

2020: A Year of Transformative Change and Conquering Adversity

Leila De Floriani, 2020 IEEE Computer Society President



IEEE Computer Society Past President Leila De Floriani looks back at 2020 and her term as president.

The year 2020 was a time of obvious challenges that our Society, its leadership, volunteers, members, and staff confronted together. Collectively, we did not just merely survive last year—we found new creative and innovative ways to thrive and move forward. The year 2020 was marked by our battles with COVID-19, but, more importantly, it was a year filled with great accomplishments as the IEEE Computer Society (CS) successfully achieved our financial sustainability goals; laid the groundwork for diversifying representation in our community; further streamlined our governance; expanded our open access publications portfolio; pivoted to successful virtual conferences; and created new volunteer recognition, education, industry,

and standards programs and initiatives. It was my great honor and privilege to serve as CS president during this year of extremes. Thus, I wanted to take this opportunity to share with all of you some of our achievements in 2020 that resulted from the efforts of the 2020 Board of Governors (Figure 1), of the 2020 CS Executive Committee (Figure 2), of Executive Director Melissa Russell, and of the entire Society staff.

PROMOTING GREATER DIVERSITY AND INCLUSION

A fundamental 2020 goal was to identify ways to expand diversity and inclusion (D&I) in all areas of the CS, including diversifying individual representation by gender, ethnicity, geographic location, age, professional sector, and technical area of computing. There is a clear lack of women and other minorities within our communities,

and the CS needs to make a significant impact on this large disparity of representation. The 2020 effort on D&I has been expansive across the entire Society, with the enthusiastic support of the Board of Governors members and members of all CS boards and committees, the deep involvement of numerous CS staff members, and the dedication of senior manager for CS Communities and Technical Activities, Brookes Little. A major achievement last year was the creation of a permanent CS Committee on D&I, which aims to coordinate and promote activities across the CS that serve and engage underrepresented groups in computer science and engineering. A dedicated fund was established by the CS at the end of 2020 and approved by the IEEE Foundation to advance the Society's efforts to promote, expand, and celebrate D&I within the computer science and engineering fields.



FIGURE 1. The 2020 IEEE CS Board of Governors members. Front row (from left): Grace Lewis, Dimitrios Serpanos, Riccardo Mariani, Forrest Shull, Leila De Floriani, Cecilia Metra, Sy-Yen Kuo, David Lomet, and Melissa Russell. Second row: Andy Chen, Carlos Jimenez-Gomez, David Ebert, Yervant Zorian, Kunio Uchiyama, Christina Schober, and Fabrizio Lombardi. Third row: Ramalatha Mariimuthu, Ernesto Cuadros-Vargas, Fred Douglis, John Johnson, and Saurabh Bagchi. Fourth row: Erik Jan Marinissen, Nils Aschenbruck, William Gropp, and Brian Blake.



FIGURE 2. The 2020 IEEE CS Executive Committee members. Front row (from left): Sumit Kacker, Dimitrios Serpanos, Riccardo Mariani, Forrest Shull, Leila De Floriani, Cecilia Metra, Sy-Yen Kuo, David Lomet, and Melissa Russell. Second row: Michelle Tubb, Eric Berkowitz, William Gropp, Yervant Zorian, Fabrizio Lombardi, and Christina Schober. Third row: Sunny Hwang and Anne Marie Kelly.

In 2020, a new interview series—*Women in STEM*—featuring famously successful women who have shaped the computer science and engineering fields was created to encourage young

and midcareer women to pursue leadership roles in the future. Interviews were promoted via email, social media, the CS's *Insider Newsletter*, and on the newly created CS webpage for D&I. At

least 10 interviews were published in 2020, and a new series of video interviews was launched as well. Collaborations have been expanded with IEEE Women in Engineering (WIE) through

the “Returning Mother Project,” led by Board of Governors member Ramalatha Marimuthu. The CS Board of Governors agreed to join the IEEE WIE pledge to work toward gender-diversified panels at all IEEE meetings, conferences, and events, including our own. In the wake of the George Floyd incident in the United States, a member feedback campaign was launched, encouraging members to provide suggestions for improving D&I within the organization. Also, a Board of Governors ad hoc committee was formed, chaired by Vice President Riccardo Mariani, to produce recommendations against the use of racist, biased, and culturally insensitive language in journal and conference articles, standards, websites, and other Society products.

CS boards and committees were very active in this D&I joint effort. Best practices for conferences and publications were developed by the Technical and Conference Activities (T&C) and Publication (Pubs) Boards and published on the D&I homepage. CS technical committees (TCs) allocated 20% of their budgets for D&I activities for the first time in 2020. While activities were seriously curtailed due to the pandemic, some TCs did support registration for virtual conferences and awards in support of their diversity goals. The CS Nominations Committee, chaired by 2019 President Cecilia Metra, brought forward a broad and diverse slate of officers and Board of Governors candidates that included 29% female candidates. For the first time, women were elected to all six of the available elected Board of Governors member positions. The CS History Committee, under the leadership of William Aspray, started a new oral history project celebrating the diversity in computing, with 10 interviews completed in 2020 and 20 more to come this year.

ENHANCING SOCIETY GOVERNANCE

An important effort in 2020 was to improve the efficiency and effectiveness of Society governance, with the

fundamental support of the CS Constitution and Bylaws Committee, chaired by 2021 President Forrest Shull, and with the invaluable help from CS Director of Governance Anne Marie Kelly and her staff.

The first goal was to increase bottom-up participation of our volunteer leaders in decision making and policy development. This enables expansion and diversification of our new volunteer base and creates a valuable pipeline of future leaders for the Society. In support of this goal, the chairs of the Magazine Operations Committee and Transactions Operations Committee, formerly appointed by the vice president for Publications, are now elected by the respective editors in chief, and they have been added to an enlarged CS Board of Governors.

The second goal was to simplify the structure of the various CS boards and standing committees to streamline decision making. Each of the five program boards examined its governance to identify improvements. Specifically, the Professional and Educational Activities and Membership and Geographic Activities Boards identified and successfully eliminated unnecessary positions and inactive committees and combined committees for stronger support to Society activities. The Pubs Board made revisions to its policies to streamline decision processes, while the T&C Board modified policies and processes to better support CS TCs and their leadership.

PUBLICATIONS: A SUCCESS STORY

The CS has a publication portfolio of 51 world-renowned periodicals, including 12 magazines and 18 sponsored and 21 cosponsored transactions. Under the leadership of Vice President Fabrizio Lombardi and the guidance of the CS Pubs Board and CS publication staff, led by Publisher Robin Baldwin, we made great strides forward last year. In 2020, most periodicals recorded substantial increases in impact factor; the Society now has five transactions with

an impact factor greater than six and four magazines with an impact factor above four. CS magazines received important recognitions: *IEEE Software* won the 2020 APEX Award and a 2020 Folio Eddie & Ozzie Award; *IEEE Security & Privacy* was a runner-up for both awards, and *Computer* also won a Folio award. In 2020, we saw also a record number of submissions, with a nearly 30% increase over 2019.

In addition to existing publications, in 2020, the CS introduced *IEEE Open Journal of the Computer Society (OJ-CS)*, a gold-level open access publication offering an accelerated peer-review process of the highest quality, and *IEEE Transactions on Artificial Intelligence*, cosponsored with three other IEEE Societies. In both cases, 2020 data suggest that they will be leaders in their technical fields. The Society also implemented an open access option for magazine authors, thus making the entire publication portfolio, except for OJ-CS, made of all hybrid titles.

Submission-to-decision delays have been considerably reduced while still retaining very competitive acceptance standards through a rigorous and professional review process. Despite the economic situation wrought by a global pandemic, the CS made an extraordinary investment in substantially expanding the number of allocated pages to its publications. This commitment will considerably reduce the queue to move accepted manuscripts from early-release to final-publication status.

In 2020, we focused on the issues of open science and reproducibility (making data and software tools open as research products) through a new Reproducibility Ad Hoc Committee, chaired by Manish Parashar, editor in chief of *IEEE Transactions on Parallel and Distributed Systems*. The CS has taken the lead in this area through pilot cases in conferences and transactions. The committee conducted a survey of reproducibility activities in the CS among editors in chief and conference organizers and developed a road map based on the recommendations of the National Academies of Sciences,

Engineering, and Medicine for professional societies, including case studies, tools, and sustainable revenue models.

CONFERENCES: THE VIRTUAL EXPERIENCE

Conferences are the major focus of the T&C Board, which faced many challenges and achieved important successes under the leadership of Vice President William Gropp and the fundamental contribution of the CS Conference and Technical Communities staff. Conferences have a fundamental importance in computer science and engineering, and, in many technical areas, they are the preferred publication venue. The pandemic disrupted everyone's plans in 2020, with conference organizers often scrambling to determine how to safely hold their meetings and deciding how to quickly pivot to all-virtual events. By working closely with the CS Conference staff, more than 120 conferences last year moved successfully to fully virtual formats, 10 became hybrid (virtual and in person), and 10 more opted for publication-only models. The conference and the marketing teams, led by Silvia Ceballos and Michelle Tubb, respectively, developed a new virtual event resource center and marketing tools to aid conference organizers in their transition to the virtual format. The resource center received considerable interest also from other IEEE Societies. A successful example was IEEE Quantum Week, which pivoted from a live event to virtual in its first year. Quantum organizers used CS services for registration, proceedings, marketing, planning, and virtual on-site support and had more than 800 paid registered attendees. The CS IT team, led by Sumit Kacker, initiated a pilot project for hosting video and multimedia content to support virtual conferences, thus also enhancing the CS Digital Library with new content.

Through a difficult year of rapid transition, conference organizers discovered some benefits of virtual conferences, including large increases in attendance and, maybe even more importantly, an impressive increase in geographic and gender diversity of

the audience. The combined efforts by CS staff and volunteer organizers kept conferences vibrant and successful. This experience has changed how conferences are organized, and the lessons learned will improve conferences going forward, even (or especially) after the end of the current pandemic.

DELIVERING MEMBER VALUE AND IMPROVING SATISFACTION

The Membership and Geographic Activities Board, under the leadership of Vice President Yervant Zorian and with the fundamental contributions from CS Director for Membership and Geographic and Education Activities Eric Berkowitz and his team, accomplished a number of notable achievements in 2020. Despite the global pandemic, the CS finished the 2020 membership year with a 2.8% increase over 2019. We serve a community of more than 100,000 computer scientists and IT professionals located in 168 countries around the world. CS Chapters serve as the foundation for meeting member needs at the local level. As of mid-November 2020, 17 new Chapters had been created, bringing the total number of global CS Chapters to 558.

The Distinguished Visitor Program shifted its focus and began delivering talks online, completing 14 lectures for close to 8,000 attendees. Our Students and Young Professionals Committee developed a "Build Your Career" webinar series with an emphasis on soft-skill development, and they held six talks, reaching approximately 6,000 early-career professionals.

A new member recognition program was developed, focusing on recognizing and rewarding members for their technical contributions and their service to the CS and the computing community at large. Members, including affiliates, shall be eligible for recognition as Distinguished Contributors of the CS. The program, which was announced and presented to the CS community at the end of 2020, starts this year with the nomination of the first CS Distinguished Contributors.

The grade of IEEE Fellow recognizes unusual distinction in the profession. I congratulate the 46 IEEE CS Members and 12 IEEE Members who were elevated to IEEE Fellow grade in 2020, and I want to thank the 2019 and 2020 CS Fellow Evaluating Committee chairs, Ahmed Louri and Ming Lin, and all committee members for their service in the rigorous review and selection of these luminaries.

The CS last year recognized 19 outstanding professionals with Society awards for their contributions to the profession (see <https://www.computer.org/volunteering/awards/award-recipients>). Six awardees were recognized at their associated technical conferences in virtual presentations, while all of the others will be honored at this year's ceremony. My thanks to Paolo Montuschi for his dedicated service and tireless efforts as the Awards Committee chair from 2017 to 2020.

Under the leadership of our IT director, Sumit Kacker, and Board of Governors member Carlos E. Jimenez-Gomez, the CS translated key pages of the <https://www.computer.org> website into multiple languages to better engage with our non-English-speaking members around the world. In 2020, we kicked off this project with the translation of the introductory and membership pages into Chinese and Spanish, with plans to expand to more languages and pages this year.

We continued our efforts in recognizing the work and the dedication of our more than 7,000 volunteers around the world. Our marketing team launched a volunteer recognition campaign, *Volunteer Highlights*, that provided CS volunteers with an opportunity to share their motivations for being involved with the Society and highlight their activities. In 2020, we also surveyed our editors in chief and associate editors regarding their volunteer experience and satisfaction. While they told us that just the appointment as an editor is their most valued recognition, the Society is currently considering some form of additional appreciation for their important work and vast contributions.

IMPROVING AND EXPANDING OUR EDUCATION ACTIVITIES

The Professional and Educational Activities Board, under the leadership of Vice President Sy-Yen Kuo and with the fundamental contribution of the CS Education staff, consolidated and expanded its activities in 2020. The *Guide to the Software Engineering Body of Knowledge (SWEBOK)* was revised by including new timely topics, such as artificial intelligence (AI) and security. A cybersecurity certification training course in collaboration with the International Institute of Business Analysts was also successfully completed.

To meet member needs during the onset of COVID-19, the CS made its online library of education material available at no cost, and nearly 1,000 courses were downloaded as of mid-November 2020. The Professional Education Products Committee, chaired by Board of Governors member Brian Blake, developed a plan for professional education, identifying relevant contemporary topics and proposing a subscription to broaden CS educational offerings.

We completed and released the Computing Curricula 2020 report, a four-year project with the Association for Computing Machinery to overview computing as a discipline and provide linkages to the various computing curricula documents that have been developed and endorsed by various professional societies. We also completed a program accreditation cycle through our membership in the Computer Science Accreditation Board.

EXPANDING STANDARDS ACTIVITIES AND PROMOTING INDUSTRY ENGAGEMENT

The CS Standards Activities Board (SAB), under the leadership of Vice President Riccardo Mariani, continued to pursue its multiyear objective of extending the contribution of the Society in the standardization of

emerging technologies. The Society had 21 project authorization requests (PARs) active, with several others recommended for approval by the IEEE SA New Standards Committee, including PARs on data compression, smart manufacturing, blockchain, and distributed learning. Results of 2020 also include kicking off IEEE Standard P2851 (about an exchange/interoperability format for safety analysis and safety verification) and proposing the establishment of three new standards committees by the IEEE SA Board: the Functional Safety Standards Committee, AI Standards Committee, and Online Gaming Standards Committee. To highlight the role the CS plays in developing standards, in 2020, the CS SAB started a series of webinars, and the first of these were on the Software and Systems Engineering Standards Committee and on the IEEE 802 local area network/metropolitan area network set of standards.

A new Industry Engagement Committee was started last year, under the leadership of Board of Governors member Kunio Uchiyama, as a CS SAB committee, focused on recommending policies to increase industry engagement and promoting CS activities to industry. In 2020, the committee launched the IEEE InTech Forum, a brand-new conference targeted at industry, which was offered virtually and focused on critical technologies and research developed in response to COVID-19.

GREAT ACCOMPLISHMENTS ALL AROUND IN 2020

Despite its unique challenges, 2020 was a year of important accomplishments in publications, conferences, and all CS services and products. And thanks to the careful stewardship of our treasurer, David Lomet, and director of finance, Sunny Hwang, we accomplished all of this while exceeding our original budgeted surpluses for the third year in a row.

It was a privilege as well as a daunting responsibility and a lot of work to be president during such challenging times, but all of these achievements were only possible through the extraordinary support and dedication of the entire CS staff and collaboration of our volunteer leadership. My deep gratitude goes to Executive Director Melissa Russell for her enthusiastic support and tireless collaboration and to Associate Executive Director Anne Marie Kelly for her invaluable help and outstanding efforts.

Throughout the year, I relied on the continuous support and inspiring collaboration of Cecilia Metra, 2019 CS president, and Forrest Shull, 2021 CS president, whose leadership on the CS Planning Committee last year resulted in an exciting new three-year strategic plan for the Society. I also benefited greatly from the advice and help of Hironori Kasahara, 2018 CS president.

Thanks to all of the members of the 2020 Executive Committee; of the 2020 Board of Governors, all CS boards and committees, the TC chairs, the editors in chief, the Chapter chairs, and all of our dedicated volunteers and members for their ideas, contributions, and collaboration that made the Society's success possible. Lastly, I want to wish 2021 President Forrest Schull the greatest success during his year as CS president—as our Society celebrates its 75th anniversary. 🎉

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