IEEE Information Theory Society Newsletter

President's Column

Aylin Yener

A whole year has come and gone and what a year it has been. As winter sets in, we are now experiencing a significant surge in COVID and while hopeful news of viable vaccines is here, there is still a long way until some normalcy returns. Since my last column, we have had to come to the difficult decision that, in at least a significant portion of 2021, we will continue to see one another in 2D in meetings and conferences. Specifically, ITW 2020, which was postponed to April 2021 in hopes of holding a physical meeting, is now going to be virtual. Our flagship conference ISIT 2021 will also be held fully virtual. The ISIT organizers have worked hard over the past few months, examined the alternatives and in the end came to the conclusion that designing an innovative online conference is the best course of action. The chairs of the conference are working on a number of innovations for the next ISIT, including in timing/dates, delivery methods and live Q&A for paper sessions. Though we will not be able to visit Melbourne, I am confident that this will be an outstanding ISIT, and would like to invite the community to submit their best work.

Speaking of best work, research productivity of our community has shown no signs of slowing down despite this challenging year. The foundational and principled thinking that is present in all information theory and coding research makes it easy for the bright minds in our community to contribute seminal results in adjacent and cross-disciplinary fields alike, including communications, computing, learning and inference, information security and privacy, and quantum. In "machine" learning, we see results of significance from information theorists, affirming that, the field has the potential for impact, both through the core expertise and through creative crossover ideas. Information theorists continue to work on a diverse array of problems with societal impact directly or indirectly, including healthcare analytics, epidemiology, and responsible data science. Importantly, the next generation of connectedness, "6G", vision is starting to crystalize: With the convergence of communications, computing, control and sensing, and building on the more adaptable network design that had already started in the current generation, we are in a perfect position to consider the potential to realize information and coding theoretic ideas for connecting everything, and if we are successful, there is a good chance we may see a repeat of the 2000s in the coming decade in our community.

On the flip side, as research dissemination models evolve, we see information theorists also expand their publishing portfolio, not just in communications and signal processing, but also in machine learning communities, reaching out to wider audiences. My own view is that all of these are healthy endeavors that enable us to recognize that there is not one kind of information theorist, and while we are all known for our highest of intellectual standards within academia, there is also merit in demonstrating the reach foundational thinking can have. After all, we all know that separation in system design (not to be confused with physical separation that is necessary) is optimal only in very specific instances, even if it is easier.

More evidence to the potential and influence of the society in the larger professional community of IEEE, despite being quite a bit smaller than the largest two societies (computer and communications), is our society's significant intellectual impact measured by the recognitions. The most recently announced 2021 IEEE medals and technical field awards include a number of information theorists. This year, our society has also done very well in fellow elevations effectively doubling the typical success rate, a first that we hope very much will continue in the coming years.

Overall, we have had a good year despite the pandemic. We have been able to grow our membership significantly. We

attention of researchers throughout the world due to their capacity-approaching performance. Consistent with his reputation for ingenuity and simplicity, Kamil achieved his remarkable results on LDPC convolutional codes by a clever, but non-obvious, "unwrapping" of the parity-check matrix of an LDPC block code into a diagonal (convolutional) form, in the process achieving a substantial "convolutional gain" in performance without added decoding complexity. In recognition of his contributions to this area, Kamil and his co-authors were awarded the 2012 IEEE Information Theory Society and Communication Society Joint Paper Award.

Characteristic of all Kamil's work was that his code constructions and decoding algorithms were novel and simpler than earlier ones. They have played a major role in forming the present theoretical understanding of encoding and decoding processes. Kamil was also a stickler for mathematical precision, often offering constructive criticism of results that made claims without rigorous proof. In this respect, he sometimes displayed a playful sense of humor by drawing distinctions between "strong proofs" and "weak proofs".

Kamil played a major role in guiding Soviet communication theory. During his 28 years at the IPIT he worked with most of its major players. At the same time he maintained liaisons with Western scientists through trips and correspondence.

Kamil showed professional leadership in his role as the instrumental organizer from the Russian side of the Joint Swedish-Soviet Workshops on Information Theory. This series, totaling seven altogether, began in 1983, and alternated between sites in Russia and Sweden. These workshops were of exceptionally high quality and attracted first class researchers from all over the world. They were the largest single interaction between Soviet and Western communication theorists during the Cold War period.

Kamil is survived by his widow Ira along with his two children, Dima and Valja, and their families.

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

have been able to start a number of initiatives, particularly in the digital domain, that will continue to flourish in the coming years and have long-term positive impact in our community. All indications are that the society is in a better place than it was at the beginning of the year, and that is the best outcome any president can hope for.

As I proudly hand over the leadership to Wei, I would like to conclude my last column with a few personal notes. I remain enthusiastic about serving our society and the profession both, and will continue to do so in my roles as past president and in others including digital initiatives and technical posts such as editorships, conferences and evaluations. I continue to believe that professional service is not about building resume, but about building community, and should be taken on with that understanding. For me, this year was a departure from the past, in that, in contrast to my previous posts where I have been able to balance my day job and volunteer service, this year, most of my awake moments needed to be focused on our society. I took it in stride with the understanding of an unusual year and aimed at continuing our positive slope. As Camus says "In the middle of winter, I at least discovered that there was in me an invincible summer"[1]. And I remain optimistic that 2021 will be even better. I am grateful to the board of governors and the officers for their hard work and support throughout this year. Despite some challenges, the community remains strong and will get stronger, and there is cause for continued optimism. All of that said, as we near the end of the year, I find myself looking forward to next year, and being able to focus on research again. In that regard, I would like to acknowledge my collaborators and my current and recently graduated students for being so patient with me this year and in a sense sharing my sacrifice, as well as my colleagues at my home institution for the same. Finally I would like to thank all of you, our members, for your support of the society, and members and research community at large who choose IEEE Information Theory Society outlets for dissemination of their research.

Stay well and healthy.

---

[1]Return to Tipasa (1952), The Myth of Sisyphus and Other Essays, Albert Camus, Vintage International.