image processing, and **d)** stimulate researchers in developing novel solutions to pressing research issues.

Topics of interest

Pertinent to communication, audio, speech, biomedical, physiological, and other **signals**, as well as natural, biomedical, remote sensing, and other **images**, the topics of interest – in the hypercomplex domain – include, but are not limited to:

- Integral transforms and applications in signal and image analysis.
- Clifford algebras and dimensionality reduction for signal analysis.
- Color and grayscale image processing.
- Generalized analytic signals in image processing.
- Tensor decompositions for signal processing and pattern recognition.
- Machine learning, including deep learning and graph neural networks.
- Geographic information systems.
- Embedded systems design and prototyping.
- Specialized applications: image compression, image encryption, image authentication, point clouds, remote sensing, compressed sensing, hyperspectral image processing, biomedical data analysis, robotics, speech recognition, computer vision, virtual reality, etc.

Important Dates

- White papers (4 pages) due: March 1, 2023
- Invitation notification: April 15, 2023
- Full manuscripts due: September 1, 2023
- First review results and decision notification: November 1, 2023
- Revised manuscripts due: January 1, 2024
- Second review results and decision notification: March 1, 2024
- Final manuscripts due: April 1, 2024
- Publication due: **July 2024 issue**

White papers are required and full articles are invited based on the review of white papers. The white paper format is up to 4 pages in length, including the proposed title, motivation, and significance of the topic, an outline of the proposed paper, and representative references. An author list with contact information and short bios should also be included. **Submitted articles must be of tutorial/overview/survey nature, written in an accessible style, and have a significant relevance to the scope of the special issue. The submitted articles should provide novel insights but also explain complex concepts in a way that is easily accessible to the non-expert audience**. All submissions are peer-reviewed according to the IEEE Signal Processing Magazine guidelines. Submitted manuscripts should not have been published previously nor be under consideration for publication elsewhere.

Manuscripts should be submitted online: http://mc.manuscriptcentral.com/sps-ieee
Guidelines: https://signalprocessingsociety.org/publications-resources/ieee-signal-processing-magazine/information-authors-spm

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