SPS Fellows and Award Winners Recognized

In this column of *IEEE Signal Processing Magazine*, 41 IEEE Signal Processing Society (SPS) members are recognized as IEEE Fellows and award recipients are announced.

41 SPS members elevated to IEEE Fellow

Each year, the IEEE Board of Directors confers the grade of Fellow on up to one-tenth of one percent of the voting members. To qualify for consideration, an individual must have been a Member, normally for five years or more, and a Senior Member at the time of nomination to Fellow. The grade of Fellow recognizes unusual distinction in IEEE's designated fields.

The SPS congratulates the following 41 members who were recognized with the grade of Fellow as of 1 January 2021.

Ahmed M.A. Ali, for leadership in high-speed analog-to-digital converter design and calibration.

Achintya Bhowmik, for leadership in perceptual augmentation devices.

Danijela Cabric, for contributions to the theory and practice of spectrum sensing and cognitive radio systems.

Jianfei Cai, for contributions to multimedia transmission and content analysis.

Chan-byoung Chae, for contributions to multiple-input, multiple-output (MIMO) design and prototypes for emerging communication systems.

Jingdong Chen, for contributions to microphone array processing and speech enhancement in noisy and reverberant environments.

Gene Cheung, for contributions to graph spectral image processing and interactive video streaming.

David Donoho, for contributions to sparse signal acquisition and processing.

Sharon Gannot, for contributions to acoustical modeling and statistical learning in speech enhancement.

Yifan Gong, for leadership in creating cloud speech recognition services in industry.

Wolfgang Heidrich, for contributions to high-dynamic-range display and computational cameras.

Xudong Jiang, for contributions to face and fingerprint image recognition.

Lori Lamel, for contributions to automatic speech recognition.

Kyoung Mu Lee, for contributions to image restoration and visual tracking.

Chunming Li, for contributions to computer vision and medical image analysis.

Houqiang Li, for contributions to video coding and multimedia content analysis.

Jiandong Li, for leadership in heterogeneous self-organizing wireless networks.

Yang Liu, for contributions to speech-understanding and language-learning technology.

Le Lu, for contributions to machine learning for cancer detection and diagnosis.

Matthew McKay, for contributions to random matrix theory in statistical signal processing.

Tomohiro Nakatani, for contributions to far-field signal processing for speech enhancement and recognition.

Hanchuan Peng, for contributions to the visualization and quantitative analysis of large-scale biological data.

Ruhi Sarikaya, for leadership in spoken-language-processing and conversational understanding systems.

Gesualdo Scutari, for contributions to distributed optimization in signal processing and communications.

Ling Shao, for contributions to computer vision and representation learning.

Guangming Shi, for contributions to image representation and reconstruction.

Hyundong Shin, for contributions to the analysis and design of wireless communication and networking.

Ivan Tashev, for contributions to audio signal processing systems and algorithms for commercial microphone arrays.

Wolfgang Utschick, for contributions to signal processing algorithms for multiantenna communications systems.

Luisa Verdoliva, for contributions to multimedia forensics.

Tuomas Virtanen, for contributions to sound event detection and source separation.

Pascal Vontobel, for contributions to graphical models for channel coding.

Michael Wakin, for contributions to sparsity-based signal processing and compressive sensing.

Meng Wang, for contributions to multimedia content analysis and retrieval.

Yingxu Wang, for contributions to real-time autonomous systems.

Yongyi Yang, for contributions to medical image recovery and analysis.

Birsen Yazici, for contributions to synthetic aperture radar and passive imaging.

Junsong Yuan, for contributions to human behavior understanding and video analytics.

Xiao-Ping Zhang, for contributions to signal processing in finance.

Gan Zheng, for contributions to the optimization and design of multiuser multiantenna communications.

Xiaoxiang Zhu, for contributions to artificial intelligence and data science in Earth observation and global urban mapping.

The following individual was evaluated by the SPS but was not a Society member:

Animashree Anandkumar, for contributions to theory and applications in signal processing, machine learning, and artificial intelligence.

2020 SPS Awards

The SPS congratulates the following members who will receive the Society's prestigious awards during ICASSP 2021.

Ali H. Sayed

The Norbert Wiener Society Award honors outstanding technical contributions and leadership in a field within the scope of the SPS. The Norbert Wiener Society Award includes a plaque, a certificate, and a monetary award of US$2,500. It is the highest-level award bestowed by the SPS. This year's recipient is Ali H. Sayed, "for contributions to adaptive and statistical signal processing and outstanding leadership in the Signal Processing Society."

Jose Carlos Principe

The Claude Shannon–Harry Nyquist Technical Achievement Award is presented this year to Jose Carlos Principe, "for fundamental contributions to adaptive learning systems." The Claude Shannon–Harry Nyquist Technical Achievement Award honors a person who, during a period of years, has made outstanding technical contributions to theory and/or practice in technical areas within the scope of the Society, as demonstrated by publications, patents, and a recognized impact in this field. The prize for the award is US$1,500, a plaque, and a certificate.

Louis L. Scharf

The Carl Friedrich Gauss Education Award honors educators who have made pioneering and significant contributions to signal processing education. Judging is based on a career of meritorious achievement in signal processing education as exemplified by the writing of scholarly books and texts, course materials, and papers about education; inspirational and innovative teaching; and creativity in the development of new curricula and methodologies. The award comprises a plaque, a monetary award of US$1,500, and a certificate. The recipient of the Carl Friedrich Gauss Education Award is Louis L. Scharf, "for sustained contributions to education and mentorship in statistical signal processing."

Henrique S. Malvar

The Amar G. Bose Industrial Leader Award recognizes an industry leader whose work has resulted in major and outstanding advances and new directions in a business area using signal processing technologies within the scope of the Society. The prize consists of US$1,500, a plaque, and a certificate. The recipient of the Amar G. Bose Industrial Leader Award is Henrique S. Malvar, "for contributions to multimedia signal processing and industrial research leadership."

James D. Johnston

Karlheinz Brandenburg

Jürgen Herre

The Industrial Innovation Award is presented this year to James D. Johnston, Karlheinz Brandenburg, and Jürgen Herre, "for contributions to the standardization of audio coding technology." The Industrial Innovation Award recognizes industry individuals and teams whose technical contributions have resulted in significant advances using signal processing technologies within the scope of the Society. Winners are selected based on major industrial accomplishments, standards, and deployments of important processes and products that are of substantial benefit to the public, use signal processing technologies, and visible beyond the companies and institutions where the contributions are made. The award is open to individuals at any level who played a significant role in the technical contribution at the time of the accomplishments being recognized. The prize includes US$1,500 per awardee (up to a maximum of US$4,500 per award), a plaque, and a certificate.

Emil Björnson

Piya Pal

The Pierre-Simon Laplace Early Career Technical Achievement Award honors an individual who, through a period of years in his/her early career, made significant technical contributions to theory and/or practice in technical areas within the scope of the Society, as demonstrated by publications, patents, and a recognized impact in the field,

including but not limited to a standard, a product, and a technology trend. The award includes a plaque, a monetary prize of US$1,500, and a certificate. The recipients of the Pierre-Simon Laplace Early Career Technical Achievement Award are Emil Björnson, "for contributions to signal processing for communications and research reproducibility," and Piya Pal, "for innovative contributions to sparse array design and fundamental performance limits of sparse inverse problems."

Bestowed this year for the first time, the Best Ph.D. Dissertation Award recognizes relevant signal processing doctoral work that stimulates further research in the field. The award consists of US$1,500 and a certificate. The recipients of the Best Ph.D. Dissertation Award are Ayush Bhandari and Tianyi Chen.

Ayush Bhandari

Tianyi Chen

The IEEE Signal Processing Magazine Best Paper Award honors the author(s) of an article of exceptional merit and broad interest on a subject related to the Society's technical scope and appearing in the Society's magazine. The prize consists of US$500 per author (up to a maximum of US$1,500 per award) and a certificate. In the event that there are more than three authors, the maximum prize is divided equally, and all authors receive a certificate. This year, the IEEE Signal Processing Magazine Best Paper Award recipients are Marco F. Duarte, Mark A. Davenport, Dharmpal Takhar, Jason N. Laska, Ting Sun, Kevin F. Kelly, and Richard G. Baraniuk, for their article "Single-Pixel Imaging via Compressive Sampling: Building Simpler, Smaller, and Less-Expensive Digital Cameras," published in the *IEEE Signal Processing Magazine* March 2008 issue.

The IEEE Signal Processing Magazine Best Column Award honors the author(s) of a column of exceptional merit and broad interest on a subject

related to the Society's technical scope and appearing in the Society's magazine. The prize includes US$500 per author (up to a maximum of US$1,500 per award) and a certificate. In the event that there are more than three authors, the maximum prize is divided equally among all authors, each of whom receives a certificate. This year, the IEEE Signal Processing Magazine Best Column Award recipients are Ljubiša Stanković, Srdjan Stanković, and Miloš Dakovic, for the article "From the STFT to the Wigner Distribution," published in the May 2014 issue of *IEEE Signal Processing Magazine*.

The Sustained Impact Paper Award honors the author(s) of a journal article of broad interest that has had an impact through many years on a subject related to the Society's technical scope. The prize consists of US$500 per author (up to a maximum of US$1,500 per award) and a certificate. In the event that there are more than three authors, the maximum prize is equally divided, and all authors receive a certificate. To be eligible for consideration, an article must have appeared in one of the SPS transactions or in *Journal of Selected Topics in Signal Processing* in an issue predating the Spring Awards Board meeting (which is typically held in conjunction with ICASSP) by at least 10 years. This year, the Sustained Impact Paper Award recipients are Yariv Ephraim and David Malah, for "Speech Enhancement Using a Minimum Mean Square Error Short-Time Spectral Amplitude Estimator," published in *IEEE Transactions on Acoustics, Speech, and Signal Processing*, vol. 32, no. 6, December 1984.

The Donald G. Fink Overview Paper Award honors the author(s) of a journal article of broad interest that has had substantial impact for several years on a subject related to the Society's technical scope. A paper considered for the award should present an overview of a method or theory with technical depth and application perspective. It should have a multiyear record of impact and be relevant to current researchers and/or practitioners. The prize is US$500 per author (up to a maximum of US$1,500 per award) and a certificate. This year,

the Donald G. Fink Overview Paper Award recipients are Robert W. Heath Jr, Nuria González-Prelcic, Sundeep Rangan, Wonil Roh, and Akbar M. Sayeed, for "An Overview of Signal Processing Techniques for Millimeter Wave MIMO Systems," which appeared in *IEEE Journal of Selected Topics in Signal Processing*, vol. 10, no. 3, April 2016.

Four Best Paper Awards were awarded, honoring the author(s) of a paper of exceptional merit dealing with a subject related to the Society's technical scope and appearing in one of the Society's transactions, irrespective of the author's age. The prize is US$500 per author (up to a maximum of US$1,500 per award) and a certificate. Eligibility is based on a six-year window preceding the year of election, and judging is based on general quality, originality, subject matter, and timeliness. Up to six Best Paper Awards may be presented each year. This year, the awardees are:

■ Po-Sen Huang, Minje Kim, Mark Hasegawa-Johnson, and Paris Smaragdis, "Joint Optimization of Masks and Deep Recurrent Neural Networks for Monaural Source Separation," *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 23, no. 12, December 2015.

■ Stefania Sardellitti, Gesualdo Scutari, and Sergio Barbarossa, "Joint Optimization of Radio and Computational Resources for Multicell Mobile-Edge Computing," *IEEE Transactions on Signal and Information Processing Over Networks*, vol. 1, no. 2, June 2015.

■ Di Wen, Hu Han, and Anil K. Jain, "Face Spoof Detection With Image Distortion Analysis," *IEEE Transactions on Information Forensics and Security*, vol. 10, no. 4, April 2015.

■ Grégoire Mesnil, Yann Dauphin, Kaisheng Yao, Yoshua Bengio, Li Deng, Dilek Hakkani-Tur, Xiaodong He, Larry Heck, Gokhan Tur, Dong Yu, and Geoffrey Zweig, "Using Recurrent Neural Networks for Slot Filling in Spoken Language

Understanding," *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 23, no. 3, March 2015.

The Young Author Best Paper Award honors the author(s) of an especially meritorious paper dealing with a subject related to the Society's technical scope and appearing in one of the Society's transactions and who, upon submission of the paper, is younger than 30. The prize is US$500 per author (up to a maximum of US$1,500 per award) and a certificate. Eligibility is based on a four-year window preceding the year of election, and judging is based on general quality, originality, subject matter, and timeliness. Six Young Author Best Paper Awards are being presented this year:

■ Joshua Rapp, for the paper coauthored with Vivek K. Goyal, "A Few Photons Among Many: Unmixing Signal and Noise for Photon-Efficient Active Imaging," *IEEE Transactions on Computational Imaging*, vol. 3, no. 3, September 2017.

■ Bo Li, for the paper coauthored with Athina P. Petropulu and Wade Trappe, "Optimum Co-Design for Spectrum Sharing between Matrix Completion Based MIMO Radars and a MIMO Communication System," *IEEE Transactions on Signal Processing*, vol. 64, no. 17, September 2016.

■ Ying Sun, for the paper coauthored with Prabhu Babu and Daniel P. Palomar, "Majorization–Minimization Algorithms in Signal Processing, Communications, and Machine Learning," *IEEE Transactions on Signal Processing*, vol. 65, no. 3, February 2017.

■ Yuki Saito and Shinnosuke Takamichi, for the paper coauthored with Hiroshi Saruwatari, "Statistical Parametric Speech Synthesis Incorporating Generative Adversarial Networks," *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 26, no. 1, January 2018.

■ Santiago Segarra, for the paper coauthored with Antonio G. Marques, Gonzalo Mateos, and Alejandro Ribeiro, "Network Topology Inference From Spectral Templates," *IEEE Transactions on Signal and Information Processing Over Networks*, vol. 3, no. 3, September 2017.

■ Xiang Wu, for the paper coauthored with Ran He, Zhenan Sun, and Tieniu Tan, "A Light CNN for Deep Face Representation With Noisy Labels," *IEEE Transactions on Information Forensics and Security*, vol. 13, no. 11, November 2018.

The IEEE Signal Processing Letters Best Paper Award honors the author(s) of a letter article of exceptional merit and broad interest on a subject related to the Society's technical scope and appearing in *IEEE Signal Processing Letters*. The prize consists of US$500 per author (up to a maximum of US$1,500 per award) and a certificate. To be eligible for consideration, an article must have appeared in *IEEE Signal Processing Letters* in an issue predating the Spring Awards Board meeting by five years. Judging is based of technical novelty, research significance, and quality and effectiveness in presenting subjects in an area of high impact to the Society's members. The recipients of the IEEE Signal Processing Letters Best Paper Award are Justin Salamon and Juan Pablo Bello, for "Deep Convolutional Neural Networks and Data Augmentation for Environmental Sound Classification," published in *IEEE Signal Processing Letters*, vol. 24, no. 3, March 2017.

2020 Chapter of the Year Award
The SPS Delhi Chapter has been selected as the recipient of the 2020 Chapter of the Year Award, which will be presented at the ICASSP 2021 awards ceremony in Toronto, Canada. The award is annually presented to Chapters that have provided their membership with the highest-quality programs, activities, and services. The SPS Delhi Chapter will receive a plaque and a check in the amount of US$1,000 to support its local activities. The Chapter will publish an article in a future issue of *IEEE Inside Signal Processing eNewsletter*.

SPS members receive 2021 IEEE Awards
The IEEE James L. Flanagan Speech and Audio Processing Technical Field Award will be presented to David Nahamoo "for contributions and leadership in research and deployment of spoken language technologies."

The IEEE Fourier Award for Signal Processing will be presented to K.J. Ray Liu "for outstanding leadership in and pioneering contributions to signal processing for wireless sensing and communications."

The IEEE Kiyo Tomiyasu Award will be presented to Zhu Han "for contributions to game theory and distributed management of autonomous communication networks."

The IEEE Eric E. Sumner Award will be presented to En-hui Yang "for contributions to the theory and practice of source coding."

The IEEE Marie Sklodowska-Curie Award will be presented to Michel Defrise "for key developments in image reconstruction for positron emission tomography and X-ray computer tomography."

The IEEE Innovation in Societal Infrastructure Award will be presented to Elisa Bertino "for advancing the security and privacy of new-generation cellular networks."

IEEE has announced the recipients of the 2021 IEEE medals, which are the highest-honor awards it presents. The medals will be given at the 2021 IEEE Honors Ceremony. Three SPS members have been awarded an IEEE medal for 2021. The IEEE Jack S. Kilby Signal Processing Medal for outstanding achievements in signal processing will be presented to Emmanuel Candès, Terence Tao, and Justin Romberg "for groundbreaking contributions to compressed sensing."

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