

Statement for IEEE SMC Society President-Elect for 2017

Edward W. Tunstel

Johns Hopkins University Applied Physics Laboratory
11100 Johns Hopkins Road
Laurel, Maryland 20723 USA
Phone: +1 240-228-9740
E-mail: tunstel@ieee.org



IEEE member #: **03589272**

SMC Society member in good standing?: **Yes**

Contributions to the profession

Dr. Edward Tunstel, Fellow of IEEE, is a Senior Roboticist in the Research and Exploratory Development Department of the Johns Hopkins University Applied Physics Laboratory (JHU/APL). He also served as Space Robotics and Autonomous Control Lead in its Space Department. He leads and defines the technical direction of robotics & unmanned systems technology development and autonomous control capabilities for national security applications and space missions. He joined JHU/APL in 2007 after 18 years at NASA Jet Propulsion Laboratory (JPL) where he was a Senior Robotics Engineer and Group Leader of the Advanced Robotic Controls Group. As a JPL Fellow he earned the Ph.D. in electrical engineering from the University of New Mexico in 1996.

During the past 30 years he has contributed to the profession as a researcher and practitioner of robotics and intelligent systems engineering with research interests in robot navigation, collaborative human-robot systems and applications of soft computing to autonomous systems synthesis and control. He has authored over 150 journal, book chapter, and conference publications (H-index 24) and co-edited 4 books and 6 journal special issues. During the past 27 years he contributed professionally as researcher, technology developer, lead systems engineer, and PI/manager of technology development projects. Recent and ongoing contributions include systems engineering for NASA's Mars Exploration Rovers' autonomous navigation system and leadership of the team responsible for operation of rover robotic subsystems on Mars as well as participation in modular open systems architecture and integration efforts supporting next generation robotic and unmanned systems for human capability projection, human-collaborative, and wearable robotics for human performance augmentation. His professional efforts have resulted in diverse contributions recognized by honors and technical achievement awards as well as international broadcast, electronic, and print media coverage of his work.

In addition to active IEEE membership, he is an active member of AIAA and NSBE-Professionals as well as associated committees, and has been affiliated with AAAI, Sigma Xi Scientific Research Society and the New York Academy of Sciences. He has also been an active contributor to many international conference committees and several dozen journal review/editorial boards within and outside of IEEE.

Contributions to the IEEE SMC Society and the IEEE

As an IEEE member for 24 years, Dr. Tunstel has contributed to IEEE **publications**, conferences and governance. For publications he served as referee for *IEEE Transactions* (on *SMC, Robotics and Automation, Fuzzy Systems, Neural Networks, Evolutionary Computation, and Mechatronics*), as Associate Editor of the *IEEE Trans. on SMC: Systems*, *IEEE Trans. on Cybernetics* and the *IEEE Systems Journal*, and as Editorial Advisory Board member of *IEEE Access* and the *IEEE Systems Journal*.

In the area of **conferences**, he has served as a member of many IEEE international conference technical program committees and has also provided conference leadership and organizational service as Program Co-Chair for IEEE SMC 2016, Program Co-Chair for IEEE ROBIO 2012, Publicity Co-Chair for IEEE SMC 2012, General Chair for IEEE SMC 2011, Program Co-Chair for IEEE SMC 2010, Local Organizations Chair for IEEE ICRA 2008, and Program Co-Chair for IEEE SMC 2005. His contributions to IEEE SMC Society conferences, in particular, have been recognized by issuance of the *Outstanding Contribution Award* for outstanding contribution to the planning and organization of the SMC 2011 Conference, the *Outstanding Contribution Award* for outstanding contributions as Conference Coordinator, and an *IEEE SMC Society Certificate of Appreciation* for outstanding leadership as co-chairman of the technical program committee for IEEE SMC 2005.

In the area of **governance**, he recently completed a consecutive term as twice-elected IEEE SMCS VP for Systems Science and Engineering (2010-2014), which followed one elected term as IEEE SMCS VP for Conferences & Meetings and one elected term as IEEE SMCS Board of Governors Member-at-Large which included service in the appointed role of Conference Coordinator. He has additionally served as IEEE SMCS Representative (and Alternate) to the IEEE Systems Council. As related technical activities, he is an active member of the IEEE SMCS Technical Committee on Robotics and Intelligent Sensing and the IEEE RAS Technical Committee on Space Robotics.

His most recent significant & notable contributions to the IEEE SMC Society include: (a) participation on the core team supporting the design process leading to the new Society web site; (b) successfully establishing a long-desired technical activity relationship with INCOSE in the area of systems engineering; (c) leadership resulting in exceptional financial and technical outcomes for IEEE SMC 2011; (d) process and efficiency improvements to the conference sponsorship approval process; (e) effective focused efforts to fiscally close financially-sponsored conferences resulting in financial gains of latent surpluses and mitigation of financial losses due to financial fees/penalties; and (f) technical program quality enhancements to the annual flagship conference including introduction of a new program co-chair role dedicated to quality control & assurance, a focus on increased involvement of industry participants, the transition to full-paper initial submissions, and re-introduction of tutorials.

Statements of Intent:

- I will continue to be an IEEE and SMC Society member in good standing for the full term.
- I am willing to serve as President-Elect for the full term.\
- I will be available for duties and responsibilities of President-Elect as required.
- I will attend the annual BoG meetings.

Position Statement

Our Society is doing well in a number of respects and is executing a coherent 5-year plan that should ensure it continues to strengthen its strengths while addressing its weaknesses to maintain an ever-improving organization that serves its members well. If elected, my tactical objective would be to lead the Society in the successful execution of that plan. My broader, near-term vision for the SMC Society is simple and requires addressing the weakness that our identity and brand is enigmatic. My vision is: by the end of my two-year term, the SMC Society's identity will be clear to, simply expressed by, and shared among its members and increasingly wider known among non-members. During my term, I will focus on the "and" in Systems, Man, **and** Cybernetics in pursuit of a strategic goal to clarify the Society's identity. I believe this is key to more effectively promoting the Society and attracting more members.

Stovepipe characteristics (real or perceived) among S-M-C disciplines within our Society can limit its potential greatness, but the synergy of our three S-M-C pillars is our latent and strength (and discriminator among IEEE Societies). Now is a time when the science, technology, and academic communities are studying problems for which synergies among S-M-C will offer robust solutions for both individual complex systems and enterprises alike. The SMC Society has an opportunity to stand and be seen as a world authority by capitalizing on the notion of its name as a unified field of study and practice.

With support of the Board of Governors, I will promote S-M-C synergy to assert a core identity. This will include leading our Technical Area VPs in encouraging technical activities and committees focused on **interdisciplinary**-SMC that eventually generate products reflecting S-M-C synergy such as position papers, archived presentations, and potentially standards. I would also work with our VP for Organization and Planning to identify aspects of our 5-year plan where interdisciplinary-SMC can be further magnified.

Clear examples of interdisciplinary-SMC and its advantages will draw increasing numbers of members to the Society. To reinforce the message, I would work with our VP for Membership and Student Activities to encourage conveyance of interdisciplinary-SMC through DL talks to SMC Chapters. In addition, I would work with our VPs for Publications and Conferences to increase the various ways in which we can highlight interdisciplinary-SMC work of Young Professional and Student members. Each of these actions could be taken within a two-year term and they collectively represent payment of due diligence to part of the SMC mission to promote the interdisciplinary aspects of systems science and engineering, human-machine systems, and cybernetics.

In essence, my efforts on behalf of the Society will be aimed at strengthening its name recognition and brand worldwide such that is it understood to represent the potential of the union of its three pillar technical areas. To address the enigma that persists among members and non-members regarding the identity of the SMC Society, I would promote a commonly shared identity that has the concise but impactful effect of a slogan like "The IEEE SMC Society...where it all comes together." If elected, I will represent our core identity in interactions at all levels, from the individual member to the IEEE TAB.