

The Evolving Landscape of IEEE Control Systems Society Publishing

The field of technical publishing is changing at an incredibly rapid pace, and the portfolio of publications in the IEEE Control Systems Society (CSS) is evolving at a comparable pace. A mere 25 years ago, the sole publication of the society was *IEEE Transactions on Automatic Control* (TAC). Today, our portfolio comprises three transactions (two print and one electronic only), a letters publication, a magazine, an electronic newsletter, as well as four technically cosponsored journals. There is also an evolving proposal for a new letters publication.

My own experience in the publishing field has been quite varied in IEEE and with other publishers. Within IEEE, I served as the editor-in-chief for *IEEE Transactions on Control Systems Technology* from 2004 to 2009, vice president for Publication Activities from 2011 to 2012, and I was the founding editor-in-chief for *IEEE Life Sciences Letters* in 2014. Outside the IEEE, I was the review papers editor for one of the IFAC journals (*Journal of Process Control*) and served on editorial boards for *Nature*, the American Chemical Society, SIAM, and the Royal Society. In this column, I'd like to give a short review of the current CSS portfolio and then share a few remarks on the future of publications in the Society.

We recently celebrated the 60th anniversary of our inaugural journal, TAC. That journal originated from the Professional Group on Automatic Control of the Institute of Radio Engineers (IRE), and the first issue was pub-



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lished in May 1956 with seven papers [1]. George Axelby was the first editor, with ten more editors after him, including numerous CSS presidents. In 1963, the journal name was changed to the current one, with continuous numbering of the volumes back to the founding in 1956. Today the editor-in-chief is Panos Antsaklis from Notre Dame, and the journal is one of the top journals in the field by any bibliometric ranking, receiving approximately 1500 submissions per year and publishing about 360 papers per year.

In 1981, the CSS launched its second publication, *IEEE Control Systems Magazine* (CSM), which was intended to reach a broader cross section of the CSS membership, including industry practitioners [2]. The founding editor was Mo Jamshidi, and six more editors have followed, up to the current editor, Jonathan How from MIT. These days, CSM publishes many columns and conference summaries as well as

approximately 27 papers per year on a wide array of topics ranging from applications of control, tutorials, education papers, and historical perspectives.

A new element of the CSS publication portfolio, *E-LETTER on Systems, Control, and Signal Processing*, was originally introduced in 1986 but only formally adopted by CSS in 2000. The e-letter was started as an informal means to exchange information among control researchers in a handful of New England universities with a modest subscriber base (~75 people). The effort was led by Eduardo Sontag of Rutgers and Brad Dickinson of Princeton. For the first 25 issues (through September 1989), it was circulated bimonthly (subsequently monthly). Now, the e-letter is published monthly, under the editorship of Jianghai Hu from Purdue University and includes news and information articles. The current circulation list is more than 12,000 subscribers globally.

The next publication that was launched by the Society was *IEEE Transactions on Control Systems Technology (TCST)*, which appeared in 1993 under the editorship of Bruce Krogh [2]. The opportunity addressed by *TCST* was the void on industrial applications and control theory. Five more editors have followed Bruce, through the current editor, Thomas Parisini from Imperial College London and the University of Trieste. Like *TAC*, *TCST* is one of the top journals in the field, particularly among journals with a focus on applications; it receives about 1000 submissions per year and publishes approximately 234 papers per year.

One of the newest additions to the CSS transactions portfolio, introduced in 2014, is *IEEE Transactions on Control of Network Systems (TCNS)* under the inaugural editorship of Yannis Paschalidis from Boston University. *TCNS* is the first new transactions for CSS in over 20 years and represents an interesting innovation in the our transactions portfolio since it is only published electronically (and not in print). Another innovation is that this is the first CSS journal with technical cosponsors from other IEEE Societies (in this case: the Circuits and Systems, Communications, Computer, and Robotics and Automation Societies). The experiment seems to be going well, as evidenced by downloads and citations to articles in the journal. *TCNS* receives about 250 submissions per year and publishes 34 papers per year.

Following shortly after that, in 2015, the *IEEE Life Sciences Letters* was launched as a collaborative product of the IEEE Life Sciences Initiative and is the first fully open-access journal in the CSS portfolio. The need was identified for the timely publication of high-quality manuscripts that apply methods of quantitative analysis to biological problems at the molecular, cellular, organ, human, and/or population levels. The unusual feature of this partnership is that there are multiple IEEE

financial cosponsors, including the Circuits and Systems Society, CSS, the Engineering in Medicine and Biology Society, and the Life Sciences Technical Community. I am presently serving as the inaugural editor, although, owing to my recent move and new decanal responsibilities, I am stepping down, and a search is underway at this time to find my replacement. CSS is also represented in the role of M. Vidyasagar as the deputy coeditor.

Finally, our portfolio is completed by four journals for which the CSS serves as a technical cosponsor: *IEEE Transactions on Computational Biology and Bioinformatics*, *IEEE Transactions on Big Data*, *IEEE Transactions on Smart Grid*, and *IEEE Transactions on Network Science and Engineering*. This further broadens the range of outlets for the publication of high-quality technical papers from this community.

An interesting question that some of you may have is how does IEEE make a decision to introduce a new journal. The process is conducted by the IEEE Periodicals Committee, which meets three times a year and considers new applications. The procedure is initiated by a letter of intent, which is posted online for commentary by the various Societies and Councils. This feedback period precedes a formal submission by one meeting cycle (about four months ahead). This is followed by a phase 1 proposal, which is primarily used to vet the need for the journal, the topical coverage, and the partnering Societies. One element of this proposal is a poll conducted by the likely readership for verification of the

need. If successful, the next phase is a phase 2 proposal, which is directed at the business case for the new journal, with appropriate financial details. If successful, the journal is approved and can be launched within the subsequent year.

As we look to the future of technical publications, we find ourselves in a highly fluid state: open access is changing the fundamental business model, bibliometrics are being used (and abused) to certify publications, and the interplay of conference publications (proceedings) and journals is facing increased scrutiny. In that context, the CSS is presently involved in a proposal for a new journal in the letters category, tentatively titled *IEEE Control Systems Letters*. Elena Valcher is the champion for this proposal and sees this journal as addressing the need for rapidly reviewed and published communications and a novel opportunity for synergy with conference publications. We have also been invited as a technical cosponsor for a new IEEE journal that will be reviewed in one of the coming cycles.

Clearly, this landscape will continue to evolve.

REFERENCES

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Francis J. Doyle III



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