

IEEE Information Theory Society Newsletter



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President's Column

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Like many of my esteemed predecessors, I will start my first column by saying that it is an honor and a privilege to act as the President of the Information Theory Society. But I must add that in 2019, having that role is a challenge as well. We had a turbulent year, and many have told me that it fell to me to steer us back to the calm and prosperity. I am grateful for the opportunity to serve and welcome the challenge as *this being human is a guest house* [1].



If you have read the president's column in the last Newsletter issue of 2018, you know that already a lot has been done over the past several years for the advancement of our technical field and our scientific environment. We have re-affirmed and introduced relevant codes of conduct & ethics, and established committees to help us be a more diverse & inclusive and a fiscally sound society. Our library of short educational videos is growing both in size and popularity. We had preliminary screenings of the movie about Shannon, and this project is advancing exceedingly well. We have set up a new journal and are working on introducing a new magazine. These are just a few recent activities out of many that continue to be done by numerous volunteers throughout the world, whose dedication makes this society what it is. I firmly believe that we are still the same, if not better, Information Theory Society that was awarded the 2014 IEEE Professional Development Award, which recognizes exemplary educational, mentoring, and member support services. However, on occasion, *everything needs to change, so everything can stay the same* [2].

This year, the new initiatives are centered around special sessions at our flagship conferences that involve topics and researchers from related fields. (You may have just attended some at ITA.) A benefit for information theorists is a direct exposure to problems where information theory could be used. A benefit for researchers in other fields is a deeper exposure to information theoretic techniques. A common goal is to identify problems of shared interest and form interdisciplinary

teams to solve such problems. However, the success of these sessions mostly rests on the vision and endeavor of the organizers (myself included). At the same time, such efforts may not be directly and obviously important for their careers and even scientific benefits may not be immediate and may never be realized. Venturing in new directions is risky in terms of both papers and proposals as *the peer review process rarely supports pursuing paths that sharply diverge from the mainstream direction, or even from researchers' own previously published work* [3].

But then again, let us remember the following words spoken by R. P. Feynman some 50 years ago to then NSF Postdoctoral fellows in Washington: "If you give more money to theoretical physics, it doesn't do any good if it just increases the number of guys following the comet ahead. So it is necessary to increase the amount of variety ... and the only way to do it is to implore you few guys to take a risk with your lives that you will never be heard of again, and go off in the wild blue yonder and see if you can figure it out."

However, big risks for advancements of science are not always required. Some simple and small departures from the ordinary and expected can generate excitement about our research area. When students inquire about my coding theory class, I ask them if they have heard of Morse, bar and QR codes, ISBN, and Blockchains. I tell them these coding schemes, and many more, play important roles in numerous scientific disciplines and virtually all telecommunication systems. In practice, codes are used to efficiently insure reliable, secure, and private transmission and storage of information. In theory, codes are used to e.g., study computational complexity, design screening experiments, provide a bridge between statistical mechanics and information theory, and even help understand the (quantum) spacetime fabric of reality. I tell them that one can also use

(continued on page 4)

Joachim Rosenthal

For contributions to algebraic coding theory and cryptography.

Igal Sason

For contributions to the achievable rate region of the Gaussian interference channel and the analysis of low-complexity capacity-achieving linear codes.

Mikael Skoglund

For contributions to source-channel coding and wireless communications.

Joseph Tabrikian

For contributions to estimation theory and Multiple Input Multiple Output radars.

Meixia Tao

For contributions to resource allocation in broadband wireless networks.

Namrata Vaswani

For contributions to dynamic structured high-dimensional data recovery.

Yimin D Zhang

For contributions to high-resolution direction finding and radar signal processing.

Board of Governors: New Members

Congratulations to the new members of the IT Society Board of Governors (a full list of members can be found on the ITSoc website).

Matthieu Bloch

Georgia Institute of Technology

Suhas N. Diggavi

University of California, Los Angeles

Stark Draper

University of Toronto

Olgica Milenkovic

University of Illinois, Urbana-Champaign

Prakash Narayan

University of Maryland

Henry D. Pfister

Duke University

President's Column *(continued from page 1)*

codes for entertainment, e.g., to solve balance puzzles such as the penny weighing problem, or to design social (hat color) guessing-game strategies that significantly increase the odds of winning. Afterwards, to many the subject starts to look less abstract and arcane, and of lasting relevance rather than a fleeting interest of some bygone era. Then some immediately take the class where I teach almost all that, and others a year later, while already working in industry. And when I tell the latter "Aha, now you like coding!" they, more often than not, reply "No, Professor. Now I know I need it, and you have not told me that."

References

- [1] "The Guest House" a poem by J. Rumi, translated by C. Barks.
- [2] G. Tomasi Di Lampedusa. *The Leopard*. Pantheon, 1960.
- [3] D. Geman and S. Geman, "Opinion: Science in the age of selfies." *Proc. Natl. Acad. Sci. USA* 2016, 113, 9384–9387.