Call for Papers
IEEE Signal Processing Magazine

Special Issue: Innovation Starts with Education

Signal processing (SP) is at the very heart of our digital lives, owing to its role as the pivotal development technology across multiple disciplines. Its prominence in modern data science has created a necessity to supply industry, government labs, and academia with graduates who possess relevant crucial signal processing expertise and are well equipped to deal with the manifold challenges in current and future applications. To this end, both the ways to deliver the educational content and the core Signal Processing curriculum need to be revisited and integrated into Engineering and Computer Science degrees, to provide hands-on skills, experience, and inspiration for students.

Signal processing education in today's universities is largely influenced by three modern trends: 1) the availability of competing and complementary online and multimedia resources; 2) the fact that we live in a world in which the amount and diversity of information we generate, process and analyse is growing ever faster; 3) the explosive growth of computing power, and the rapid development of new technologies for implementing both analog and digital signal processing. These trends offer both opportunities and challenges, which we can, and must, exploit in charting dynamically adjustable courses that attract a high level of student engagement while offering a mix of essential background physics, intuition, mathematical rigor, and practical applicability of the taught material.

With such initiatives underway at many universities world-wide, this special issue aims to facilitate both keeping abreast with SP education and exploring innovative and participatory ways to present the educational materials. In effect, we cannot assume that students will be able to appreciate the scope and relevance of their courses without explicitly building a bridge between the material presented in class and cutting-edge research, societal, and practical impact of their education. This includes the convergence of educational material with other disciplines (machine learning, data science, big data, bioengineering, artificial intelligence, finance and many others).

This special issue will revolve around three general and most pressing aspects of modern SP education:

o **How to educate differently (better).** This includes the use of available technology, bringing research into the classroom, web resources, experiential learning, and massive open online courses (MOOC).
o **Student engagement**, such as ways to enhance student creativity and curiosity, student satisfaction issues, various forms of assessment and metrics, engagement of under-represented population, and outreach drives.
o **Promotion of the societal impact of SP,** including privacy, ethical and security concerns, wearable devices and eHealth, global interconnections through IoT, and impact on climate change, global economy and finance.

Topics of interest include but are not limited to:

- Mitigation of issues related to the perceived difficulty of traditional SP courses, such as strategies on how to teach SP with less maths and how to attract attendees from non-engineering departments.
- The use of emerging technologies and technologically orientated classroom, such as MOOC and web resources.
- Metrics for success of education delivery in the After Online Technology (AOT) era.
- Using the principles of signal processing to improve teaching and research in related areas, such as machine learning, bioengineering, artificial intelligence and optimization, and vice versa.
- Curricular changes to meet contemporary demands from industry, such as using practically relevant problems, exploring feasible extensions and new applications of the taught material, and curiosity driven learning.
- Preparing students for life-long learning, teaching life-long fundamentals of SP, and relevance of SP with respect to technological advance.
- Challenges and solutions in industry-run courses; design of short courses offered by academia for industry, Government Agencies and National Defence.
- Role of mentorship and initiatives to encourage and motivate students in research experiences.
- Promoting creativity in learning, especially when applying the concepts with "opportunity windows" to explore entrepreneurship and possible product developments, and cross-disciplinary aspects of our work.

Submission Process. Original submissions will be reviewed according to the guidelines as set out in the IEEE Signal Processing Magazine, and should be submitted online at http://mc.manuscriptcentral.com/sps-ieee. Prospective authors should initially submit short White Papers, as indicated below, which will be reviewed by Guest Editors. Authors of successful White Papers will be invited to submit full-length manuscripts, which will undergo the usual reviewing process in accordance with the schedule outlined below.

White Papers (up to 4 pages) due: March 1, 2020	Decision on White Papers: April 1, 2020
Full length manuscripts due: June 1, 2020	Review results and decision: August 1, 2020
Revised manuscripts due: September 15, 2020	Acceptance notification: November 1, 2020
Final manuscripts due: December 1, 2020	**Publication date: March 1, 2021**

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Please contact Danilo Mandic for any initial questions concerning this Special Issue.