Institute of Electrical and Electronics Engineers

Systems, Man, and Cybernetics Society

Report 2020

January 30, 2021

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PRESIDENT'S MESSAGE

We are over the terrible pandemic 2020, a year that we will never forget and will remember as the one when the world turned upside down. Starting the New Year what could be more actual than the words of Alfred Tennyson:

"Hope Smiles from the threshold of the year to come,

Whispering 'it will be happier'…".

So, my message for 2021 is:

Smile and Hope!

Turning to a new year the terms of some Society Officers and Board of Governor members end.

I would like to thank the valued service and contribution of the outgoing Vice Presidents:

Ferat Sahin	VP Finance
Adrian Stoica	VP System Science and Engineering
Sam Kwong	VP Cybernetics
Enrique Herrera Viedma	VP Publications,

and the outgoing BoG members:

Giancarlo Fortino,	David Mendonca
Peng Shi,	Thomas Strasser
Tadahiko Murata,	Ying (Gina) Tang.

I would like to thank also the long-term high-level contributions and services of the outgoing Editor in Chiefs:

Mariagrazia Dotoli	E-Newsletter
David Kaber	Transactions on Human-Machine Systems.

Many thanks to the other, remaining members of the Executive Committee and the Board of Governors. The Society operation strongly relies on the work of our dedicated volunteers, as well. I am inspired by their commitment to SMCS, I am grateful to them for serving our members, from students to professors.

I would like to introduce a new tradition in the Society starting with this present report. At the beginning of the new year the main activities of the previous one shall be summarized and published. The report could provide more information to our members and bring them closer to the everyday activities of the governance.

Our Society would not exist without our members. I thank them all their contributions, I hope they will remain active members of our SMCS family.

I hope that we will continue to work together in 2021 for the benefit of the SMC Society in a friendly, collegial, and productive way.

I wish you and your family good health! Take care!

GOVERNANCE - IMRE RUDAS

The pandemic due to the coronavirus has brought us new challenges; the Society life has been turned to virtual from the beginning of March.

BOARD OF GOVERNANCE MEETINGS 2020
Meeting Series Mexico City 2020
       February 19: SMCS Affiliated Institutes network
       February 20: Workshop on Advanced Intelligent Systems
       February 21: IEEE SMC Society Outreach Workshop
       February 22-23: ExCom Meeting
Online BoG meeting July 3, 2020
Online ExCom meeting September 2, 2020
Online BoG meeting October 11, 2020

GOVERNANCE
Congratulations to the newly elected members, denoted by red color.

Executive Committee Voting Members				
1	President	Imre	Rudas	2021
2	President-Elect	Sam	Kwong	2021
3	Jr. Past President	Edward	Tunstel	2021
4	Sr. Past President	Dimitar	Filev	2021
5	VP Systems Science and Engineering	Thomas	Strasser	2022
6	VP Human-Machine Systems	Fei-Yue	Wang	2021
7	VP Cybernetics	Enrique	Herrera Viedma	2021
8	VP Membership and Student Activities	Karin	Panetta	2022
9	VP Organization and Planning	Vladimir	Marik	2021
10	VP Conferences and Meetings	Andreas	Nuernberger	2021
11	VP Publications	Peng	Shi	2022
12	VP Finance	Gina	Tang	2022
Non-voting members				
	Secretary	Tom	Gedeon	2021
	Treasurer	Vladik	Kreinovich	2021
	Executive Assistant	Valeria	Garai	2022

Board of Governors Members at Large					Term
Saeid Nahavandi	Yo-Ping Huang	Tom Gedeon	Okyay Kaynak	Adrian Stoica	2021
Daoyi Dong	Mariagrazia Dotoli	György Eigner	Shun-Feng Su	Vladik Kreinovich	2022
Ferial El-Hawary	Tiago Falk	Francesco Flammini	Giancarlo Fortino	Ferat Sahin	2023

Publications	Editor-In-Chief	Term
IEEE Trans on Cybernetics	Philip Chen	2022
IEEE Trans on SMC: Systems	Robert Kozma	2022
IEEE Trans on Human-Machine Systems	Ljiljana Trajkovic	2023
IEEE Trans on Computational Social Systems	Bin Hu	2022
E-Newsletter	Dongrui Wu	2023
Magazine	Saeid Nahavandi	2022

Associate Vice Presidents and Secretary			
1	Conferences and Meetings	Daoyi Dong	2021
2	Systems Science and Engineering	Haibin Zhu	2021
3	Finance	Jiacun (Jay) Wang	2021
4	Human Machine Systems	Dongrui Wu	2021
5	Publications	Xiaojie Su	2021
6	Organization and Planning		2021
7	Membership and Student Activities		2021
8	Cybernetics		
9	Associate Secretary	György Eigner	2021

ORGANIZATION & PLANNING - VLADIMIR MARIK

1. Fulfillment of the IEEE SMC Annual Operational Plan 2019 was evaluated in detail, after communication with all the ExCom members and some MAL BOG members in January 2020

2. The Operational Plan 2020 was submitted to the ExCom in February 2020 during the Mexico City meeting. This plan was approved by BOG on May 24, 2020.

3. Each of the BOG members was asked to prepare his/her list of tasks for 2020 in accordance with the AOP 2020. Communication with majority of the BOG members on this topic did happen.

4. The first preliminary evaluation of the fulfillment of the AOP 2020 has started in September 2020 and will be completed at the end of January 2021 as required.

5. Discussions aimed at a new IEEE SMC Strategic Plan 2022-2026 with the O&P Committee has started in March 2020, but this was strongly influenced and delayed by the Covid situation. It is necessary to define new Vision, Mission and Values as fundaments of the New Strategic Plan. We expect that fields of interests should be revised and some of them extended. This is true especially about AI and ML areas. Inputs from all IEEE SMC members are welcome.

6. The following former Presidents were appointed by the President to serve in an ad hoc committee for developing sound ideas as a basis of the New Strategic Plan 2021-2025:
   Ljiljana Trajkovic (Chair), Dimitar Filev, Philip Chen, Mike Smith (members). All of them accepted the appointment.

7. Several new motions submitted by VP O&P were approved by the BOG.
   The most important motion concerns the positions of the Associate VP and the Associate Secretary. The main idea is to involve more volunteers into the activities helping the Society as a whole and to make the operation of the ExCom and BOG more efficient. These positions might improve the pipeline for future BoG/ExCom members – for just up to $10K total for travel expenses if required by circumstances.

Actions in the area of SMCS publications have focused on three types of activities during the past year 2020: promotion and creation of new journals, election of new Editors in Chief of our SMC magazines, and editorial activities associated with our magazines.

PROMOTION AND CREATION OF NEW JOURNALS

Together with friendly societies IEEE Computational Intelligence Society, IEEE Computer Society, IEEE Signal Processing Society and IEEE Robotics and Automation Society, and continuing with the work started by our society in 2018, we have promoted within the IEEE the creation of a new journal called *IEEE Transaction on Artificial Intelligence (TAI)*. It received the go-ahead at the beginning of 2020 and saw the light in February 2020, being led at that time by Prof. Hussein Abbass from University of New South Wales (Australia), as Founding EiC agreed by all driving societies of the project. Prof. Okyay Kaynak and Prof. Shun-Feng Su were designed by our society to be members of the Management Committee of TAI.

ELECTION OF NEW EDITORS IN CHIEF OF OUR SMC MAGAZINES

Throughout the year 2020, the VP Publications, Prof. Enrique Herrera-Viedma, together with the Publications Committee have developed the different selection processes for the appointment of the new EiCs of all the journals of our society. At the beginning of the year, the EiCs of three of our main journals, IEEE Transactions on SMC: Systems, IEEE Transaction on Cybernetics, and IEEE SMC Magazine were appointed, with Prof. Robert Kozma (College of Information and Computer Sciences, University of Massachusetts, USA), Prof. Philip Chen (School of Computer Science and Engineering, South China University of Technology, China) and Prof. Saeid Nahavandi (Institute for Intelligent Systems Research and Innovation, Deakin University, Australia) , being appointed as EiCs, respectively. In the middle of the year, we celebrated the election of the EiC of the IEEE Transactions on Computational Social Systems, being appointed Prof. Bin Hu (School of Information Science and Engineering, Lanzhou University, China). At the end of the year we have appointed the new EiCs of the journals, IEEE Transactions on Human-Machine Systems and IEEE eNewsletter, Prof. Ljiljana Trajkovic (School of Engineering Science, Simon Fraser University, Canada) and Prof. Prof. Dong Rui Wu (Huazhong University of Science and Technology, China), respectively. We would like to express our appreciation to the outgoing EiCs of each of the aforementioned journals, Prof. Philip Chen, Prof. Jun Wang, Prof. Mo El-Hawary, Prof. Fei-Yu Wang, Prof. Dave Kaber and Prof. Mariagrazia Dotoli, respectively, for the great volunteer work done directing each of the respective journals.

EDITORIAL ACTIVITIES ASSOCIATED WITH OUR MAGAZINES

We are going to briefly comment on the most relevant aspects and editorial activities developed by our journals during 2020:

IEEE SMC eNewsletter: During the past year 2020, two issues of the eNewsletter were published, containing many news on the SMC society organization, on the society publications, call for papers and participation to conferences, and information on job openings. The distribution of the Newsletter to all SMCS members was done using the IEEE eNotice tool sending messages including html hyperlinks of all news, which improved accessibility of posts to readers.

IEEE SMC Magazine: IEEE SMC Magazine published four issues in 2020. A total of 21 peer reviewed papers were published. 17 papers were received that went under peer review process. 12 papers were accepted for publication. Each paper received at least three reviews before a decision was passed by the Associate Editor to the EiC for the final decision. One issue was turned into an open access publication. Each issue also published a number of Society specific news items for the benefit of members. An Special Section on "Brain–Machine Interface Systems" coordinated by Prof. Ljiljana Trajkovic was published. This special section of IEEE SMC Magazine contains contributions on a timely research topic: brain–machine inter-face (BMI) systems. The section was solicited by the late Mo El-Hawary, past EiC of the magazine. It includes a pictorial view of BMI activities sponsored by the IEEE SMC Society as well as technical articles. We should highlight that IEEE SMC Magazine is indexed in the database Emerging Sources Citation Index provided by Clarivate Analytics.

IEEE Transactions on Systems, Man, and Cybernetics-Systems (TSMC-S): The journal grew dynamically in the past years both in quantity and quality. The size of TSMC-S is almost doubled in the past 3 years from 3,400 pages in 2017, to 5,500 pages in 2020. We plan to publish 8,000 pages in 2021. As for quality, the increase is also dynamic; the Impact Factor

increased from 5.13 in 2017 to 7.35 in 2018, and 9.30 in 2019, the most recent available number. Overall, TSMC-S become one of the leading journals worldwide in the following areas, based on JCR, 2020 metrics: Automation & Control Systems (#2, Q1) and Computer Science Cybernetics (#2, Q1). The number of submissions has increased notably. In 2017 TSMC-S had 1,907 submissions, which increased to 2,239 in 2018, 2,735 in 2019, and 3,135 in 2020. TSMC-S had a significant backlog of papers accepted in previous years and waiting for publication in IEEE Early Access portal. In early 2020, there were about 1,050 paper in Early Access, so the waiting time for publication after acceptance was over 2 years. One important measure is that the acceptance rate was reduced to 10%. This is very difficult task, but most of the AEs work strongly on this target. As a result, by the end of 2020, the backlog on Early Access has been reduced to about 750 papers by early 2021, and we expect to further reduce it to about 550 by the end of 2021. A special event has been the 50th Anniversary Issue of TSMC-S, commemorating January 1971, when the very first issue on IEEE TSMC has been published. An Anniversary Issue has been published in January 2021. It gives a broad vista of groundbreaking achievements published in our Transactions by many pioneers of our field. The Anniversary Issue also included sections on cutting-edge recent revolutionary progress in systems engineering, computational and algorithmic breakthroughs, as well as hardware domains and embodiments.

IEEE Transactions on Human-Machine Systems (THMS): This journal also grew in the past years both in quantity and quality. THMS received 359 submissions in 2019, which increased to 381 in 2020. As for quality, the Impact Factor increased from 5.563 in 2017 to 3.332 in 2018, and 3.374 in 2019, the most recent available number. THMS presents an acceptance rate of 16.5%. Overall, TSMC-S become one of the leading journals worldwide in the following areas based on JCR 2020 metrics: Computer Science-Artificial Intelligence (#42, Q2) and Computer Science-Cybernetics ((#6, Q2). During 2020 THMS published two special issues: "Special Issue on Agent and System Transparency" and "Special Issue on Human Interaction with Artificial Intelligence Systems: New Human-Centered Perspectives and Challenges".

IEEE Transactions on Cybernetics: Similarly*,* this journal grew in the past years in both quantity and quality. The size of Cybernetics is almost doubled in the past 3 years from 3,440 pages in 2017, to more than 5,500 pages in 2020. Its Impact Factor increased from 8.803 in 2017 to 10.387 in 2018, and 11.079 in 2019. Cybernetics is also one of our leading journals worldwide in the following areas, based on JCR, 2020 metrics: Automation & Control Systems (#1, Q1), Computer Science Artificial Intelligence (#5, Q1), and Computer Science Cybernetics (#1, Q1). In 2017 Cybernetics had 2,693 submissions, which increased to 3,244 in 2018, 3,623 in 2019, and more than 3700 in 2020. Cybernetics presents an acceptance rate around 15%. As TSMC-S, Cybernetics had a significant backlog of papers accepted in previous years and waiting for publication in IEEE Early Access portal. But that backlog has been reduced in during year 2020.

IEEE Transactions on Computational Social Systems (TCSS): In 2020, TCSS received 618 submissions, including 472 Regular Papers, 140 Special Issue Papers and 6 Technical Correspondences. The number of submissions per day in 2020 is 1.689, which increased 905.36% comparing with that before April 2017 (only 0.168 per day). Among them, final decisions have been made for 535 manuscripts in 2020, and 133 manuscripts were accepted. The page budget of TCSS in 2020 is 1500 pages, which increased 525% than that in 2017 (only 240 pages). In 2020, 6 issues including 112 articles have been published with 1499 pages. Due to page limits, there are still 47 Early Access articles, which will be published in the upcoming issues. The average articles published per issue is 18.67, which increased 455.65% comparing with that before April 2017 (only 3.36 per issue). The average pages published per issue is 249.8 pages, which increased 432.62% than that before April 2017 (only 46.9 pages per issue). In February 2020, one special issue entitled "Social Sensing and Privacy Computing in Intelligent Social Systems" was published. Currently, TCSS is indexed in the database Emerging Sources Citation Index provided by Clarivate Analytics.

MEMBERSHIP AND STUDENT ACTIVITIES – KAREN PANETTA

We have made tremendous strides with outreach and engaging our graduate student population and increasing value of membership to our professional members in 2020. We embarked on several initiatives to create more professional development webinars and co-sponsored joint events with other IEEE organizations to leverage on the power of our joint resources. Our membership recovery from the pandemic is showing significant progress since the pandemic struck in March of 2020.

The table below shows the membership snapshots. Most of the membership loss was in region 10, while regions 1-7 remained relatively stable and showed slight membership increases.

Table 1 IEEE SMC Membership trends

February 2019	October 2019	February 2020	July 2020	October 2020	January 2021
4786	5120	5344	4316	4746	4978

Below are the statistics for January 2021. IEEE SMC is on a steady recovery and members are seeking new ways to remain connected and new opportunities to strengthen their networking opportunities. Our investments in directing unused budgetary funds to support students and young professionals to attend SMC conferences as well as directing some funds for chapter level support are excellent steps forward. The IEEE SMC BoG should be commended for taking immediate action and supporting these membership initiatives.

The partnership with IEEE SIGHT (Special Interest Group on Humanitarian Technologies) was an example of utilizing existing resources within IEEE to advance the causes of our IEEE SMC members. Many members reached out to inquire whether there was funding to support projects to create low-cost ventilators, PPE and other novel aids to keep people safe and healthy. This saved us from having to administrate this submission process and do ad-hoc reviews among ourselves. The other synergistic value of this collaboration was that projects are given public visibility through corporate communications, so that SMC could get visibility for our members' wonderful contributions and promote our society.

New membership and student initiatives have continued to be developed to engage our graduate students and professionals. This includes many new webinars in partnership with other IEEE OUs. This strategy should continue and expand to include other IEEE partners.

The strategy for 2021 is to establish more interactions and collaborations with other societies and OUs while cultivating the relationships we have created including: *IEEE WIE joint events. and IEEE-HKN/SMC Diversity and Inclusion events.* This year, the MS&A committee will focus on chapter revitalization and engaging volunteers. Before we can engage volunteers, we must have strong infrastructure for them to jump on board initiatives. Other programs continuing: **Distinguished Lecturer Program:** Chair: Shun-Feng Su. The call for DLPs has been posted but still requires fresh DLP candidates & diversity.

Summarizing the challenges, we need to continue working on:

- Membership is down in R10.
- Have SMC chapters with no Chairs.
- Student chapters need mentors/advisers.
- Still very little diversity in SMC membership.
- Graduate members in R1-R6 is not strong compared to other regions.

Engagement will be the focus of membership activities for 2021 and supporting our chapters during and post-Pandemic. The Membership committee will partition the chapters and ensure that chapters have chairs, work on streamlining reporting of meetings. Our chapters are active, but simply not submitting reports, which made establishing eligible chapters for outstanding chapter awards difficult to assess.

The online repository of products and training we have provided have helped us bridge the gap to our members during this challenging Pandemic and our collaborations have proven to provide visibility for IEEE SMC and our members.

CONFERENCES & MEETINGS – ANDREAS NÜRNBERGER

The year 2020 had been quite challenging for most conference organizers. With a few exceptions, all of our 49 sponsored conferences had to find a way to organize their event in an online format, some after shifting their dates first, hoping to be able to organize a physical meeting later in the year. One of our new conferences, the 1st IEEE International Conference on Human-Machine Systems planned in April in Rome first shifted to September and finally took place quite successfully, thanks to our highly motivated organizing team, in the virtual world. Different interactive online platforms had been used to enable smooth presentations and the organizer were able to trigger a lot of creative discussions. Some of the online formats will be surely integrated into upcoming "physical" conferences in order to ensure also hybrid participation. Unfortunately, the situation is still limiting travelling and so our flagship conference SMC 2021 already had to decide that the conference, originally planned to take place in Melbourne, Australia in October, will be organized fully virtual. Despite all issues most of us are looking quite positive in the new year, as the applications for sponsorship indicates.

Some Statistics about SMCS Sponsored conferences

Year	Technically sponsored	Financially sponsored
2015	43	6
2016	45	6
2017	42	6
2018	43	6
2019	48	6
2020	44	6

Changes in the Sponsorship Application Processing

In 2020 the application processed has been revised and applications for sponsorship now will from the beginning be handled by the IEEE online system. Therefore, we require all applications to first fill the IEEE online conference application form and then submit necessary additional documents. The whole process is described at https://www.ieeesmc.org/conferences/obtaining-smc-conference-sponsorship. We hope to be able to reduce the workload for applicants by avoiding duplicate forms and the SMCS volunteers by electronic and traceable handling of applications. In case help is needed, IEEE staff and our SMCS volunteers from the Conferences and Meetings Committee (CMC) can provide assistance.

FINANCE – FERAT SAHIN, VLADIK KREINOVICH

As VP Finance for IEEE SMC Society, my main responsibilities were making sure current year Budget (2020) operations, preparations of next year's budget (2021) and coordination of new initiatives in the current year and the next year. In addition, I worked with all VPs and the President in matters which has financial impact such as publishing extra pages for backlog reduction and the staff position for helping the President.

Current Year (2020) Budget Operation

The budget of the current year has been finalized last year. This year I work with IEEE and all ExCom members so that the Society Technical Activities are carried out by the ExCom members by providing details of their budget allocations and reporting their budget line statuses. Operating Budget lines and amounts have been used successfully if the activities are not affected by the Covid-19 limitations. The activities which required in person interactions had been affected by the Covid-19 limitations. Thus, we have not spent as much as we budgeted. However, some of our income lines have also been reduced such as conference income. On the other hand, main publication incomes stayed strong and committee expenses were dramatically reduced. Thus, the 2020 budget had a significant surplus which is very promising for the future years and a sign of how strong SMC Society's finances with respect to publication, conferences and other technical activities. The forecast of the society budget has been closely watched during the year. In the third quarter, we have made an executive decision through ExCom and BoG to print extra pages for our transactions as much as our budget allows. Using the extra surplus in the budget we were able to allow our journals to print total of 3000 extra pages in the third quarter. Finally, in last quarter, we have printed some more extra pages but the exact number will be available in the publications report. It has been proven that publishing more paper in our transactions has increased our publication income through downloads, contributing to the sustainable health of the society finances.

Next Year (2021) Budget Preparations

The 2021 initial budget is created by IEEE TABS in May. Then, we have provided our societies input regarding membership fees, publication fees, page counts for the transactions and the new initiatives. We have significantly increased our page counts for our journals and built in their numbers into our budget. Compare to 2020 Budget, in 2021 we have budget 6500 more pages. The total number of page budget for our transactions is significantly increased, reaching a total of approximately 16500. This is 7000 more pages than the approximately 9500 pages we budgeted for 2020. The main page increases are seen from T-SMC Systems and T-CYB. The remaining transactions kept similar page counts and are stable. In addition, the input described above, we have also solicited operating budget proposal and new initiative proposals from Society volunteers in the ExCom and BoG. We have received several operating budget proposals and new initiative proposals. We have successfully entered all the operating budget requests. The Finance Committee has evaluated all the new initiative proposals and accepted most of them as our 3% new initiative allocation budget was close to $350K. We have submitted the operating budget proposals and the news initiative projects in to the budget. In August 2020, IEEE TAB releases the Second Pass budget for 2021 where the operating budget components are fixed. Then, later in October 2020, IEEE released the actual budget for the new initiatives. There was a significant cut in the new initiative budget. Thus, the Finance Committee has chosen new initiatives based on their impact on the society and submitted updated budget for nine projects.

CYBERNETICS – SAM KWONG

Cybernetics committee currently has 25 technical committees and most of them are actively in promoting activties for the interests of cyberentics within IEEE systems, man and cybernetics society. Details of the individual technical committees can be found at http://ieeesmc.org/technical-activities/cybernetics.

A new technical committee was established in the end of December 2020 named "AI based Smart Manufacturing Systems (AISMS)" and this TC aims at promoting interdisciplinary research, education, and international collaboration in the field of AI, smart manufacturing, and digital manufacturing. The main target is to establish a community consisting of AISMS research experts and industrial practitioners and drive relevant technology development and system implementation.

This year TC on Quantum Cybernetics was awarded best TC award for their contributions on membership promotions to 13 countries, organizing special sessions in six conferences including IEEE SMC 2020 and many other activities to strengthen the branding of the cybernetics areas of the society. TC members have been invited to deliver more than 10 invited talks at leading conferences and universities such as KTH in Sweden and ETH in Switzerland.

The activties conducted by technical committees in 2020 could be summarized as follows:

- 53 IEEE conferences

- 37 non-IEEE conferences

- Recruitment of IEEE SMC TC membership ranged from 100% to 35%. Currently has 1620 members

- Proposed 40 Special Sessions and 15 are accepted in SMC 2020

- Organized 37 special issues on variuous transactions and journals

- 9 student activites are conducted mainly in conferences

- 21 Book chapters are published

- Most of TC hold TC meetings once a year

- 7 TC has published its own newsletters

- 5 Technical committee seminars were presented

- 53 invited talks

- 1 summer school

- 7 standards

The activites organized by these technical commiteees are greatly appreciated especially under the very difficult situation of social distancing. All these credits must go to the great leadership by the chairs/co-chairs of the technical committees.

Overall, most of the activties show positive developments and the TCs are actively involved in IEEE SMC cybernetics activities. The activities are also in line with the goals and aims of the cybernetics committee. Of course, most of the TC activites are affected by the pandemic currently and we hope the situation could be improved in the second half of 2021. I would like to extend my gratitude to all our TC chairs, cochairs and members for making this possible.

SYSTEMS SCIENCE & ENGINEERING – ADRIAN STOICA

Systems Science and Engineering (SSE) - Reported for 2020, by Adrian Stoica, VP SSE, 2019-2020, on behalf of the SSE Committee, including Gina Tang (Coordinator), Daoyi Dong, Robert Kozma, Maria Pia Fanti, Enrique Herrera-Viedma, Vladik Kreinovich, Ferial El-Hawari, Saeid Nahavandi (Past Coordinator, till April 2020, started as EiC for the SMC Magazine), Chris Nemeth, Rodney Roberts and Haibin Zhu.

The year 2020 has clearly been full of surprises and challenges. It affected all of us, preventing us from meeting in person, from running traditional conferences, and from the benefit of social interactions. Social interactions are so vital for building the friendships on which many collaborations are built, for inspiring people to volunteer, for unstructured interactions between students and senior professionals. We all want to travel to locations where we can learn more about the local professional activities, as well as the culture and way of living of our colleagues in various locations around the world, to build bridges for trusting, long term international collaboration and friendship.

Despite these challenges, the SSE technical area (TA) has been resilient. We added two new Technical Committees (TCs), the 'Intelligent Systems to Human-Aware Sustainability', chaired by Gina Tang, Hui Yu, Mariagrazia Dotoli, and Congbo Li, and 'Human and Robotic Space Exploration Systems' chaired by Virgil Adumitroaie, Yumi Iwashita, and Robert Mueller, with over 100 new members, thus bringing the number of TCs to 25, and the total number of members to 1047. One should mention here that the Most Active TC Award (for the activity in 2019) went to the 'Autonomous Bionic Robotic Aircrafts' TC, chaired by Wei He, Okyay Kaynak, and Shun-Feng Su.

The Operational Plan (OP) for SSE emphasized three directions: *Development of relevant and active TCs*, *Increased TC involvement in society activities*, and *Leverage involvement outside the SMC Society*. We had good teleconferences with TC chairs, who expressed interest in increasing the TC involvement in society governance. They also expressed availability of TCs to support recruiting and mentoring of the students and young professionals. Mentoring is an important benefit we could offer to our members, and engaging TCs would bring lots of value. The TC chairs requested an increase promotion by the society of the TCs activities,– via society website, Magazine, etc.

The SSE Committee performed a study, and generated a report that determines the relevant areas of growth in SSE, in which new technical activities are needed, and new TCs could be established. The following areas made the top of the list: 'Autonomous and Adaptive Systems', 'Collaboration Systems', 'Smart Systems', 'Virtual Reality Systems', 'AI Systems'. Also, of particular relevance during the pandemic, is 'Telepresence and Avatars'. To provide the exposure to members, and to stimulate formation of TCs, several measures were recommended, such as a calling for Proposals for TCs and organizing Conferences and Summer Schools in these areas.

The SSE TC were active in all SMC activities, supporting the flagship conference with papers and special sessions, organizing other sponsored conferences, in publications. In involvement outside the society, SSE has promoted an excellent relationship with INCOSE (thanks to Chris Nemeth's leadership), one of the outcomes being the Future of Systems Engineering (FuSE) joint session at SMC 2020.

The pandemic has forced us to increase our virtual operations. In some respect there is no turning back – it is likely that most conference will maintain from now on a virtual track, even after we go back to meeting in person. There is a potential positive outcome: increasing the number of participants, with lower fees, and without the costs of travel or the difficulties of visas, researchers would be able to attend remotely. On the other hand, we all want to go back to attending conferences in person. I, for one, badly miss seeing old friends and having a glass of wine together, making plans for the future.

HUMAN-MACHINE SYSTEMS – FEI-YUE WANG

Human-Machine Systems covers integrated human/machine systems at multiple scales, and includes areas such as human/machine interaction; cognitive ergonomics and engineering; assistive/companion technologies; human/machine system modeling, testing and evaluation; and fundamental issues of measurement and modeling of human-centered phenomena in engineered systems.

TECHNICAL COMMITTEES AND ACTIVITIES

In 2020, our TCs have organized or co-organized many conferences and special issues, including Companion Technology Track in ICHMS 2020, ITG-Workshop 2020, Special Issue on "Advances in Graph Representation Learning for Large-scale Multimedia Analytics" in Information Processing & Management, and Special Issue on "Deep Dictionary Learning: Algorithm, Theory, and Application" in Neurocomputing.

Our Best TC in 2020 is TC on Cognitive Computing. It has organized a series of special sessions in IEEE SMC annual conferences and special issues in top journals. The members of this TC serve as Program Committee members of multiple conferences including IJCAI2021, ICCV2021, AAAI2021, CVPR 2021, ACMMM2020, WACV2021 and CSCWD 2021.

In 2020, we also set up two new Technical Committees, named "Humanized Crowd Computing" and "HMI for Connected and Automated Vehicles", respectively. The new TC on Humanized Crowd Computing aims at promoting interdisciplinary research, education and international collaboration in the field of Crowd Computing, and it will stimulate the SMC society researchers to participate in the interdisciplinary HCC research in the future and contribute to breaking the existing barriers among research communities related to crowd-powered ecosystems. The new TC on HMI for Connected and Automated Vehicles aims at promoting interdisciplinary research and international collaboration on the development and application of more intelligent, reliable, and secure HMI for on and off-road CAVs, and it will make profound international impacts in both academic and industrial fields.

Up to December 2020, we have 14 Technical Committees. In 2021, we aim to set up a Joint CPSS TC with CFRID and CAA, and a Joint eSports TC with CAA and CFRID.

CONFERENCES

In 2020, we have organized several conferences as Technical Co-sponsors, including 2020 Parallel Intelligence Conference in Qingdao, China, on September 19, 2020, and IFAC/IEEE CPHS 2020 in Beijing, China, on December 3-5, 2020.

In 2021, we will organize the 4th China Symposium on Cognitive Computing and Hybrid Intelligence (CAA CCHI 2021) in Beijing, China in August 2021, and 2021 Parallel Intelligence Conference in Beijing, China in Dec. 2021.

FUTURE PLANS

In 2021, we will develop several new TCs and promote TC activities, and organize HMS conferences and workshops to promote innovations in HMS research. We will also organize two special issues on HMS in IEEE Transactions on Systems, Man, and Cybernetics: Systems, and IEEE Transactions on Human-Machine Systems. Moreover, we will enhance the relationship between IEEE SMCS and other organizations, e.g., IFAC, CRFID and INCOSE.

Nominations Committee 2020 Report – Chair: Eddie Tunstel, Junior Past President

The IEEE SMC Society Nominations Committee (NC) consists of the NC Chair and three members of the Society serving as NC members. Primary responsibilities include administering and executing the nominations and elections processes for Members-At-Large (MaLs) and Executive Committee (ExCom) members of the Board of Governors (BoG) serving new terms beginning with the year immediately following their elections. The former involves five new MaLs each year and the latter involves the subsets of new Vice Presidents (VPs) and a new President-Elect as indicated in the Bylaws for even and odd calendar year elections. Additional duties are as specified in the Constitution and Bylaws.

This brief report highlights the results of planned activities for 2020. The Society Operational Plan includes goals and objectives falling within the purview of the NC with various sub-tasks, the strategic nature of which should be ongoing, focused on further improving the BoG nomination and election processes. The main objectives that were met during 2020 include: ensuring that the NC membership balances gender, geographical, and technical diversity; conducting an open and highly selective nomination process with emphasis on professional qualities of nominees; identifying and encouraging new leaders for a range of Society roles; and promoting a balanced representation within BoG and Society committee leadership across Systems Science and Engineering, Human-Machine Systems, and Cybernetics, and the IEEE Regions.

The first major tactical task of the year was to establish the 2020 NC membership. The BoG elected Dimitar Filev, Yutaka Hata and Ljiljana Trajkovic to serve with the NC Chair as the 2020 NC. The next major tactical tasks include executing the nominations schedule, which spans late spring through summer, and the elections schedule spanning fall through early winter. The nominations schedule got off to a late start due to issues with the electronic nominations form and its availability via the Society web site as well as global pandemic impacts. The summer nominations schedule was compressed to compensate for the late start.

The NC received nominations for BoG MaL and ExCom roles and prepared slates for all elections. As 2020 was an even year, the 2020 election of ExCom members included the following offices for service terms starting in 2021: President-Elect and Vice Presidents for Systems Science and Engineering, Membership and Student Activities, Publications, and Finance. The slates were approved by the BoG at the October BoG meeting. At that meeting, the ExCom elections were held resulting in the elections of Sam Kwong for President-Elect in 2021, and the following Vice Presidents to serve during 2021-2022: Thomas I. Strasser for VP Systems Science and Engineering, Karen Panetta for a second term as VP Membership and Student Activities, Peng Shi for VP Publications, and Ying (Gina) Tang for VP Finance. In late November, the BoG MaL candidate slate of 12 member-candidates was reviewed and presented by IEEE to the SMC Society membership for the 2020 election to determine the next 5 MaLs to serve on the BoG. The election closed on 23 December 2020 resulting in elections of Ferial El-Hawary, Tiago H. Falk, Francesco Flammini, Giancarlo Fortino, and Ferat Sahin to serve 3-year terms beginning in January 2021, having received the most votes from SMC Society members who participated in the election.

In 2020, the NC adopted an additional objective to develop an ongoing focus on increasing election turnout among SMC Society members. Election of new BoG MaLs should best reflect the membership's collective preferences for which of its fellow members will best represent their interests within Society governance and associated technical activities, publications, conferences, and establishment of member benefits. There is considerable room for improvement in the total percentage of our membership that participates in annual BoG MaL elections. For better representation, our Society needs a greater voter response from the membership during the roughly 1-month annual election period. In 2021, the NC will continue to explore ways to increase the voting turnout. This includes considerations for treating the election process as an opportunity to engage members and to provide members the chance to connect with current and potential Society leadership. All SMC Society members are urged to participate by voting each year to lend their influence on improvements to the Society and its benefits to the membership at large.

FELLOW COMMITTEE – DIMITAR FILEV

SMCS had 18 fellow nominees in 2020. 6 of them were transferred to other committees since their qualification didn't fit to SMCS. All remaining 12 nominees were evaluated and ranked by consensus. Final evaluation forms were submitted to IEEEE Fellow Committee on time.

FELLOW COMMITTEE MEMBERS:

Eddie Tunstel – Vice Chair

Hao Ying

Philip Chen

Jianbo Lu

Okyay Kaynak

Liping Fang

Robert Kozma

Vladimir Marik

Fei-Yue Wang

Sam Kwon

Karen Panetta

Jie Lu

Peng Shi

Kazuo Tanaka

Jun Wang

ELECTED IEEE SMCS FELLOWS:

Enrique Herrera-Viedma

Honghai Liu

Yingxu Wang

Jaideep Vaidya

Ganesh Venayagamoorthy

Jizhong Zhu

Shuxiang Guo

Ayanna Howard

Junzhi Yu

Paul Hershey

SUMMARY OF AWARD COMMITTEE ACTIVITIES

- Announcement published in May
- Committees formed in June
- Committee membership posted in June
- Deadline for submissions: June 15, 2020 (extended to June 30)
- 45 SMCS award recipients - awards and preliminary certificates presented at the Annual Conference
- Worked with Liz Parascondola of IEEE HQ on communicating and shipping the plaques and payments of prizes to the 2020 IEEE SMCS award recipients

2020 AWARD COMMITTEE MEMBERS:

C. L. Philip Chen – Chair, Technical Achievement Awards Subcommittee

Subcommittee Members: Hong Yan, Jose del Milan, Donald Brown, Witold Pedrycz

Michael H. Smith - Chair, Outstanding Service Awards Subcommittee

Subcommittee Members: Vladimir Marik, Eddie Tunstel, Okyay Kaynak, Tadahiko Murata

Vladik Kreinovich – Chair, Transactions Awards Subcommittee

Subcommittee Members: Enrique Herrera Viedma, Mengchu Zhou, Andreas Nuernberger, Peng Shi, Jun Wang

Karen Panetta - Chair, Committee/Chapter Awards Subcommittee

Subcommittee Members: Chris Nemeth, Ferat Sahin, Mariagrazia Dotoli, Gyorgy Eigner

Michael H. Smith - Chair, Best Conference Paper Awards Subcommittee

Subcommittee Members: Sam Kwong, Feu-Yue Wang, Adrian Stoica, Vladik Kreinovich, Karen Panetta, Robert Kozma

Laurence Hall – Member

2020 SMCS AWARD RECIPIENTS

Azad Madni	Norbert Weiner Award	Jagannathan	Best Associate Editor Award Systems
Liiliana Traikovic	Joseph G Wohl Outstanding Career Award	Xiaomei Wu	Adviser for Outstanding SMC Student Chapter
Maria Pia Fanti	Outstanding Contribution Award	Yinghsan Tao	Student Chapter Chair for Outstanding SMC
Robert Woon	Outstanding Contribution Award	Giancarlo Fortino	Outstanding SMC Chapter Award
Tiago Falk	Meritorious Service Award	Daovi Dong	Most Active TC Award Quantum Computing
Ying Gina Tang	Meritorious Service Award	Chulin Chen	Most Active TC Award Quantum Computing
Mengchu Zhou	Meritorious Service Award	Tzyh-Jong Tarn	Most Active TC Award Quantum Computing
Liping Fang	Meritorious Service Award	Wei He	Most Active TC Award Autonomous Bionic
Xiaokang Zhou	Andrew P. Sage Best Transactions Paper Award	Okyay Kavnak	Most Active TC Award Autonomous Bionic
Wei Liang	Andrew P. Sage Best Transactions Paper Award	Shun-Feng Su	Most Active TC Award Autonomous Bionic
Kevin-I-Kai Wang	Andrew P. Sage Best Transactions Paper Award	Yicong Zhou	Most Active TC Award Cognitive Computing
Shohei Shimizu	Andrew P. Sage Best Transactions Paper Award	Yuan Yuan	Most Active TC Award Cognitive Computing
Ruoxu Ren	Andrew P. Sage Best Transactions Paper Award	Bin Hu	Most Active TC Award Cognitive Computing
Terence Hung	Andrew P. Sage Best Transactions Paper Award	Weifeng Liu	Most Active TC Award Cognitive Computing
Kay Chen Tan	Andrew P. Sage Best Transactions Paper Award	Felix Top	Franklin Taylor Best Paper Award
Guy Hoffman	Andrew P. Sage Best Transactions Paper Award	Julia Krottenthaler	Franklin Taylor Best Paper Award
Derui Ding	Andrew P. Sage Best Transactions Paper Award	Johannes Fottner (co-	Franklin Taylor Best Paper Award
Zidong Wang	Andrew P. Sage Best Transactions Paper Award	Marc-Antoine	Best Student Paper Award
Qing-Long Han	Andrew P. Sage Best Transactions Paper Award	Alcyr Oliveira Jr.	Best Student Paper Award
Guoliang Wei	Andrew P. Sage Best Transactions Paper Award	Tiago H. Falk	Best Student Paper Award
Rui Qin	Best Associate Editor Award Computational	Jieun Lee	Best Student Paper Award
Qing-Long Han	Best Associate Editor Award Cybernetics	Toshiaki Hirano	Best Student Paper Award
Xiaogang Hu	Best Associate Editor Award Human Machine	Makoto Itoh	Best Student Paper Award