



Happy New Year to All

May the year 2023 bring everyone closer to the fulfilment of their dreams. We have left behind a year marked with successes on multiple fronts, including health and technology as well as a year filled with proud people risking their lives for freedom. In particular, two big movements have captured our hearts: the fierce resistance of Ukrainian people against the Russian invasion of their country, and the pro-democracy uprising in Iran with women in the lead. I would like to express my sympathy to our colleagues and students who were affected by these events. I would also like to salute our members who are supporting those fighting for their basic rights. May freedom prevail!

Happy 75th year to the IEEE Signal Processing Society (SPS)! This year, the SPS celebrates 75 years of groundbreaking contributions to the field of signal processing, and we have several events planned.

Through its publications, conferences, technical activities, education offerings, and member services, SPS continues to catalyze advances in signal processing. Let me use this column to update you on the state of the SPS and the initiatives that we are pursuing this year.

Technical areas

In order to have strong impact in emerging areas and also broaden the Society's exposure outside of its traditional community, the SPS creates *megatrend initiatives* representing large trending

technical areas that are relevant to many technical committees (TCs) and prospective TCs within the Society. The current SPS megatrend initiatives are the autonomous systems initiative (ASI) and the data sciences initiative (DSI).

The ASI aims at highlighting the central role of signal processing in the design and development of autonomous systems. This is a multidisciplinary area, cutting across artificial intelligence, robotics, and the Internet of Things, just to mention a few. A webinar series on ASI topics started in November 2022. The main role of the DSI is to coordinate the activities of the various TCs on data science. Data science is a central theme in signal processing. Different from computer science or statistics, signal processing deals with a specific type of data, i.e., signals. By exploiting a priori information about structure in problems/data, signal processing contributes to "structured data science". It also contributes connections to physical applications, e.g., 3D audio, radar, and ultrasound, and computational platforms and scenarios, e.g., distributed computing, edge computing, and wireless networks. The DSI started a very successful webinar on graph signal processing and established a working group that works with the Education Board on incorporating topics around data science in academic and postacademic education curricula.

Standards activity

The IEEE SPS Synthetic Aperture Standards Committee (SASC) continues to experience steady growth and increasing

interest from the research community. Most recently, the SASC hosted a half-day workshop in October 2022 with invited speakers who presented their work on topics such as advanced synthetic aperture radar, nonline-of-sight optical imaging through keyholes, wideband all-digital radar architectures, Fourier ptychography, and phase-retrieval techniques in microscopy, microwave power beaming, and magnetic resonance imaging. Activities such as the workshop have helped raise awareness of how synthetic apertures are deployed across a wide range of imaging applications. The SASC currently consists of the existing P3199 Synthetic Aperture Sonar Working Group, P3162 Synthetic Aperture Channel Sounding Working Group, P3339 Synthetic Aperture Radiometry Working Group, and Synthetic Aperture Radar Study Group. In the pipeline for expected approval in 2023 by the IEEE Standards Association Standards Board are the Medical Imaging Study Group and the Field-Portable Synthetic Apertures Working Group. The steady growth of the SASC is a testament to the need for market-driven standards in this technology space and increasing awareness among researchers from academia and industry that there is synergy among all synthetic aperture applications. There is always room for similar initiatives around standardization.

Membership

SPS membership comprises 14% students, 11% graduate students, and 75% higher-grade members. The overall SPS membership increased throughout 2022,

driven by the growth in student membership in Asia-Pacific Region 10. We are very excited about this influx of new talent and are doing our best to make the SPS the preferred professional home for all members, students, and professionals throughout their professional careers.

Conferences

SPS conferences are growing. After a very successful three-part 2022 International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2022), which we thought had broken all records, ICASSP 2023 is emerging as yet another record

breaker. The conference, set to take place in Rhodes Island, Greece, 4–9 June 2023, received approximately 6,000 submissions, which is more than a 50% increase from last year! This is a strong indication of the great relevance of the topics covered at ICASSP to the hottest technical trends, and the strength and dynamism of our community.

Indeed, ICASSP is the home of cutting-edge research in many areas, including speech and language processing, audio and acoustic signal processing, machine learning for signal processing and communications, image, video, and multidimensional signal processing. ICASSP 2023 is introducing, for the first time, satellite workshops, which will foster a cross-discipline exchange of ideas and promote focused events in topics at the cutting edge of our field. We expect that these will become permanent features in future ICASSPs.

The current efforts on strengthening our conferences target increased industry participation. Industry involvement has progressively increased in the last ICASSPs, and at ICASSP 2022, there was an industry program that was nicely incorporated into the technical program. It comprised a full parallel industry track, with its corresponding open call for participation, high-profile industry keynote speakers, industry ex-

pert sessions, industry workshops, and show-and-tell demos.

The SPS started looking into ways to enable signal processing-related discoveries to impact applications. Toward that end, the SPS is now offering an Entrepreneurship Forum in conjunction with ICASSP, aiming to promote entrepreneurship among the signal processing community by sharing entrepreneurship journeys, discussing challenges and

opportunities in translating signal processing research into commercial applications, providing a forum for pitching, and ultimately training a new generation of signal processing

entrepreneurs. The first Entrepreneurship Forum was held at ICASSP 2022 with great success.

SPS publications

The SPS has 11 SPS-owned or SPS-managed journals, receiving a total of 10,000 submissions per year and publishing approximately 2,500 papers per year. The two largest journals are *IEEE Signal Processing Letters (SPL)* and *IEEE Transactions on Image Processing (TIP)*. In 2021, *SPL* received 2,559 papers and published 494, while *TIP* received 2,465 and published 638. To deal with the large numbers of paper submissions and improve the timeliness of SPS journals, a new paper handling model was implemented for *TIP* via the introduction of deputy editor-in-chief positions.

The SPS has an open access journal: *IEEE Open Journal of Signal Processing (OJ-SP)*. *OJ-SP* recently introduced new paper categories; in addition to regular papers, it now accepts short (eight-plus-one-pages long), overview, and dataset/competition/challenges papers.

Starting with ICASSP 2023, but continuing for the 2023 International Conference on Information Processing, we began connecting *OJ-SP* as a way for ICASSP authors to submit longer pages (eight plus one) rather than four plus one, and also allow for an open access

option for authors, while the important dates are aligned with the ICASSP review dates. For ICASSP 2023, more than 30 submissions were received by *OJ-SP*. This was the first experiment to link SPS conferences to SPS journals, and more such efforts will follow. This would be in addition to the Society's existing process where authors of all signal processing journals, including *OJ-SP*, have the opportunity to present their paper at the Society's conferences within a year of publication.

The SPS also has 24 financially or technically cosponsored journals. This past year, we added the *Journal on Indoor and Seamless Positioning and Navigation* (open access), *IEEE Transactions on Radar Systems* (hybrid), and *IEEE Transactions on Machine Learning in Communications and Networking* (open access).

SPS visibility

We are considering additional ways to increase the visibility of signal processing as improved visibility will bring more talent in signal processing, and will also improve the diversity of the people entering the field. The possible directions include a sustained presence in mainstream media via blogs and articles, highlighting new developments in simple language that can be understood by the non-technical public.

We are also planning outreach activities to precollege students and their teachers worldwide. We have started a kindergarten through 12th grade (K–12) Outreach Initiative Program, which funds teams to develop exciting signal processing-related projects that be incorporated into the classroom, providing students with hands-on signal processing experiences. The funding is given after a competitive process, during which the teams have to submit a proposal. Successful proposals demonstrate to students how signal processing concepts are ideated and executed and how they impact the world. Additionally, the program is designed to create a pipeline of students who will enter universities to pursue a signal processing-related degree. The

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SPS encourages the development of K–12 outreach efforts that can bring the awareness of signal processing to all students, including those who belong to groups that are underrepresented in science, technology, engineering, and mathematics fields regionally and/or globally.

Digital strategies for education

A strategic goal of the SPS is to offer continuing education short courses. The courses started at ICASSP 2022 and were more in-depth than tutorials, providing a deep and multisided understanding of a topic. Professional development certificates for training hours are provided upon completion of the course and quiz. The Education Board created an Education Center Editorial Board comprised of three cluster groups according to topics and categories to act as a peer-review body to vet content and provide a stamp of approval and validation of future content/course material. They are working toward establishing an SPS academy or portal for continuing education.

The Education Board started working with Interface Guru to develop an education portal. The exercise identified our user population and its potential needs, with a focus on education prior to creation of the portal. This is an exciting project that will span all of our areas: education, publications, conferences, and membership. The next steps are as follows: curation of

content in the Resource Center to identify related topics, creation of related course bundle packages for professional development certificates, creation of the SPS Education Academy/SPS Education Zone and development of a dedicated site/portal/presence on the SPS main site.

The SPS Education Webinar program grew significantly in 2022, when we offered a total of 55 webinars. Some webinars are author solicitations/invitations based on IEEE *Xplore* article analytics, and some are arranged by the various TCs and SPS initiatives. In 2022, webinars were organized by the Computational Imaging TC, Information Forensics and Security TC, Bio Imaging and Signal Processing, and SPS Data Science Initiative [Data sciEence on GrAphS (DEGAS) Webinar].

The SPS Scholarship

The IEEE SPS Scholarship Initiative is being established to generate excitement and interest in the fields of interest of the SPS. The program aims to support industry needs for more signal processing expertise by providing financial support to undergraduate and graduate students committed to pursuing signal processing education, and subsequently, careers. The scholarship is meant for qualifying undergraduate and graduate students worldwide.

The intent is not only to support potential signal processing students but

generate interest and awareness among employers in industry, government, and academia about the value of investing in signal processing students and potential employees as assets to their companies, organizations, and institutions.

Ethics

We are working on developing ethics guidelines for the Society's publications, which are important because there are security and privacy concerns in the many areas that the Society works, e.g., images, biometric data and datasets, and also reproducibility concerns in the research we produce. A committee has been created, including the chairs or representatives of SPS technical committees, and other SPS members, who will work to develop the Society's own ethics guidelines.

I am excited to work with all SPS volunteers this year toward making all these initiatives a success and would like to invite you to support our efforts.

Acknowledgment

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FROM THE EDITOR (continued from page 4)

about him and his publications on his webpage: <https://techjohnedwards.com>.

He confided in me, "It has been an honor and a privilege to contribute to *IEEE Signal Processing Magazine*." It has been a great pleasure and a good fortune for *SPM*. Thank you so much, John!

Appendix: Related articles

[A1] B. Wen, S. Ravishankar, Z. Zhao, R. Giryes, and J. Chul Ye, "Physics-driven machine learn-

ing for computational imaging," [From the Guest Editors], *IEEE Signal Process. Mag.*, vol. 40, no. 1, pp. 26–28, Jan. 2023, doi: 10.1109/MSP.2022.3222888.

[A2] J. Acevedo and A. Oppenheim, "The magical art of technical presentations," [Perspectives], *IEEE Signal Process. Mag.*, vol. 40, no. 1, pp. 15–21, Jan. 2023, doi: 10.1109/MSP.2022.3200449.

[A3] A. K. Roonizi, "Fourier analysis: A new computing approach," [Lecture Notes], *IEEE Signal Process. Mag.*, vol. 40, no. 1, pp. 182–190, Jan. 2023, doi: 10.1109/MSP.2022.320386.

[A4] J. Edwards, "Signal processing comes to the senses," [Special Reports], *IEEE Signal*

Process. Mag., vol. 40, no. 1, pp. 22–25, Jan. 2023, doi: 10.1109/MSP.2022.3202327.

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- [1] R. Couillet, D. Trystram, and T. Ménéssier, "The submerged part of the AI-Ceberg [Perspectives]," *IEEE Signal Process. Mag.*, vol. 39, no. 5, pp. 10–17, Sep. 2022, doi: 10.1109/MSP.2022.3182938.
- [2] A. Petropulu, "Starting the ethics discussion in our community [President's Message]," *IEEE Signal Process. Mag.*, vol. 39, no. 6, pp. 4–5, Nov. 2022, doi: 10.1109/MSP.2022.3198299.

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