IEEE Information Theory Society Newsletter

President's Column

Elza Erkip

Do you believe in love at first sight? I didn't until I started graduate school. My goal was to get a Ph.D. in the general area of electromagnetics. That was the strength in my undergraduate institution, and that's what I had been trained in. But then one day a good friend, after hearing me constantly talk about how much I was enjoying Bob Gray's Random Processes course (think about sigma algebras in an introductory graduate engineering course!), gave me a spiral bound book to read. As I read theorem after theorem, I was fascinated by the elegance and depth of the results (even though I later realized what I had understood was only the tip of the iceberg), and I knew I had found my passion. The book was one of the final drafts of the first edition of "Elements of Information Theory" by Cover and Thomas, and within a few months I was a Ph.D. student in Tom Cover's group. As a fresh PhD student, I would not have imagined that I would be the President of the Information Theory Society a quarter century later. It is a great pleasure and honor to serve this society, which has a very special place in my heart.

Love may be forever, but a honeymoon doesn't last long. Shortly after I started my presidency on January 1, 2018, we had to prepare a long document for the five-year IEEE review of the Information Theory Society. Ruediger Urbanke (our Past President) and I rolled up our sleeves, and got major help from Prakash Narayan, Emina Soljanin, Daniela Tuninetti, Emanuele Viterbo, Aylin Yener and Matt LaFleur in completing a 14-section document on society activities and best practices. While being tedious, this process reminded me many of the recent accomplishments of our society:

- We have built a very strong Information Theory Schools program. We had 21 schools all around the globe in the last five years. This is a global educational initiative, with regular schools in the US, Europe, Australia, and Hong Kong. Other locations include India, Africa and South America. The number of participants during these five years significantly exceeds 1500. The tenth anniversary of the North American School of Information Theory was celebrated in 2017, with an accompanying article by Aylin Yener appearing in the December 2017 issue of the Newsletter.

- In celebration of Claude Shannon's 100'th birthday on April 30, 2016, the Information Theory Society sponsored and stimulated a large number of Shannon Centenary Celebrations around the globe. This initiative was a great success; details of all the events can be found on http://www.itsoc.org/resources/Shannon-Centenary

- Shannon's 100'th birthday celebrations also included a number of broad outreach projects, with the most ambitious one being the production of a feature length documentary on Shannon. This project was started in 2015 and is led by the director and producer Mark Levinson. I recently had the pleasure of meeting Mark in person and attending a small screening together with several movie enthusiasts and executives in New York. Who knew society presidency would also involve glamour moments like this? Mark plans to complete the documentary in the next few months and hopes to have screenings in several film festivals around the world.

- We also initiated several broad outreach activities aimed for school age children. The society, in collaboration with Britt Cruise (who also works for Kahn Academy), produced two short technical videos that explain some of the important technical contributions of our society to a broad audience, particularly to high school students. These videos covered network coding, MIMO and space time codes and can be found on

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Brit's YouTube channel "Art of the Problem." Two more are in production and more are envisioned in the coming years. Anna Scaglione and Christina Fragouli co-authored and produced a wonderful children's book, "Information in Small Bits," aimed at elementary and middle school children. The book was distributed to the attendees of ITA this year and will soon be available for sale to the general public.

Looking into the future, we have several initiatives to expand the use of and exposure to Information Theory in the scientific community at large. Jeff Andrews is chairing the Steering Committee of a new Journal on Selected Topics in Information Theory. This will be a multi-disciplinary journal publishing special issues on the intersections of information theory with fields such as machine learning, statistics, genomics, neuroscience, theoretical computer science, and physics as well as on hot topics within information theory. Wojciech Spankowski is chairing the Steering Committee that is looking into revamping our beloved newsletter, and turning it into an archival publication that will include tutorial articles in core Information Theory topics as well as cross-cutting areas. Our Board of Governors had to prioritize the projects to make the best use of our finite resources, and decided to pursue the Selected Topics Journal first. Jeff plans to bring a detailed Phase 1 proposal for IEEE's consideration in the next few months. Wojciech will follow with the second project shortly thereafter.

As information theorists, we know very well the importance of diverse viewpoints: A channel with two independent looks at the output has higher capacity than a channel with two identical looks (see Problem 7.20, Second Edition of Cover & Thomas). Unfortunately, both our society and the IEEE still have a long way to go in terms of diversity. In terms of geographical diversity, Information Theory Society needs to increase membership and leadership from Region 10 (Asia-Pacific), which is one of the fastest growing regions of the IEEE. On the topic of gender diversity, according to a recent IEEE Survey on Women in Tech (summarized in page 11 of this Newsletter), 73% of women have experienced negative outcomes in their careers attributed to being a woman and 28% have experienced unwanted sexual advances. Sadly, our society is not immune to the types of events we are now accustomed to hearing in the recent #MeToo movement; Andrea Goldsmith shares an experience she had at her first ISIT in her interview in the Student's Corner (page 12 of this Newsletter).

Our Board of Governors, in its most recent meeting in February 2018, approved a statement to reaffirm the IEEE Code of Conduct, IEEE Code of Ethics, and IEEE Non-discrimination Policy, particularly in the context of harassment, bullying, discrimination and retaliation. You will find the complete statement on page 10 of this Newsletter. This statement will also be prominently displayed on our web site. The board also approved forming an Information Theory Society Ad-Hoc Committee on Diversity and Inclusion, the mission of which is to ensure contributions from and recognition of a diverse group of participants in our society. In addition to continuing the society's numerous technical and outreach activities, my goal as the President is to ensure a diverse and inclusive environment for everyone who chooses to pursue this beautiful field I fell in love with many years ago. I am happy to hear from all of you; please feel free to contact me at elza@nyu.edu.