Call for Papers
IEEE Signal Processing Society
IEEE SIGNAL PROCESSING MAGAZINE

Special Issue on Intelligent Signal Processing for Affective Computing

Affective Computing has matured over its roughly two-and-a-half decades coming closer than ever to the point of usage at large. Once entering into everyday usage, Affective Computing has the potential to massively change how we interact with computing and robotic devices: They will be able to respond more appropriately to our emotions and moods, and able to show signs of empathy through mimicry, but may also use affective information for retrieval or their own creativity. Affective Computing becoming truly robust also has the potential to massively change mental health care, once computing systems are able to monitor our wellbeing or potential depression, or, just as a further example, children's development. In most if not all of these and manifold further applications, however, reliable assessment of affect and affective behavior is key. A major breakthrough in the field – as has been the case in many related intelligent signal processing problems – came with the advent and increasing usage of deep learning and further novel techniques of machine intelligence for signal processing. Likewise, end-to-end learning from the raw signal or shallow time-frequency representations and more general unsupervised representation learning are frequently encountered if not omnipresent in today's literature on Affective Computing. In addition, generative adversarial approaches and transfer learning exploiting pre-trained neural networks is on the rise, going as far as using image-pretrained convolutional networks for the representation of audio or physiology data. The latter is triggered by the field's ever-dominating bottleneck of sufficient training data. While such approaches led to an impressive number of successes in boosting performances, it came at the price of 1) a major change in the processing of affective signals in a 2) often reduced transparency in the signal processing and decision-making parts. The lower explainability can be attributed to self-learnt, generated, and transferred representations and increasing data-injection both into the signal representation, but also signal pre-processing parts, such as source separation or signal restauration and enhancement.

This Special Issue seeks to offer broad coverage of Intelligent Signal Processing for Affective Computing with an emphasis on techniques that focus on machine learning for signal pre-processing and signal representation, their combination with model-based and conventional approaches and related arising questions. Submissions of comprehensive overviews of methodological advances are encouraged, as well as more application-oriented contributions. Articles should provide new insights to the problem that is of interest to many areas of signal processing, explain complex concepts and subjects in a way that is easily accessible to the general, non-expert audience, and offer the value of bringing the magazine's readers quickly to a new area.

Topics of interest include (but are not limited to):

- Intelligent Affective Signal Processing and combination with model-based approaches in Affective Computing
- Adversarial Affective Signal Processing, Transfer, and Automatic and Reinforced Learning for Affective Signals
- Intelligent Multimodal/-sensorial Affective Signal Fusion
- Context-embedding in Affective Signal Processing
- Explainable Affective Signal Processing, Trustability, and Human Acceptability of Affective Signal Processing
- Applications (e.g., in digital health, psychology and psychiatry, education, edutainment, HCI/HRI, security)

Submission Process

The Special Issue seeks to offer broad coverage of the field including most recent developments in both theory and applications. Submissions of comprehensive overviews of methodological advances are strongly encouraged, as well as papers dealing with new and emerging applications. All submissions will be peer reviewed according to the IEEE and Signal Processing Society guidelines. Submitted articles should not have been published or be under review elsewhere. Manuscripts should be submitted online at http://mc.manuscriptcentral.com/sps-ieee using the Manuscript Central interface, see http://www.signalprocessingsociety.org/publications/periodicals/spm/ for guidelines and information.

Important Dates

White papers (4 pages) due: November 1, 2020
Invitation notification: November 15, 2020
Full length manuscripts due: January 15, 2021
First review to authors: March 5, 2021
Revision due: May 1, 2021
Final decision: July 1, 2021
Final package due: August 3, 2021
Publish manuscript: **November 1, 2021**

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