IEEE Information Theory Society Newsletter

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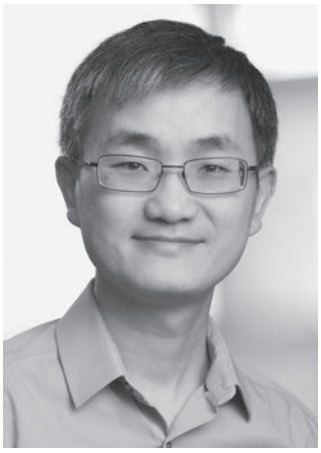
President's Column

Wei Yu



It is with mixed feelings that I write this President's column in the final printed edition of the newsletter. With the successful launch of the society's new *IEEE BITS the Information Theory Magazine*, the newsletter will transition to an electronic format in 2022, and the President's message will appear in the magazine in the future. This newsletter has been a favorite reading for me since my graduate student days. I wish to thank successive generations of newsletter editors over the decades, and especially Changho Suh in the past year, for their dedication to the newsletter. Changho will continue to serve as the editor and oversee the transition to an electronic newsletter in the coming year. The magazine and the electronic newsletter will complement each other as informative vehicles for reaching out to our society members.

As we draw closer to the end of the 2021, I am happy to report that the state of the Information Theory Society remains strong. Our membership numbers have grown and are now at the highest in the past 8 years; our finance is sound; our conference and publication activities prove to be resilient despite the lingering Covid situation worldwide. As my own term as President will soon end, I look forward to welcoming Christina Fragouli as the new President, Matthieu Bloch as the First Vice President, and Stark Draper as the Second Vice President in 2022. I am also pleased to report that Marco Dalai, Lara Dolecek, Michael Langberg, Henry Pfister, Sennur Ulukus, and Shun Watanabe have been elected to the Board of Governors for 2022–24.

I wish to take this opportunity to thank Emina Soljanin for her service as a Board member for nearly a decade and for her stewardship as an officer in the past five years. A big thank you goes to Andrea Goldsmith for her vision and energy as the inaugural editor-in-chief of our journal in the past three years, and a big welcome goes to Tara Javidi as her successor in 2022. We are also indebted to Vijay Kumar for his leadership as the Conference Committee Chair, especially during the on-going pandemic in which Vijay has helped navigate the challenging landscape in conference organization. I'm very happy that Li Chen has graciously agreed to chair the conference committee starting next year. I wish to thank Lara Dolecek for her service as Secretary of the Board in the past three years, and welcome Parastoo Sadeghi as our new secretary starting 2022. Finally, the outgoing Board members Suhas Diggavi, Olgica Milenkovic and Prakash Narayan have each contributed tremendously to our society. I wish to thank them for their service.

Volunteerism is the lifeline of our society. Among the awards that the society gives out at each ISIT is the Aaron D. Wyner Distinguished Service Award, which recognizes individuals who have shown outstanding leadership in, and provided long-standing exceptional service to the information theory community. The recipient of the 2021 Wyner Award is Gerhard Kramer, who had a long and distinguished service record including being the society's President in 2013, and serving either as the general co-chair or the TPC co-chair for no fewer than four ISITs and an ITW. Gerhard has been instrumental in co-founding and consolidating ITSoc's global schools program. Since 2008, the schools of information theory program have become a signature event of our society, serving as an educational and outreach vehicle to over 2500 students in every continent. Gerhard was the founding chair of the North American School of Information Theory in 2008—2010, the chair of European School of Information Theory in 2012, and has advised and supported 34 schools from Australia, to East Asia, India, Latin America, and Africa. Our society now has a dedicated Schools Subcommittee, which has been chaired by Aylin Yener, Stark Draper, and Parastoo Sadeghi over the years. The North American, Indian, and East Asian Schools just concluded this past summer, and the

(continued on page 11)

From the Editor

Changho Suh

With the holiday season drawing near, I wish everyone a happy and healthy New Year. Our last issue in 2021 opens up with Wei Yu's final column as President of the IT Society. Please join me in thanking Wei for his dedication and hard work leading our society during this ongoing pandemic. Also, I would like to extend a warm welcome to our incoming president Christina Fragouli. This issue then congratulates all the members of our community who have recently received prestigious awards and honors. Next we feature several reports from: (i) IEEE International Symposium on Information Theory; (ii) JTG/IEEE Informaiton Theory Summer School; (iii) Croucher Summer Course in Information Theory; and (iv) Greater Bay Area International Workshop on Information Theory and Artificial Intelligence. We also have a speicial article on the survey taken to envision the future format of our flagship conference ISIT. As usual, we continue with the minutes from the Board of Governors meeting that was held virtually this past November.

As Wei mentioned, this issue is the last printed edition, so Wei and I wanted to make this final printed version as rich as possible with full of exciting contents, even including very recent news on IEEE-level awards and newly elevated Fellows, usually adversited in the March issue. I would like to give a special thank to Wei who have guided me with ideas on the contents. Starting from 2022, the newsletter will transit to a fully online format, and part of the contents such as President's Column will appear instead in our society's new *IEEE BITS the Information Theory Magazine*.

As a reminder, announcements, news, and events such as award announcements, calls for nominations, and upcoming conferences, can be submitted at the IT Society website http://www.itsoc.org. Articles and columns can be e-mailed to me at chsuh@kaist.ac.kr with a subject line that includes the phrase "IT newsletter."

The next few deadlines are:

January 31, 2022 for the issue of March 2022.

April 30, 2022 for the issue of June 2022.

July 31, 2022 for the issue of September 2022.

Please submit plain text, LaTeX, or Word source files; do not worry about fonts or layout as this will be taken care of by IEEE layout specialists. Electronic photos and graphics should be in high resolution and sent as separate files.

Changho Suh

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Awards

Congratulations to the members of our community that have recently received prestigious awards and honors!

P. R. Kumar: 2022 IEEE Alexander Graham Bell Medal

The IEEE Alexander Graham Bell Medal is awarded for exceptional contributions to communications and networking sciences and engineering. It is awarded to **P. R. KUMAR** (LFIEEE)—Professor, Texas A&M University, USA, *for seminal contributions to the modeling, analysis, and design of wireless networks*.

Madhu Sudan: 2022 IEEE Richard W. Hamming Medal

The IEEE Richard W. Hamming Medal is awarded for exceptional contributions to information sciences, systems, and technology. It is awarded to **MADHU SUDAN** (FIEEE)—Professor, Harvard University, USA, *for fundamental contributions to probabilistically checkable proofs and list decoding of Reed-Solomon codes*.

David L. Donoho: 2022 IEEE Jack S. Kilby Signal Processing Medal

The IEEE Jack S. Kilby Signal Processing Medal is awarded for outstanding achievements in signal processing. It is awarded to **DAVID L. DONOHO** (FIEEE)— Professor, Stanford University, USA, *for groundbreaking contributions to sparse signal recovery and compressed sensing*.

Ingo Wolff: 2022 IEEE/RSE James Clerk Maxwell Medal

The IEEE/RSE James Clerk Maxwell Medal is awarded for groundbreaking contributions that have had an exceptional impact on the development of electronics and electrical engineering or related fields. It is awarded to **INGO WOLFF** (LFIEEE)—Research Director, IMST GmbH, Germany, *for the development of numerical electromagnetic field analysis techniques to design advanced mobile and satellite communication systems.*

Ali H. Sayed: 2022 IEEE Fourier Award for Signal Processing

The IEEE Fourier Award recognizes an outstanding contribution to the advancement of signal processing, other than in the areas of speech and audio processing. It is awarded to **ALI SAYED** (FIEEE)—Professor, EPFL, Switzerland, *for contributions to the theory and practice of adaptive signal processing*.

Muriel Médard: 2022 IEEE Koji Kobayashi Computers and Communications Award

The purpose of the IEEE Koji Kobayashi Computers and Communications Award is to recognize outstanding contributions to the integration of computers and communications. It is awarded to **MURIEL MÉDARD** (FIEEE)—Professor, MIT, USA, *for contributions to the theory and practice of network coding, optical networks, and wireless communications.*

Christopher Rose: 2022 IEEE Undergraduate Teaching Award

The IEEE Undergraduate Teaching Award was established by the Board of Directors in 1990 to honor teachers of electrical and electronics engineering and the related disciplines. It is awarded to **CHRISTOPER ROSE** (FIEEE)—Professor, Brown University, USA, *for innovations in team-oriented signature design and inspiring women and under-represented minority students to pursue engineering.*

Elza Erkip: 2021 IEEE Communications Society Edwin Howard Armstrong Achievement Award

This award is named in honor of Edwin H. Armstrong, most notably the inventor and father of the complete FM radio system. It is awarded to **ELZA ERKIP** (FIEEE)—Professor, New York University, USA, *for pioneering work in cooperative communications and relay networks.*

Andrea Goldsmith: 2020 Marconi Prize

The Marconi Prize is awarded annually to innovators who have made a significant contribution to increasing digital inclusivity through advanced information and communications technology. It is awarded to **ANDREA GOLDSMITH** (FIEEE)—Professor, Princeton University, USA, *for pioneering contributions to the theory and practice of adaptive wireless communications.*

Giuseppe Caire: 2021 Gottfried Wilhelm Leibniz Prize

The Gottfried Wilhelm Leibniz Programme awards prizes to exceptional scientists and academics for their outstanding achievements in the field of research. It is awarded to **GIUSEPPE CAIRE** (FIEEE)—Professor, TU Berlin, Germany, *for laying the foundation for key principles in information theory within the field of wireless modern communication and information technology.*

Onur Günlü: 2021 Johann Philipp Reis Award

The award is biannually given to engineers up to the age of 40 who have published an outstanding, innovative publication in the field of communications that have initiated, or are expected to have, an impact on the economy. It is awarded to **ONUR GÜNLÜ** (MIEEE)—A Research Group Leader, TU Berlin, Germany, *for his research on Physical Unclonable Functions (PUFs) for biometric and device identification.*

Newly Elevated IEEE Fellows: Class of 2022

Congratulations to society members elevated to the grade of IEEE Fellow!

Petros Boufounos
for contributions to compressed sensing

Anthony Chan Carusone
for contributions to integrated circuits for digital communication

Minghua Chen
for contributions to delay-critical networked systems

Todd Coleman
for contributions to biomedical signal processing and leadership in neuro-engineering

Andrea Conti
for contributions to wireless communication and localization systems

Alexandros G. Dimakis
for contributions to distributed coding and learning

Albert Guillén i Fàbregas
for contributions to the analysis and design of wireless communication systems

Deniz Gündüz
for contributions to the foundations of source-channel coding, cooperative and cache-aided communications

Steve Hranilovic
for contributions to optical wireless communication systems

Michael Langberg
for contributions to the theory and practice of network coding

Amir Leshem
for contributions to multi-channel and multi-agent signal processing

Yingbin Liang
for contributions to information theoretic methods for wireless systems

Devavrat Shah
for contributions to network and information science, inference and machine learning

Kumar Sivarajan
for leadership in optical networking

Sriram Vishwanath
for contributions to information theory and coding for wireless communication systems

Rebecca Willett
for contributions to the foundations of computational imaging and large-scale data science

Jun Zhang
for contributions to dense wireless networks

Board of Governors: New Members

Congratulations to the new members of the 2022 IT Society Board of Governors. (A full list of members can be found on www.itsoc.org.)

Li Chen
Sun Yat-sen University

Marco Dalai
University of Brescia

Lara Dolecek
University of California at Los Angeles

Michael Langberg
University at Buffalo

Henry D. Pfister
Duke University

Parastoo Sadeghi
University of New South Wales

Sennur Ulukus
University of Maryland, College Park

Shun Watanabe
Tokyo University of Agriculture and Technology

2021 IEEE International Symposium on Information Theory

Parastoo Sadeghi and Emmanuel Viterbo (general co-chairs)

It is hard to believe the only ISIT ever held in Australia was in 2005, more than sixteen years ago. The idea to hold a second ISIT in Australia goes back ten years ago. In 2016, the proposal to have ISIT in Melbourne was approved by the Board of Governors of the IT Society. Our organizing committee had a diverse representation from all over the Globe with six female colleagues out of 17 on the committee. Between 2016 and early 2020, we were steadily planning for a normal live event. Unfortunately, because of the pandemic, our plans for a conference *down-under* were turned *upside down*.

In December 2020, we decided to turn ISIT 2021 into a virtual event taking advantage of the latest innovations in virtual event delivery. The transition from an in-person to a virtual event required several non-trivial adjustments to our contracts, which are of minor interest to the readers and outside the scope of this paper!

Innovations

By December 2020, most people in the community were already well-adjusted to online interactions and meetings. To compensate for the loneliness of our never-ending lockdowns, our primary aim was to maximize the opportunity for live interactions among the participants. With this in mind, we made some radical changes to the traditional format of past ISITs and some recent virtual conference formats.

- The most challenging problem remained the spread of time zones, which only offered a "golden time window" of about 2-3 hours (12-3pm GMT) per day. Even then this meant some folk had to wake up very early or go to bed late. To compensate for such a limited time window per day, our solution was to extend the conference from 6 to 9 days. Retrospectively, it may have been good for participants (at least we did not get any negative feedback about it), but it was very heavy for the organizers.

- The next challenging problem was how to balance the number of parallel sessions, duration of each session, and available opportunities for attendees and speakers to meaningfully interact with each other. Taking into account many factors including platform functionalities and budgetary considerations, we converged on chaired 20-minute "micro-sessions", which featured 3 lightning presentations (pre-recorded short videos), followed by live Q&A.

- Since the micro-sessions were very time-constrained, we used the Breakout Engagement Rooms feature of the platform, to allow the participants to continue discussions. These rooms were crucially pre-scheduled to start at the conclusion of each micro-session and offered a very flexible solution to emulate what goes on in a live conference during

coffee breaks. The interesting post-event statistics from the platform showed that about two-thirds of the engagement rooms were utilized.

- We allocated the entire weekend in between the technical program days to 8 tutorials covering a diverse range of timely topics.
- The TPC tried a new review process allowing the authors to respond to the reviewers comments. In making the final acceptance/rejection decisions, this was taken into account by the TPC. Overall, both authors and TPC felt that this was a helpful addition to the review process.
- The "Quote competition" was a last-minute innovation: the game was to modify a famous quote and make it related to information theory or ISIT. This became an instant hit: we had 127 submissions of which 86 were published and received a total of 438 likes. Some very active participants fought their way to the last quote.

Papers

Similar to ISIT 2015, 2019 and 2020, we used CMS as the paper management system. Its use in the past two years provided continuity in paper handling by authors, reviewers, and the TPC. We had about 800 papers submitted that underwent peer-review, out of which 571 were accepted and presented. About 38% of submitted papers were from the United States, followed by China, India, Germany, Israel, Japan, France, Singapore, United Kingdom and Canada.

The most popular topics of the submitted papers were:

1) Coded or distributed computation
2) Cryptography, security and privacy
3) Learning
4) Coding for storage and memories
5) Coding theory
6) Quantum information theory and coding
7) Information theory and statistics
8) Wireless communications
9) Source coding and data compression
10) Channel capacity

Technical Program

The technical program featured:

1) 5 plenaries
2) 8 tutorials
3) 14 recent result posters

4) 28 technical tracks

5) 196 micro-sessions

6) 571 papers

7) 767 breakout engagement rooms

8) ~1000 attendees

9) ~1500 contributors to the content and sessions

Despite the short time for Q&A at the end of each micro-session, the authors, attendees, and chairs were very engaged and utilized breakout engagement rooms to continue discussions. Plenaries were attended by about 100–200 people and the Shannon Lecture by Alon Orlitsky attracted around 300 attendees. Tutorials were attended by around 30–80 participants and enjoyed active discussions.

Registration model

After much deliberation, we decided to decouple the fees for paper presentation from the attendance fees. This model closely reflected the actual costs incurred for the paper management system and the virtual platform facilities.

The registration model we adopted came about considering different goals:

1) reaching out to as many participants with interest in Information Theory;

2) limiting the cost of interactive sessions on the virtual platform with live management, video recording and post-processing;

3) fairly sharing the cost of running the conference between both speakers and attendees;

4) providing free access to all tutorials, as an incentive for attendance.

Given the registration statistics, we believe this model achieved its goals. Out of close to a thousand participants, we had one third being first-timers and one third being student participants. The top countries/regions in number of attendees were: United States (~350), Europe (~200), China (~90), India (~70), Australia (~50), and Israel (~45). About 18% of attendees were female.

Virtual Platform

We selected the same virtual platform by Conference Catalysts that was used to deliver ISIT'20, ICASSP'20, ICASSP'21, ICC'21, and WCNC'21. The benefit of this was that many participants already had some experience with it. The platform offered very flexible solutions to support a variety of media (paper, slides, video (short/long)). The personalized timezone feature and calendar integration proved to be very useful for participants from around the globe. All live sessions and micro-sessions were fully managed by Conference Catalysts staff and recordings were made available within 24 hours of live delivery.

IT Society Events

We invited the organizers of the following IT Society events to choose their preferred time and format within the general pattern of the conference timetable.

Women in Information Theory: The 2021 WITHITS event at ISIT was hosted as virtual networking roundtables, where participants were allowed to freely visit different Zoom breakout rooms. Each breakout room was themed around different research topics and hosted by experts in the area from the IT community. About 50 people participated in the event, and everyone had a great time! The 1-hour time allotment was appropriate for the virtual setting.

Mentoring Event: Two one-hour sessions were organized to cater for different time-zones. The first time slot was convenient for people in the US and Europe. There were 8 mentors who ran 30-minute parallel sessions with at least 80 people. The second time slot was convenient for people in the Asia-Pacific; there were 6 mentors who ran 30-minute parallel sessions with more than 20 participants.

Meet the Shannon Lecturer: This 50-minute event was scheduled right after Alon Orlitsky's Shannon Lecture and attracted a large number of attendees (~200). Participants had an opportunity to post questions beforehand and during the session.

Four Minutes, Two Techniques Contest: A total of 14 students participated of which three groups were selected as winners. In each group, two students explained to each other two different concepts from information theory in 4 minutes. The videos produced by the winners were available on the platform for offline viewing and the winners were also announced on the ISIT website.

Sponsorship

We thank all our sponsors for their support. We believe the shift to the virtual format significantly increased engagement in the conference by our sponsors, due to zero travel costs and the ability to allocate time flexibly. Our platinum sponsors were both based outside Australia, but each had about 12–17 registrants attending. The flexibility offered by the online format had the advantage of enabling the sponsors to organize sessions with a range of speakers (not necessarily all from the sponsor) or contribute talks by high-ranking personnel, who might not have the time to attend ISIT in person.

Conclusions

We thank all authors, speakers, and chairs who contributed high-quality content on the platform and engaged with the program. We acknowledge that the timeframe for uploading material was tight and hope it can be addressed in the future. We are indebted to the IT Society who trusted and supported us with running this ISIT experiment. We are very grateful to all colleagues and participants who made this event a success and supported us with their kind words and feedback. We hope you enjoy the photos which were taken at one of the coffee breaks and at the Shannon Lecture.

We conclude by wishing the organizers of ISIT'22 all the very best.

2021 JTG/IEEE Information Theory Summer School in Information Theory, Signal Processing, Telecommunication, and Networking

Adrish Banerjee (organizer)

The twelfth Joint Telematics Group/IEEE Information Theory Summer School was held online for the first time from 28 June to 1 July 2021, organized by the department of electrical engineering, IIT Kanpur. This year's summer school also featured the 2021 Padovani lecture by Prof. Muriel Médard, Cecil H. Green Professor in the Electrical Engineering and Computer Science (EECS) Department at MIT.

This year's summer school had three short courses, each of duration of five-eight hours spread over four days. In addition, we had four invited talks by young faculty and four invited talks by senior Ph.D./postdocs.

In the first course, Prof. Médard gave a tutorial introduction to a new algorithm, Guessing Random Additive Noise Decoding (GRAND), for noise-centric ML decoding. In this algorithm, the receiver rank orders noise effect sequences from most likely to least likely and guesses accordingly. When inverting, in decreasing order of likelihood, noise effect sequences from the received signal, the first instance that results in an element of the codebook is the ML decoding. Prof. Médard showed that with GRAND, even extremely simple codes, such as CRCs, match or outperform state-of-the-art code/decoder pairs, thus indicating that the choice of decoder is likely to be more important than code. Advanced topics such as mathematical aspects of GRAND and soft decoding algorithms were also covered in the course.

In the second course, Prof. Andrew Eckford, Department of Electrical Engineering and Computer Science, York University, Toronto, Canada, discussed state-of-the-art molecular communication. Prof. Eckford gave a theoretical perspective, showing how molecular communication fits the standard framework for analyzing communication systems. Prof. Eckford also talked about various models for molecular communication, good communication strategies, and information-theoretic analysis. Finally, he also showed a practical perspective, showing how to validate these results experimentally, and described two successful, low-cost, tabletop experimental systems that have already been used in published experiments.

In the third course, Prof. Harpreet S. Dhillon, Associate Professor of ECE and the Elizabeth and James E. Turner Jr. '56 Faculty Fellow, Virginia Tech, Blacksburg, USA, provided a rigorous introduction to machine learning tailored for communication and information theory researchers. In the first module, Prof. Dhillon gave an overview of statistical learning that led to the discussion of the types of communication system design problems that can benefit from machine learning. A case study exploring the connection of machine learning to point processes in the context of subset selection problems in wireless networks was presented. The next module focussed on statistical estimation. Popular supervised learning algorithms were interpreted as ML and MAP estimators of appropriate underlying statistical models. In the last two modules, Prof. Dhillon talked about unsupervised learning, including discussions on k-means, expectation-maximization, and detailed case studies on distributed learning in wireless networks and manifold learning for codebook design in MIMO systems.

The young faculty talks were delivered by Profs. Amitalok Budkuley, IIT Kharagpur (Unconditionally Secure Commitment over Constrained Noisy Channels), Shashank Vatedka, IIT Hyderabad (Data compression with locality), Avhishek Chatterjee, IIT Madras (Decoherence in the Buffer and the Classical Capacity of Quantum Channels), and Piyush Srivastava, TIFR Mumbai (An invitation to causal inference). Young researchers (students/postdoc) talks were delivered by Varun Narayanan, Technion (Computationally Secure Computation from One-Way Noisy Communication), Kota Srinivas Reddy, IIT Bombay (Structured index coding problem and

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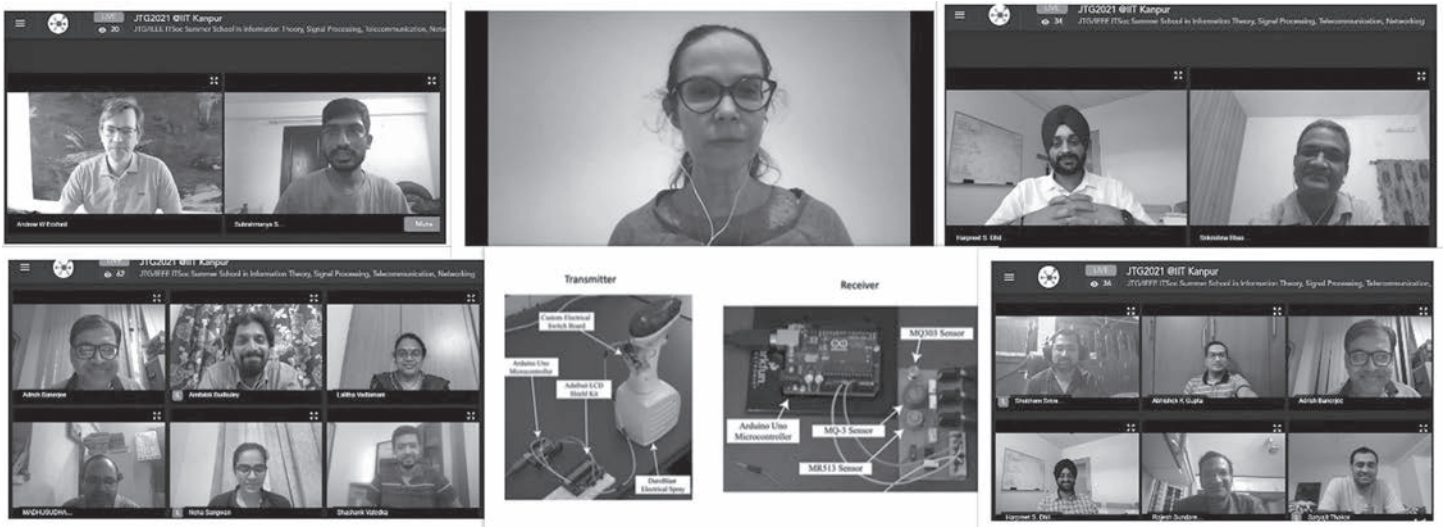


2021 Croucher Summer Course in Information Theory

Pascal O. Vontobel and Sidharth Jaggi (co-organizers)

The 2021 Croucher Summer Course in Information Theory (CSCIT 2021) was held at The Chinese University of Hong Kong from August 22 to August 27, 2021. Due to the ongoing COVID-19 pandemic, the school was held in hybrid format, i.e., participants from Hong Kong attended physically, whereas participants from outside Hong Kong joined via zoom.

The school consisted of seven exciting tutorials:

Clément Canonne (University of Sydney),
"Estimation and hypothesis testing under information constraints"

Chung Chan (City University of Hong Kong),
"Mutual information in machine learning"

Siu On Chan (The Chinese University of Hong Kong),
"Random walk on high-dimensional expanders"

Cheuk Ting Li (The Chinese University of Hong Kong),
"Finite-blocklength schemes in information theory"

Noga Ron-Zewi (University of Haifa),
"Locally-testable and locally-decodable codes"

Parastoo Sadeghi (University of New South Wales, Canberra Campus),
"Fundamental trade-offs between privacy and utility in data sharing"

Changho Suh (Korea Advanced Institute of Science and Technology),
"Fair machine learning via information theory"

Lecture slides and lecture videos are available at http://cscit.ie.cuhk.edu.hk/CSCIT2021/program.html under Lecture Resources.

Given that this was among the first summer schools using a hybrid format, here are some comments about its organization and the rationale for some of the decisions that were taken, in particular also toward meeting the requirements of our sponsor.

When inviting lecturers, our goal was to have roughly the same number of lecturers from Hong Kong and from outside Hong Kong. Finally, we had three lecturers from Hong Kong and four lecturers from outside Hong Kong (two from Australia, one from Israel, one from South Korea). Each lecturer gave three 60-minute-long presentations. Notably, each presentation was followed by 20-minute-long discussion session. These discussion sessions gave the participants and the session chair ample time to ask questions and to discuss various aspects of the lecture in detail.

For selecting participants, our goal was to have (to a good approximation) at least as many physical participants as online participants. Given this, although there could have easily been more online participants, there were in total 36 participants (graduate students and postdoctoral researchers), with 17 from Hong Kong and 19 from outside Hong Kong (Mainland China, India, Japan, Singapore, South Korea, and Taiwan).

Participants in Hong Kong attending a lecture.

Participants discussing a poster during one of the poster sessions.

Besides the lectures, there were four poster sessions where each participant presented a poster related to his/her own research or, in case of junior graduate students, a tutorial poster on some topic. The poster sessions were arranged in hybrid mode, i.e., every local participant was paired up with an online participant (connected via iPad) and they presented their posters in the same physical booth and the same zoom breakout room. Already before the summer course, posters and poster video presentations were shared among all participants and lecturers. On the one hand, this allowed the participants and the lecturers to already have a glimpse at the poster presentations before the poster sessions, on the other hand, it served as a backup solution should there be technical issues during the poster sessions.

We sincerely thank all the lecturers and participants for the efforts in making this summer course a success despite the circumstances. Moreover, the smooth operation and administration of this summer course would not have been possible without the dedicated help by Ms. Samuel Tam and her team of student helpers, along with the assistance offered by Dr. Gautam Prakriya.

Finally, we are very grateful to the Croucher Foundation for generously sponsoring this summer course. The Croucher Foundation is an academic charity that was founded by Noel Croucher. It funds educational programs for natural science, technology, and medicine in Hong Kong.

This was the fourth installment of the Croucher Summer Course in Information Theory, with the other summer schools being held in 2015, 2017, and 2019 (all in Hong Kong). There are plans to have the next Croucher Summer Course in Information Theory in 2023.

The local lecturers and participants went to Sharp Island near Sai Kung to explore the nature of Hong Kong.

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

upcoming 2022 schools in Los Angeles U.S., Shenzhen China, Vienna Austria, and IIT Mandi India are all examples of the vision and the impact of our society's volunteers.

I have learned a lot about how IEEE operates and how our society's finance works since becoming president. I now appreciate more than ever that it is our society's volunteers that keep ITSoc in good financial shape and enable us to launch new initiatives, to avoid overlength fees, and to ensure that the conference registration fees are as reasonable as possible. The ITSoc typically does not rely on conference surpluses to balance its budget. Its main source of funding is its share of the IEEE's package product subscription revenue. Because of the scholarly impact of our Transactions, the Journal, and the ISIT Proceedings, and their corresponding statistics of downloads in IEEE Xplore, the society has been running significant surpluses in recent years, and now has a reserve of over $7 million. The IEEE finance rules, however, do not give the society easy access to this endowment, except through an annual 1-3% spending through new initiatives. The society is also allowed to spend 50% of the previous year's surplus, but such spending must also be on new projects, which have a limited life span of three years. The ITSoc has started its schools program and funded its digital infrastructure through new initiatives. We can potentially do more to broaden the impact of our discipline, to better serve our members, and to raise the profile of the society.

Looking forward, however, the IEEE package product subscription revenue is by no means assured. The revenue can fluctuate from year to year and is forecast to have a significant long-term downward trend. From IEEE's perspective, the biggest disruptive force to its financial model is the emerging mandates for open-access publishing, which requires publicly funded research output to be made available for free to all in perpetuity, while making the authors pay a fixed open-access fee to cover the cost of publication. The issue is that the contributing authors are mostly from research intensive universities, which are much fewer in number than the set of all subscribers. Thus, the open-access fees collected mostly from these institutions cannot replace the loss of future revenue from all the subscribers.

The ITSoc does not yet have a gold open-access journal (meaning a journal in which all articles are open access). We are monitoring the open-access mandates from the funding agencies closely and will adapt to these mandates as necessary. But we shall remember that the society's financial result is only a means for us to promote information theory and not an end by itself. Our society's primary mission is to further the advancements in information theory. Just as most of us have long embraced the posting of preprints on arXiv, I believe that we should look forward to a future, in which open-access will be the norm in scientific publishing and will become indispensable in the open and free exchange of ideas in information theory and beyond.

Our society's greatest assets are the researchers and authors who contribute fresh ideas and high-impact results to our own publications and conferences. The future success of our field is tied to our ability to attract and to retain these talents. Many of our members publish in multiple disciplines, for example in machine learning in recent years and also in many other neighboring fields. This is of course fantastic, but we also need to make sure that our own publications and conferences are relevant and have high impact on neighboring scientific communities. In term of attracting talents, diversity and inclusion efforts are essential. We must continue to focus on gender diversity and further strengthen the outreach efforts in the Asia and Pacific region, where we are seeing the most membership growth.

As we look forward into the future, I believe that our society is in a good shape. Notwithstanding the challenge of the Covid situation, our community remains strong. I am hopeful that in-person conferences will attract our members back together soon. To all the fellow information theorists that I have had the incredible experience working with in the past year, I wish to say thank you from the bottom of my heart. It has been a privilege serving as the President of this beloved society. So long!

Report on the Greater Bay Area (GBA) International Workshop on Information Theory and Artificial Intelligence

Shu-Tao Xia and Bin Chen (co-organizers)

The Guangdong-Hong Kong-Macau Greater Bay Area (GBA) International Workshop on Information Theory and Artificial Intelligence took place at Tsinghua Shenzhen International Graduate School (SIGS) in on Sep. 25, 2021. This workshop was jointly organized by the IEEE Information Theory Society Guangzhou Chapter and Tsinghua SIGS, co-sponsored by Huawei Technologies Co., Ltd. More than 90 scholars and industry partners from mainland China participated in the Workshop on the day. Due to travel restriction, a few others participated online, including the invited speakers En-Hui Yang, Professor of University of Waterloo and Wei Yu of University, Professor of University of Toronto.

Many methods and ideas developed in information theory (IT) have been adopted to explain and reveal the internal mechanism in modern deep neural networks. Progress regarding an information-theoretic understanding of deep neural networks has often been driven by the deep-learning-based application and induced phenomenon and is yet to be explored further. Moreover, the use of artificial intelligence (AI) techniques to study and improve the classical source coding and channel coding problem in IT is to be explored. This workshop aims to provide an opportunity for academic exchanges on novel progress regarding the connection between IT and AI and promotes the academic and industrial applications in the GBA.

This one-day workshop invited 10 IT and AI experts to deliver in-depth talks. It also contains a poster session with 20 student posters. Welcoming speeches were given by Li Chen, Chair of the Guangzhou Chapter and Professor of Sun Yat-sen University, Jianmin Lu, Director of Huawei 2012 Wireless Lab, Lan Ma, the Vice President of SIGS, and Shu-Tao Xia, a Co-chair of the Workshop and Professor of Tsinghua SIGS. The daily program was hosted by Shu-Tao Xia and Bin Chen, Assistant Professor of Harbin Institute of Technology (Shenzhen). In the morning session, Zongben Xu, Academician of the Chinese Academy of Sciences and Professor of the Xi'an Jiaotong University started the session by a talk on a theoretical approach to automatic machine learning and his exploration based on learning methodology. Then, En-Hui Yang introduced a general framework and algorithms for designing the watermarking for protecting deep image classifiers against adversarial attacks. Wei Yu presented

some novel learning-based techniques to beamform and to reflect without explicit channel estimation. The morning session ended with the talk by Shu-Tao Xia and Bin Chen, who showed the quantization applied in a semantic communication system for the Internet of Things. The afternoon session started with the talk delivered by Pinyi Fan, Professor of Tsinghua University, with an overview of federated learning for mobile edge computing. Then, Wenyi Zhang, Professor of the University of Science and Technology of China, presented a tractable theory for non-ideal wireless communication models. Dr. Mengyao Ma of Huawei shared some promising future directions on wireless communication and basic research on IT. Dr. Qianqian Yang of Zhejiang University shared the latest research results on the theory and practice for semantic-oriented communications in 6G. The last talk was presented by Han Qiu, Assistant Professor of Tsinghua University, who presented his latest research results on deep learning-based image transmission for resource-constrained networks.

Finally, Li concluded the Workshop by pointing out that the IEEE Information Theory Society Guangzhou Chapter holds its mission in Promoting Exchanges and Serving the Community. It will always advocate consolidating fundamental research, which in return accumulates the indispensable elements for developing new information technology. At the same time, He called on more scholars who are interested in IT to join the Society as the progress of the Chinese IT research requires the efforts of everyone.

The Workshop Agenda	
Speaker	**Tittle**
Zongben Xu	A Theoretical Approach to Automatic Machine Learning: Exploration Based on Learning Methodology
En-Hui Yang	Watermarking for Protecting Deep Image Classifiers against Adversarial Attacks: A Framework and Algorithms
Wei Yu	Learn to Beamform and to Reflect Without Explicit Channel Estimation
Shu-Tao Xia & Bin Chen	Quantization in Semantic Communication System for Internet of Things
Pinyi Fan	Federated learning for mobile edge computing
Wenyi Zhang	Towards a tractable theory for non-ideal wireless communication models
Mengyao Ma	Basic research on Information Theory in Future Wireless Communication
Qianqian Yang	Semantic-oriented communications for 6G: Theory and Practice
Han Qiu	Deep Learning-based Image Transmission for Resource-constrained Networks

Survey on the Future Format of ISIT

P. Vijay Kumar and Wei Yu

The pandemic has caused us to rethink how a future IEEE International Symposium on Information Theory (ISIT) might be organized. Although the successes of ISIT 2020 and ISIT 2021 proved that it is possible to admirably conduct our annual flagship conference without interruption in the midst of a pandemic, the fully virtual mode is still far from ideal. This has motivated the Information Theory Society (ITSoc) Conference Committee to conduct a survey on the notion of a hybrid ISIT—a format that would permit both in-person and virtual attendance, albeit a format that is yet to be experienced at an ITSoc event. As the outgoing conference committee chair and society president of 2021, we would like to share the results of the survey with society members and future ISIT organizers, while also venturing to offer some of our personal perspectives. It is to be emphasized that the interpretations of the results and the opinions expressed below are solely that of the authors.

We begin by discussing some of the strong and weak aspects of fully in-person, fully-virtual and hybrid formats, summarized in Fig. 1.

Ability to hear talks in person: In a fully in-person conference, the attendees are able to observe and gauge the dynamics associated to an in-person presentation, including verbal and non-verbal cues, audience reaction and the ensuing Q&A session and discussion. It is hard to recreate this full experience in a hybrid or virtual format. However, the alternative virtual formats also have their own merits. In a virtual format, all attendees have access to the recorded 20-minute videos that can be accessed at leisure, thus eliminating schedule conflicts in a multi-track in-person conference. In some virtual formats, each talk is accompanied by a shorter 4-min presentation which makes it easier to sample many talks.

Opportunities for Networking: A fully-in-person format makes it much easier to meet colleagues. It affords opportunities for longer discussions over breaks as well as providing chance encounters that often end up being very important, especially for students and younger colleagues at the beginning of their careers. The networking experience in the current virtual platforms does not yet compare to the in-person experience.

Full Participation by All Attendees: A fully-in-person format has a captive audience that has gathered for the sole purpose of attending the conference at a venue where attendees typically spend all-week in conference-related activities. In a virtual or hybrid format, virtual attendees are easily distracted by local events and end up participating in only a small fraction of the conference. The organizers thus face the challenge of attracting and sustaining the interest of the participants.

The Time Zone Issue: The problem with handling different time zones is unique to the hybrid and virtual formats and represents a significant hurdle. To some extent, the use of recorded videos overcomes the issue. However, that does not permit interaction with the speaker or other attendees. ISIT 2020 and ISIT 2021 both made use of the "golden period" for live interactions—a narrow time window that avoids the late-night time period for most countries, but it is at best 3 hours in duration per day.

Accessibility: The hybrid and virtual formats score best with respect to this criteria as virtual attendance lowers cost for virtual attendees, particularly with respect to expenses such as air fares and accommodation; it also eliminates the hurdle of obtaining visas for foreign travel.

Reduced Carbon Footprint: Given the pressing concerns on climate change, permitting virtual participation clearly lowers the carbon footprint of the event, which is an important consideration.

Recorded Videos: Either a virtual or a hybrid format will typically request all participants to make available recorded videos of their talks for posting on the conference website. This permits the attendee to listen to a desired talk at the attendee's convenience. These talks can also be archived for later retrieval. These could also prove to be of use in providing supplementary material that accompanies a journal submission.

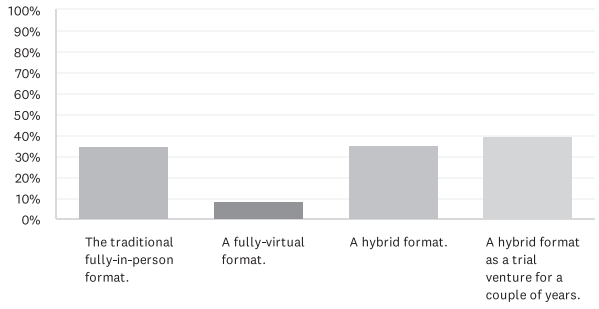
Complexity of Organization: A hybrid event is far more complex to organize than either a fully in-person or a fully-virtual counterpart. A hybrid conference would

Issues	Fully In-Person	Hybrid	Fully-Virtual
Opportunity to Hear Talks in Person	Excellent	Good	Not possible
Opportunities for Networking	Excellent	Good	Needs improvement
Full Participation by Attendees	True of all attendees	True of in-person attendees	Unlikely of most attendees
Time-Zone Issue	Not an issue	Somewhat of an issue	A challenging issue
Accessibility	Not the best	Excellent	Excellent
Reduced Carbon Footprint	Poor	Good	Excellent
Availability of Recorded Videos	Typically not made available	Typically made available	Typically made available
Complexity of Organizing	Medium	High	Low

Fig. 1 Strong and weak aspects of fully in-person, fully-virtual and hybrid conference formats.

likely require two parallel organization teams for separately and collaboratively handling the virtual and in-person tracks. The quality of the planned interactions between the in-person and virtual attendees will depend to a large extent, on the Internet bandwidth and the capabilities of the audio-video facilities at the venue.

The conference committee of the ITSoc was interested in the thoughts of the ITSoc members on the possible format of future ISITs. Toward this end, we conducted a survey during May to June time frame in 2021, which was still in the midst of the pandemic, but also a time when vaccines had started to make significant inroads in quite a few countries (although by no means fully available worldwide yet).



ANSWER CHOICES	RESPONSES	
The traditional fully-in-person format.	34.51%	274
A fully-virtual format.	8.31%	66
A hybrid format.	35.01%	278
A hybrid format as a trial venture for a couple of years.	39.67%	315
Total Respondents: 794		

Fig. 2 Which of the following ISIT formats would you prefer to see in the future?

The preamble to the survey was as follows: "The pandemic has made us aware of the advantages of incorporating an online component to most activities. By a hybrid ISIT, we mean an IEEE International Symposium on Information Theory (ISIT) in which some attendees, including the presenters of accepted papers, attend in person and some attend virtually, a recorded video presentation of each accepted paper is made available to all registrants and authors attending virtually will participate in synchronous live sessions. The survey seeks your opinion on the format of such a hybrid ISIT that might be held in the future. In answering this survey, please assume that we are in the post-pandemic era. When we speak below of an ISIT over 1+5 days, we mean an ISIT where tutorials are held on Day 1 followed by the remaining sessions over the next 5 days."

The survey received a phenomenal 794 responses (considering that the usual size of ISIT is about 800-900). Questions 1–3 are on the demographics. They show that the responses are similar to the demographics of a typical ISIT. For example, about 53% of the responses are from faculty members, 10% from industry, and about 32% from students and post-docs. All geographical regions are proportionally represented. Interestingly, we received a uniform range of responses from those who have never attended ISIT, or attended ISIT only once, all the way to ISIT veterans who have attended 5 or more ISITs. The answers to the questions below do not differ significantly for different demographics (e.g., faculty members vs. students, or different geographic regions). Below, we show some of the highlights of the survey results.

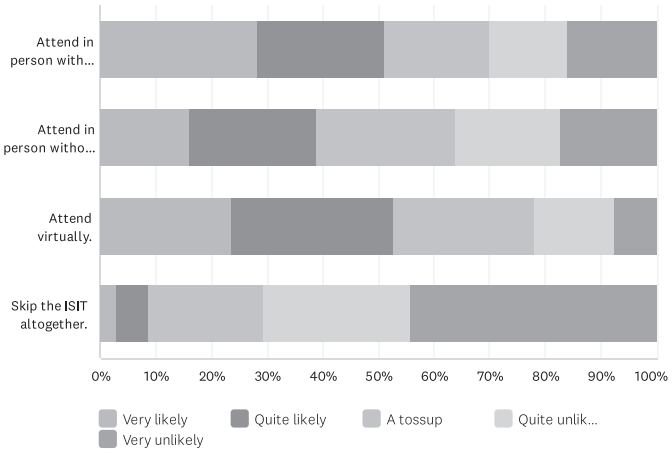
Fig. 2 shows the responses to the key question of the preferred format of future ISITs. While there is a substantial fraction of the respondents who prefer to keep the traditional fully-in-person format, a majority of respondents are in favor of a hybrid format at least on a trial basis. The caveat here is of course, that the ITSoc has yet to conduct a hybrid event[1]. Thus respondents answered this question based on the description provided at the start as well as their own supplemental notion of what a hybrid might look like. It is not yet clear if the technological limitations, the organizational hurdles, and the time zone constraints can fully deliver the perceived promises of a hybrid event. Interestingly, there was only a low level of support for a fully-virtual format. This is perhaps not surprising, given that all of us have been involved in hundreds of virtual calls on various online platforms during the lockdown days of the pandemic that has left us craving for in-person interaction.

We also asked how likely people would attend a hybrid ISIT in-person or virtually in the post-pandemic era, while accounting for the cost differentials. The results in Fig. 3 show that despite the additional cost, there is a definite greater preference for attending ISIT in person. On the other hand, among all the options, attending the ISIT virtually also has the fewest percentage of respondents marking it as something they are unlikely or very unlikely to do. An interpretation of this survey result is that having the virtual option does appeal to a significant percentage of ISIT attendees. If a virtual option is available, perhaps about 25% or even as high as 50% of the attendees may choose to do so virtually, which could be a significant concern for the organizers of future ISITs, because it would mean that the in-person component of a hybrid ISIT would be much smaller than a traditional ISIT.

In the next series of questions, we were interested in finding out the perceived advantages and disadvantages of a hybrid ISIT. Fig. 4 shows that cost, flexibility, and greater outreach are viewed as being valued attributes of the hybrid format, while Fig. 5 shows that there is a widespread feeling that a hybrid ISIT will reduce opportunities for networking and that a hybrid format will relegate students to the role of a remote participant. With regard to the second concern, in the opinion of the authors, one could argue that in the absence of a hybrid format, some students might not have gotten a chance to participate at all, including many prospective attendees from developing nations.

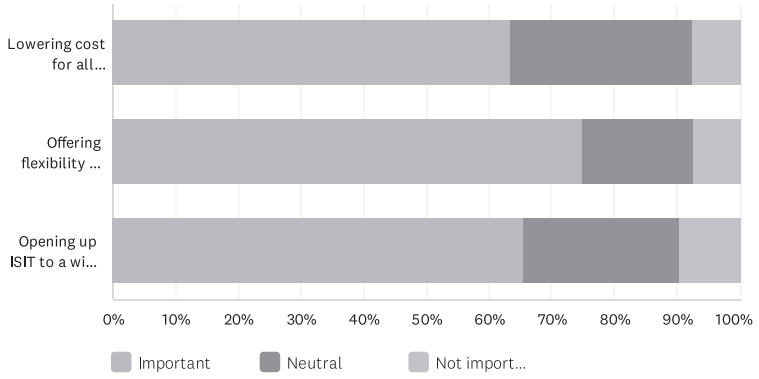
Finally, we asked the survey respondents about the principles that should guide the organizers of the future ISITs. There is strong consensus that a hybrid ISIT should not increase the cost of in-person attendees. There is also good support for the statement that

[1]At the recent ITSoc Board of Governors meeting held on Nov. 13, 2021, the proposal by the General Chairs of ISIT 2023, of adopting a hybrid format for ISIT 2023 was approved.



	VERY LIKELY	QUITE LIKELY	A TOSSUP	QUITE UNLIKELY	VERY UNLIKELY	TOTAL	WEIGHTED AVERAGE
Attend in person with banquet.	28.21% 224	22.92% 182	18.77% 149	14.11% 112	15.99% 127	794	2.67
Attend in person without banquet.	15.87% 126	23.05% 183	24.94% 198	19.02% 151	17.13% 136	794	2.98
Attend virtually.	23.55% 187	29.22% 232	25.31% 201	14.36% 114	7.56% 60	794	2.53
Skip the ISIT altogether.	2.90% 23	5.79% 46	20.65% 164	26.57% 211	44.08% 350	794	4.03

Fig. 3 Assume that a hybrid format is adopted, and consider a hypothetical scenario in which the in-person registration fees are US $850 with banquet, $650 without banquet, student registration is 50% of the above, and the virtual attendance registration fees are $250 per paper, and in addition, $100 for regular members, and $50 for student members. Assuming you have an accepted paper, how likely are you to attend the ISIT, and in what form? (Please do not forget to factor in other costs associated with in-person attendance such as airfare and hotel-room charges.)



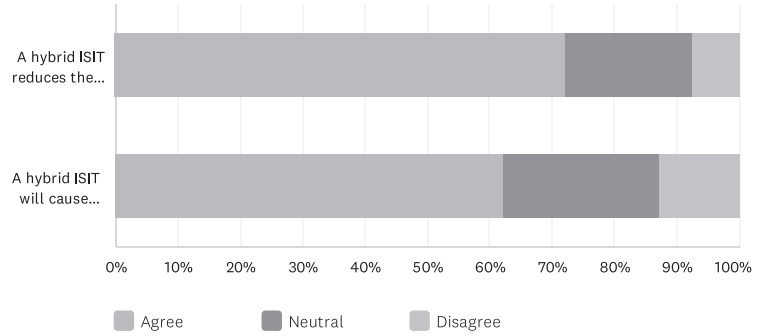
	IMPORTANT	NEUTRAL	NOT IMPORTANT	TOTAL
Lowering cost for all attendees.	63.35% 503	29.09% 231	7.56% 60	794
Offering flexibility to attend virtually.	74.81% 594	17.76% 141	7.43% 59	794
Opening up ISIT to a wider audience.	65.37% 519	24.94% 198	9.70% 77	794

Fig. 4 How important are the following possible positive attributes of a hybrid ISIT?

a hybrid ISIT should be designed so as to encourage in-person attendance and that a hybrid ISIT should therefore, prioritize in-person experience over the virtual experience. There is lesser support for requiring all attendees to make available recorded 20-min versions of their presentations.

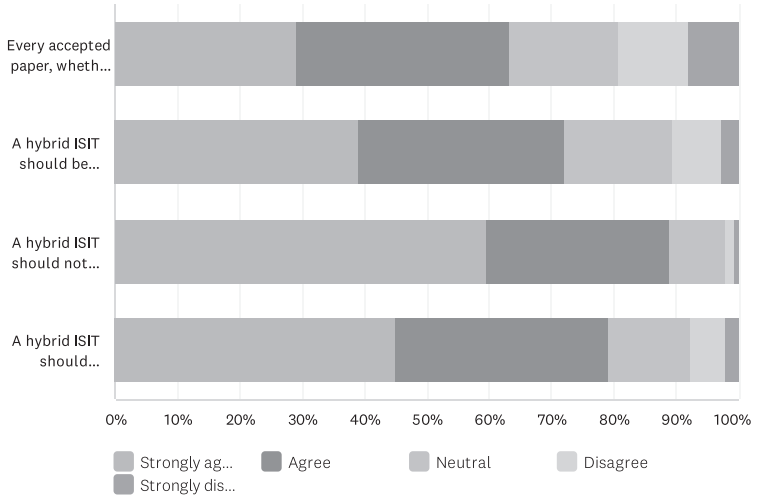
We asked a couple of additional questions about the specifics of how to organize a hybrid conference. Due to space constraint, we do not include the results in this article. Full survey results are available on the ITSoc website[2]. It should be emphasized that the hybrid format is very much only an experimental concept at this point. We also caution that the survey captures a snapshot of the sentiment of the respondents at a particular juncture only, and opinions could well shift over time. Nevertheless, it is our hope that this survey will provide a useful data point for the

[2]https://www.itsoc.org/news/survey-future-format-isit



	AGREE	NEUTRAL	DISAGREE	TOTAL
A hybrid ISIT reduces the opportunity for networking and meeting speakers in person and this is a concern.	72.17% 573	20.28% 161	7.56% 60	794
A hybrid ISIT will cause students to become remote participants and this is a concern.	62.22% 494	25.06% 199	12.72% 101	794

Fig. 5 This question examines some possible negative attributes of a hybrid ISIT. Indicate your agreement or disagreement.



	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	TOTAL
Every accepted paper, whether presented in person or virtually, should be accompanied by a 20-min recorded, presentation video.	29.09% 231	34.01% 270	17.63% 140	11.21% 89	8.06% 64	794
A hybrid ISIT should be structured so as to encourage in-person attendance.	39.04% 310	33.00% 262	17.38% 138	7.93% 63	2.64% 21	794
A hybrid ISIT should not increase cost of in-person attendance as compared to a traditional ISIT.	59.45% 472	29.47% 234	9.07% 72	1.39% 11	0.63% 5	794
A hybrid ISIT should prioritize in-person experience while providing as good a virtual experience as possible.	45.09% 358	34.13% 271	13.10% 104	5.67% 45	2.02% 16	794

Fig. 6 Indicate whether you agree or disagree that the statements above can be viewed as guiding principles in organizing a hybrid ISIT

organizers of future ISITs. The implementation of a hybrid conference would of course also be subject to technological feasibility and organizational practicality.

In summary, the survey indicates that while the personal interactions and networking opportunities of an in-person ISIT are highly valued, there is also a strong interest in a hybrid format for the ISIT in a post pandemic era, even if only on a trial basis. There are some strong reasons in favor of holding ISITs in hybrid format: making ISITs accessible to a wider audience, lowering the cost to virtual attendees, giving attendees the flexibility to attend in person or virtually. There are significant challenges to overcome such as the complexity of organizing a hybrid ISIT, the time-zone hurdle, making sure that there is sufficient incentive for participants to attend in person. It is hoped that in time ISITs will evolve to overcome these hurdles.

Call for Nominations

(ordered by deadline date)

Thomas M. Cover Dissertation Award

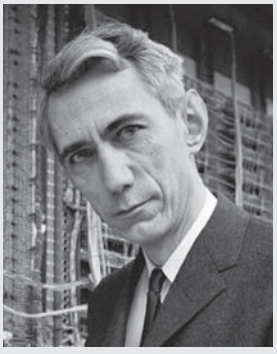
The IEEE Information Theory Society Thomas M. Cover Dissertation Award, established in 2013, is awarded annually to the author of an outstanding doctoral dissertation contributing to the mathematical foundations of any of the information sciences within the purview of the Society including, but not limited to, Shannon theory, source and channel coding theory, data compression, learning theory, quantum information theory and computing, complexity theory, and applications of information theory in probability and statistics. Nomination of underrepresented minorities are encouraged. Eligible dissertations must have been successfully defended during the two calendar years prior to the award year.

NOMINATION PROCEDURE: Nominations must be submitted by **January 15, 2022** using the online form available at https://www.itsoc.org/honors/cover-award. Endorsement letters should be emailed by **January 25, 2022** to the Committee Chair (Roy Yates, ryates@winlab.rutgers.edu) and CC to Matt LaFleur (m.lafleur@ieee.org) with "Cover Award Recommendation" in the subject line.

IEEE Joint ComSoc/ITSoc Paper Award

The Communications Society/Information Theory Society Joint Paper Award recognizes outstanding papers that lie at the intersection of communications and information theory. Any paper appearing in a ComSoc or ITSoc publication during the preceding three calendar years is eligible for the award.

NOMINATION PROCEDURE: Nominations and optimal letters of endorsement must be submitted by **February 15, 2022**. All nominations should be submitted using the online nomination forms. Please see http://www.itsoc.org/honors/comsoc-informationtheoryjoint-paper-award/comsoc-itsoc-paper-award-nomination-form for details. Please include a statement outlining the paper's contributions.



IEEE Information Theory Society Claude E. Shannon Award

The IEEE Information Theory Society Claude E. Shannon Award is given annually to honor consistent and profound contributions to the field of information theory.

NOMINATION PROCEDURE: Nominations and letters of endorsement must be submitted by **March 1, 2022**. All nominations should be submitted using the online nomination forms. Please see http://www.itsoc.org/shannon-award for details.

IEEE Information Theory Society Aaron D. Wyner Distinguished Service Award

The IT Society Aaron D. Wyner Service Award honors individuals who have shown outstanding leadership in, and provided long standing exceptional service to, the Information Theory community.

NOMINATION PROCEDURE: Nominations and letters of endorsement must be submitted by **March 1, 2022**. All nominations should be submitted using the online nomination forms. Please see http://www.itsoc.org/wyner-award for details.

IEEE Fellow Program

Do you have a colleague who is a senior member of IEEE and is deserving of election to IEEE Fellow status? If so, please submit a nomination on his or her behalf to the IEEE Fellow Committee. The deadline for nominations is **March 1, 2022**.

IEEE Fellow status is granted to a person with an extraordinary record of accomplishments. The honor is conferred by the IEEE Board of Directors, and the total number of Fellow recommendations in any one year is limited to 0.1% of the IEEE voting membership. For further details on the nomination process please consult: http://www.ieee.org/web/membership/fellows/index.html

IEEE Information Theory Society Paper Award

The Information Theory Society Paper Award is given annually for an outstanding publication in the fields of interest to the Society appearing anywhere during the preceding two calendar years. The purpose of this Award is to recognize exceptional publications in the field and to stimulate interest in and encourage contributions to fields of interest of the Society.

NOMINATION PROCEDURE: Nominations and letters of endorsement must be submitted by **March 15, 2022**. All nominations should be submitted using the online nomination forms. Please see http://www.itsoc.org/honors/informationtheory-paper-award/itsoc-paper-award-nomination-form for details. Please include a statement outlining the paper's contributions.

IEEE Information Theory Society James L. Massey Research & Teaching Award for Young Scholars

The purpose of this award is to recognize outstanding achievement in research and teaching by young scholars in the Information Theory community. The award winner must be 40 years old or younger and a member of the IEEE Information Theory Society on January 1st of the year nominated.

NOMINATION PROCEDURE: The nominee must be a Society member, who on January 1st of the year in which the award is given, is no more than 10 years beyond having their highest degree (up to doctorate) conferred. Nominations and supporting materials must be submitted by **March 15, 2022**. All nominations should be submitted using the online nomination forms. Please see http://www.itsoc.org/honors/massey-award/nominationform for details.

IEEE Awards

The IEEE Awards program pays tribute to technical professionals whose exceptional achievements and outstanding contributions have made a lasting impact on technology, society and the engineering profession. For information on the Awards program, and for nomination procedures, please refer to http://www.ieee.org/portal/pages/about/awards/index.html

2021 JTG/IEEE Information Theory Summer School *(continued from page 9)*

multi-access coded caching), Deekshith P K, IISc Bangalore (Second-order Rates for a Block Fading Channel with an Energy Harvesting Transmitter), and Mohammad Ishtiyaq Qureshi, IIT Mandi (On the Information Flow in Undirected Unicast Networks).

The course was attended by more than two hundred eighty participants from around seventy institutes in India and ten institutes outside of India. The lectures were very well received, and there was good participation in the Q&A sessions. We are thankful to our sponsors: platinum sponsors, IEEE Information Theory Society and Qualcomm, Gold Sponsors, COMSNETS association and Springer and Silver Sponsors, British Telecom India Research Centre at IISc Bangalore.

Recorded sessions of the summer school can be accessed from the course website https://www.iitk.ac.in/jtg2021/

IEEE Information Theory Society Board of Governors Meeting

Location: Remote

Date: November 13th, 2021

Time: The meeting convened at 9:00 am EST; the meeting adjourned at 4:45 pm EST

Meeting Chair: Wei Yu

Minutes taken by: Lara Dolecek

Meeting Attendees: Erik Agrell, Matthieu Bloch, Joseph Boutros (#), Robert Calderbank (#), Themistoklis Charalambous (#), Li Chen (#), Kristen Cignavitch (#), Natasha Devroye, Suhas Diggavi, Lara Dolecek, Stark Draper, Meir Feder, Christina Fragouli, Massimo Franceschetti, Andrea Goldsmith, Camilla Holanti, Shao-Lun Huang (#), Sid Jaggi, Tara Javidi, Navin Kashyap (#), Vijay Kumar, Brian Kurkoski, Matt LaFleur (#), Muriel Médard, Olgica Milenkovic, Prakash Narayan, Henry Pfister, Joachim Rosenthal, Stefano Rini (#), Parastoo Sadeghi, Anand Sarwate, Emina Soljanin, Vincent Tan, Satyajit Thakor (#), Daniela Tuninetti, Emanuele Viterbo (#), Aaron Wagner, I-Hsiang Wang (#), Rabab Ward (#), Rick Wesel (#), Aylin Yener, Wei Yu.

Non-voting members are denoted by (#).

Business conducted between meetings.

1) In June 2021, the board elected the officers for 2022:

   Christina Fragouli was elected as the President of the IEEE Information Theory Society for 2022.

   Matthieu Bloch was elected as the First Vice President of the IEEE Information Theory Society for 2022.

   Stark Draper was elected as the Second Vice President of the IEEE Information Theory Society for 2022.

2) In July 2021, the board voted on the Area Editors for Transactions on Information Theory.

   - Shannon Theory and Information Measures—Ioannis Kontoyiannis
   - Coding and Decoding—Moshe Schwartz
   - Communications—Ubli Mitra
   - Machine Learning and Statistics—Bob Williamson
   - Sequences and Cryptography—Anne Canteaut
   - Security and Privacy—Aylin Yener
   - Quantum—Andreas Winter
   - Signal Processing and Source Coding—Deniz Gündüz
   - Networking and Computation—Edmund Yeh

   All candidates were approved by the board.

3) In August 2021, the board voted to approve meeting minutes from the June 2021 meeting.

4) In October 2021, BoG voted on the following slate of associate editor (AE) candidates for Transactions on Information Theory:

a) Coding and Decoding AE Candidates
   Eimear Byrne
   Cunsheng Ding
   Ryan Gabrys
   Gennian Ge
   Anna-Lena Horlemann-Trautmann
   Brian M. Kurkoski
   Vitaly Skachek
   Itzhak Tamo
   Xiande Zhang

b) Signal Processing and Source Coding AE Candidates
   Lifeng Lai
   Or Ordentlich
   Jan Østergaard
   Namrata Vaswani
   Zhiqiang Xu

c) Networking and Computation AE Candidates
   Atilla Eryilmaz
   Iraj Saniee
   Vijay Subramanian

d) Security and Privacy AE Candidates
   Matthieu Bloch
   Mael LeTreust
   Ravi Tandon
   Vinod Prabharakan
   Anand Sarwate
   Mikael Skoglund

e) Sequences and Cryptography AE Candidates
   Thomas Johansson
   Daniel Katz
   Gohar Kyureghyan

f) Communication AE Candidates
   Ashutosh Sabharwal
   Elif Uysal
   Meixia Tao

g) Shannon Theory and Information Measures AE Candidates
   Varun Jog
   Anelia Somekh-Baruch

Aslan Tchamkerten
Michèle Wigger

All AE candidates were approved by the board.

At 9:00 am EST, ITSoc President Wei Yu called the meeting to order. Attendees introduced themselves. President Yu thanked everyone for joining the meeting.

Motion: A motion was made to approve the agenda.

The motion passed.

President's Report—Wei Yu

President Yu started his presentation by thanking the members for their service. He next presented ITSoc membership numbers and stated that now the membership has been at the highest level since 2003, and that there has been a significant growth in Asia and Pacific region. President Yu also stated that starting in 2023, membership fee discount program for developing nations will be implemented. Next, President Yu announced the results of BoG election. The following members were elected (or re-elected) to the BoG for 2022–2024: Marco Dalai, Lara Dolecek, Michael Langberg, Henry Pfister, Sennur Ulukus, and Shun Watanabe. He thanked Emina Soljanin for nearly a decade of service on the BoG, as well as the other outgoing BoG members P. Vijay Kumar, Andrea Goldsmith, Suhas Diggavi, Prakash Narayan and Olgica Milenkovic. He welcomed Stark Draper as Second Vice President for 2022. Next, he stated that Edmund Yeh is renominated as Treasurer for 2022, and that Parastoo Sadeghi is nominated as Secretary for 2022. He next went over the awards received by society members. President Yu next discussed IEEE Systems Council, in which ITSoc is one of 18 sponsoring members. He stated that the main membership benefit is outreach, and that the membership fee is permanently set to $0.

The following motions were presented.

Motion: To reappoint Edmund Yeh as Treasurer for 2022.

Motion: To appoint Parastoo Sadeghi as Secretary for 2022.

The motions passed.

The following motion was issued.

Motion: To renew the MOU with IEEE systems council.

The motion passed.

Next, President Yu provided updates on the movie "Bit Player." He stated that Amazon removed all documentaries not produced by itself, including this one. The movie is now available on Curiosity Stream. The movie has made $42K over two years. The society takes a fraction of this revenue; this amount would go to reserves if not spent.

In conclusion, President Yu outlined challenges on the horizon, including that the locations of ISIT 2024 and 2025 are both still open, whether ISITs will be remote, in-person, or hybrid, and how the impact and timeliness of flagship journals could improve. It was noted that the next BoG meeting will be on February 5, 2022, with the format still to be determined.

IT Schools Subcommittee—Parastoo Sadeghi

Next presentation was opened up by Parastoo Sadeghi on behalf of the IT Schools Subcommittee. She provided an update on the IT schools. NASIT 2021 was held virtually in Vancouver, Canada. All lectures were live and there were around 200 attendees. Statistics regarding attendee demographics were presented. IT school held in India in 2021 had pre-recorded lectures. Statistics and the list of speakers were also shared with BoG.

Next, Shao-Lun Huang presented a proposal for EASIT 2022 to be held in Shenzen City, China. He went over the organizing committee, location, venue, list of speakers, timeline, and three plans for holding the event in person, in a hybrid mode, and fully virtual. The preference from the organizers is to hold the event in person.

The following motion was issued.

Motion: To support the 2022 EASIT School at $20K.

The motion passed.

Next, Satyajit Thakor presented the status of the 2022 India School of Information Theory to be held at IIT Mandi, India in June 2022. He presented IIT Mandi, and stated that the school harbors cross-disciplinary culture and that this is the only IIT in the Himalayas. He also presented the list of speakers, went over the registration fees, organizing and advisory committee, and stated that they are currently seeking sponsorship.

The following motion was issued.

Motion: To support the 2022 India School at $10K.

The motion passed.

Next, Rick Wesel presented the status of the 2022 North American School of Information Theory (NASIT), to be held at UCLA, Los Angeles in August 2022. He went over the program outline, list of speakers, organizing committee, and the social program.

The following motion was issued.

Motion: To support the 2022 NASIT at $10K.

The motion passed.

It was stated by Parastoo that a potential place for ESIT 2023 is Bristol, UK, and Sid Jaggi is leading this effort. It was also discussed to not hold EASIT in 2023 due to another related event taking place in Hong Kong around the same time. BoG agreed to postponement.

Conference Committee—Vijay Kumar

Vijay provided update on the status of ISIT 2022 to 2024. He stated that ISIT 2021 was highly successful. It was noted that new budget for ISIT 2022 needs to be approved. Vijay also stated that previously considered ISIT 2024 in New York City will not be further pursued due to steep cost associated with various options. He thanked Anand Sarwate and Joerg Kliewer for their service in regards to planning of this event.

ISIT 2021 Organizing Committee Update—Parastoo Sadeghi

Parastoo presented a report on ISIT 2021. There were 968 attendees and 571 papers were presented. There were 8 tutorials over 2 days. Parastoo provided detailed statistics about the event. The event was completely virtual and was run with great success.

ITW 2021 Organizing Committee—Brain Kurkoski

Next, Brian presented a report on ITW 2021. He thanked the organizing committee. Brian stated that ITW was run fully virtually on a platform developed for the society. He also said that there was daily lottery to encourage participation. BoG members expressed their impression that the workshop was extremely well run. It was clarified that the society invested $35K to develop this on-line platform which the society now owns.

ISIT 2022 Organizing Committee—Themis Charalambous

Next update was given by Themis on behalf of the ISIT 2022 Organizing Committee to be held in Espoo, Finland. There was a discussion on the format of the event (in person vs. fully virtual, and if in-person the criteria for accepting on-line presentations), and at what time does that format need to be made binding so as not to lose the venue deposit but also not to miss out on prospective authors who may not be able to attend in person. A survey to prospective authors is to be made available at submission time to gauge the in-person attendance was discussed. BoG members made suggestions on how to make this survey valuable for the organizers while keeping the event inclusive for the whole society, and to make ISIT 2022 offer the best experience given the circumstances.

Next, a poll was issued to gauge BoG opinion on the minimum number of in person attendees an ISIT needs to attract in order to be worthwhile to hold an ISIT in person. Out of 23 respondents, 7 chose 200; 8 chose 300; 5 chose 400; 2 chose 600; 1 chose 700.

ITW 2022 Organizing Committee—Navin Kashyap

Next presentation was given by Navin on behalf of the ITW 2022 Organizing Committee. He stated that the event is primarily planned in a hybrid mode, and that the venue is flexible in terms of booking. He also went over the budget and timeline. He stated that call for papers is out and that a sponsorship brochure has been prepared. He next went over the next steps in organization, including setting up virtual platform and submission, and having an open call for themed sessions.

ITW 2023 Proposal—Joseph Boutros

Joseph went over the proposed dates, motivation for the proposed venue, including a historical context. He stated that the web domain is already booked. There was some discussion on the paper acceptance rate, which is currently projected at 40-45%. It was noted that some previous ITWs had been very popular in terms of submissions, leading to program expansion.

The following motion was issued.

Motion: To approve ITW 2023 and its attendant budget.

The motion passed.

ISIT 2023 Organizing Committee—I-Hsiang Wang

I-Hsiang provided an update on the status of ISIT 2023. He presented a new hybrid conference format that will consist of both live and in-person sessions. Each day of the conference will have 2 live and 6 in-person parallel sessions. All the conference events will be held in the same week. There was some discussion regarding how many papers will be allowed for the virtual component. It was noted that virtual sessions are harder to implement and thus the number of virtual papers should be limited while also maintaining a high quality of papers. A motion regarding conference budget was presented. After a discussion on if and how to limit the virtual attendance, a revised motion was issued.

Motion: To approve a hybrid format of ISIT 2023 and its attendant budget.

The motion was approved.

IEEE Division IX Update—Rabab Ward

Next presentation was given by Rabab Ward who presented an IEEE Division IX update. She went over the membership numbers, and said there has been a recent drop in membership in higher grade. She also stated that IEEE Constitution is being revisited, as it has not changed since 1963. Currently, 1000 signatures on a petition are required to initiate a change, and the new rule will change it to 1% of the total membership plus at least 1/3 of 1 % from all regions.

A BoG member commented that surpluses are revealed late, and Rabab said other societies also have a similar issue. It was state that Aylin Yener is a candidate for Division IX director-elect.

After a short break, the meeting continued.

Constitution and Bylaws Committee—Emina Soljanin

Emina presented proposed changes to bylaws. President Yu went over the rules to make changes to bylaws; revisions that were communicated to the board three weeks ago require 2/3 majority of those present (assuming quorum is met); amendments that change the intent of the revisions require unanimous approval.

There was a discussion regarding the inclusion of 3 journal and magazine EiCs as ex-officio board members. It was noted that other sister societies do not share the practice of including EiCs on the board. It was also noted that changes to the Bylaws are potentially cascading and need to be done carefully.

A motion to make changes to the pertinent part of Bylaws was introduced. A BoG member issued an amendment to remove all EiCs from the board.

The amendment failed. It did not receive unanimous approval.

The following motion was issued.

Motion: To approve the Bylaws revision Article IV, Section 3 (Ex-officio member of the Board).

The motion failed, as it did not reach 2/3 majority.

The following motion was issued.

Motion: To approve the Bylaws revision Article V, Section 4 (Publications Committee).

The motion passed.

It was explained that the new Area Editor model for the Transactions requires an update to the Bylaws. The set of motions on the Transactions, Journal, and Magazine editorial structure were introduced.

The following amendments to the language of the motions were issued.

Motion. To amend the Bylaws revision Article V, Section 4, Subsection A (Transactions Editor-in-Chief, Area Editors, and Associate Editors) as follows:

Current: In the event of a within-term vacancy in the position of EiC, an interim EiC shall be designated by the President from the present editorial board or past EiCs.

Amended: In the event of a within-term vacancy in the position of EiC, an interim EiC shall be designated by the President, from the present Transactions Area Editors, Associate Editors, or past Transactions EiCs.

The motion passed.

Next motion was issued.

Motion: To amend the Bylaws revision Article V, Section 4, Subsection B (Journal Steering Committee, and Editor-in-Chief) as follows:

Current: "In the event of a within-term vacancy in the position of EiC, an interim EiC shall be designated by the President from the present editorial board or past EiCs."

Amended: In the event of a within-term vacancy in the position of EiC, an interim EiC shall be designated by the President, from the present Journal Senior Editors, or past Journal EiCs.

The motion passed.

Next motion was issued.

Motion: To extend the meeting by 1 hour.

The motion passed.

Next motion was as follows.

Motion: To amend the Bylaws revision Article V, Section 4, Subsection C (Magazine Steering Committee, and Editor-in-Chief) as follows:

Current: In the event of a within-term vacancy in the position of EiC, an interim EiC shall be designated by the President from the present editorial board or past EiCs.

Amended: In the event of a within-term vacancy in the position of EiC, an interim EiC shall be designated by the President, from the present Magazine Editors, or past Magazine EiCs.

The motion passed.

The following amended motions on the publications were issued.

Motion: To approve the Bylaws revision Article V, Section 4, Subsection A (Transactions Editor-in-Chief, Area Editors, and Associate Editors).

The motion passed.

Motion: To approve the Bylaws revision Article V, Section 4, Subsection B (Journal Steering Committee, and Editor-in-Chief).

The motion passed.

The motion on the Magazine editorial structure was introduced. An amendment to the motion was proposed and seconded.

Motion: To remove "The Magazine Editor-in-Chief shall be a voting member of the Board".

The motion failed. It did not receive unanimous approval.

The original motion was issued.

Motion: To approve the Bylaws revision Article V, Section 4, Subsection C (Magazine Steering Committee, and Editor-in-Chief).

The motion failed. It did not receive 2/3 majority approval.

It was noted that there could be some resulting inconsistencies. A BoG member indicated that the bylaws document will be carefully checked after the meeting.

It was then explained that committee membership requirements require updating. Next motions were then issued.

Motion: To approve the Bylaws revision Article V, Section 4, Subsection D (Newsletter Editor).

Motion: To approve the Bylaws revision Article V, Section 6 (Digital Presence Committee).

Both motions passed

Next motion was issued.

Motion: To approve the Bylaws revision Article V, Section 10 (Aaron D. Wyner Distinguished Service Award Committee).

The motion passed.

Next motion was issued.

Motion: To approve the Bylaws revision Article V, Section 13 (Paper Awards Committee).

The motion passed.

Next motion was proposed and seconded.

Motion: To replace all occurrences of the pronouns "he/his/she/her" by "they/their" in the Bylaws.

The motion passed.

JSAIT EiC—Andrea Goldsmith

Andrea stated that there have been 7 issues so far, that the quality of papers has been high, and that JSAIT now generates a revenue of almost $100K in 2021. Jeff Andrews thanked Andrea for her excellent leadership, and presented to following motion, coming from the JSAIT steering committee.

Motion: To appoint Tara Javidi as the next EiC for JSAIT.

The motion passed.

Transactions on Information Theory (T-IT) EiC—Muriel Médard and Kristen Cignavitch

Next presentation was given by Muriel in her role as EiC of T-IT. She stated the paper submission and time to publication statistics. She also stated that there were outlier papers that went over one year without a single review. She also stated that the allotted time to review has been reduced and that she honored extension requests. New editorial structure with area editors has been put in place.

Next, Kristen Cignavitch, who is with IEEE Publishing Operations assisting with the T-IT issues, talked how distributing the work among area editors will make the reviewing workload easier to manage.

It was also stated that the journal is subject to review by the Periodicals Review and Advisory Committee (PRAC) from the IEEE on a 5-year cycle basis.

Next part of the meeting was an executive session.

The following motions were issued.

Motion: To appoint Graeme Smith as Associate Editor in Quantum for the IEEE Transactions on Information Theory.

Motion: To appoint Mario Berta as Associate Editor in Quantum for the IEEE Transactions on Information Theory.

Motion: To appoint Stefano Mancini as Associate Editor in Quantum for the IEEE Transactions on Information Theory.

Motion: To appoint Richard Nock as Associate Editor in Machine Learning for the IEEE Transactions on Information Theory.

Motion: To appoint Frank Nielsen as Associate Editor in Machine Learning for the IEEE Transactions on Information Theory.

All motions passed.

After the executive session ended, due to that the meeting is running overtime, the following motion was issued.

Motion: To remove the item on the meeting agenda regarding Treasurer's report.

The motion passed.

BITS Magazine—Christina Fragouli and Rob Calderbank

Rob provided an update on the status of BITS in his role as EiC of BITS. He mentioned that the first issue is in production, with the expectation from the IEEE of having 2 issues in the first year. He also mentioned two upcoming special issues in 2022, one on art and information theory and the other on quantum and information theory. He encouraged new submissions.

Christina, in her role as chair of the BITS steering committee, provided an update on how the BITS funding has been used for illustrations, design and publicity.

Proposal of Joy Thomas Tutorial Paper Award—Suhas Diggavi

Presentation was given by Suhas, who led an ad hoc committee to prepare the criteria for the IEEE Joy Thomas tutorial paper award. This award itself had been already approved by the board of Governors in the June 2021 meeting, where Suhas had presented the rationale of having such an award. He reminded everyone about the rationale of having such an award and its importance to the IT society. He also explained the criteria that the committee had proposed for the award including the eligibility, process and timelines.

Next, a motion was issued.

Motion: To approve the criteria and the process for the IEEE Joy Thomas Information Theory Tutorial Paper Award.

The motion passed.

Matthieu Bloch stated that the results for the Padovani Lecturer, Goldsmith Lecturer and Distinguished Lecturers will be available in 3 weeks.

Remaining agenda items were postponed for the next meeting.

The meeting ended at 4:45 pm EST.

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IEEE BITS | The Information Theory Magazine

Call for Papers

Special Issue on

'Information Processing in Arts and Humanities'

Recent years have witnessed the emergence of various sophisticated information processing tools — including artificial intelligence ones — that are capable of interrogating increasingly complex datasets in order to tackle challenges arising in various application domains.

With increasing digitization efforts adopted by libraries, museums, cultural heritage institutions, and other stakeholders — using sophisticated imaging tools such as hyper-spectral imaging, computerized tomography, and many more — there is now a unique opportunity to rely on state-of-the-art information processing tools to investigate scholarly and art work in order to generate new insights in the arts and humanities.

For example, such tools can help address high-profile questions in the arts and humanities; they can also support art conservation & preservation, and they can also lead to new ways to convey scholarship and art to the general public.

This special issue intends to showcase how information processing tools (broadly defined, hence encompassing artificial intelligence, signal and image processing powered by machine learning, and more) can be used to address challenges arising in the arts and humanities.

It also intends to bridge the gap between the information processing and the arts and humanities communities, by gathering representative contributions from interdisciplinary teams spanning both fields, in order to raise the visibility of this emerging interdisciplinary space.

We specifically encourage contributions from interdisciplinary teams composed of information processing researchers and arts or humanities scholars.

Topics of interest include (but are not limited to):

- Scientific imaging for arts, humanities, and cultural heritage, including hyper-spectral imaging, x-ray fluorescence, computerized tomography, remote sensing, and others.
- Information processing techniques to enrich and analyse digitised or born-digital datasets to answer new and established questions in the humanities, historical investigation, or art-historical investigation. Datasets of interest include, but are not limited to, texts, networks, audio, images, video, virtual, 3D and multi-dimensional
- Information processing tools to support art-historical analysis, art conservation & preservation, and art presentation, including style analysis, material analysis, virtual restoration, and visualisation of concealed features.
- Information processing tools to interrogate scholarly work, artwork, and cultural heritage collections at scale, including approaches to shape analysis in 2D and 3D, object matching, and object identification.
- General multimodal information processing tools capable of leveraging various data modalities to address outstanding challenges in the arts and humanities.

Both contributions involving the use of information processing techniques underpinned by data-driven methods or model-based ones are welcome.

Instructions:

Prospective authors are invited to submit a white paper (limited to three pages single column 11-point font size), containing manuscript title, motivation / significance, outline, representative references, and the author list with contact information and short bios. Full articles will be invited based on the review of white papers.

The full articles must be of tutorial/overview/survey nature, in an accessible style to a broad audience, and have significant relevance to the scope of the Special Issue. The full article would include up to 12 double column pages including references, 11-point font size, at least one figure (to be hosted at the website), up to 30 references, at least 1.25" margin on left and right sides, and 1" margin from top and bottom.

The articles should not have been published or be under review elsewhere. For submission guidelines, see the Information for Authors at https://www.itsoc.org/bits/information-authors.

Relevant Dates:

- White paper submission: 4th February 2022
- Manuscript invitation: 25th February 2022
- Manuscript submission: 29th April 2022
- Manuscript reviews: 27th May 2022
- Manuscript final version: 1st July 2022
- Special Issue Publication: September / October 2022

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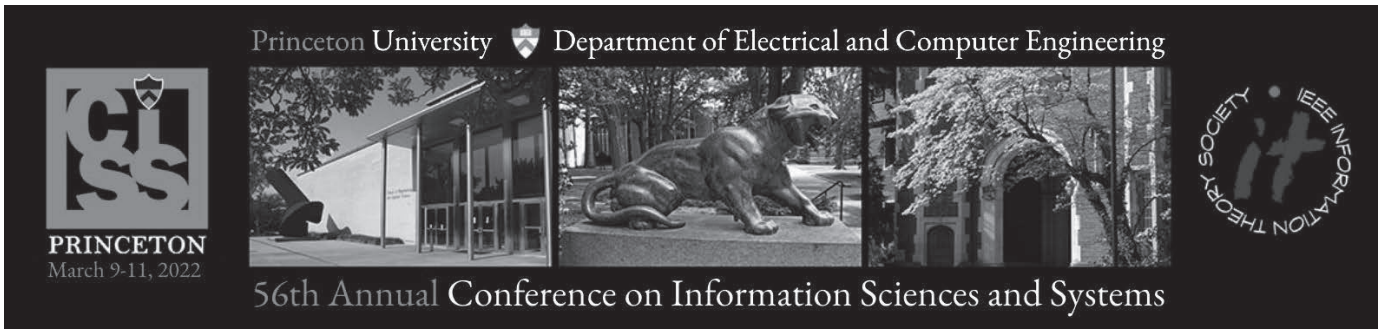

Call for Papers --

56th Annual Conference on Information Sciences and Systems

March 9, 10, & 11, 2022 (Virtual Conference)

Princeton University - Dept. of Electrical and Computer Engineering and Technical Co-sponsorship with the **IEEE Information Theory Society**

Authors are invited to submit previously unpublished papers describing theoretical advances, applications, and ideas in the fields of information sciences and systems including:

- Information Theory
- Communications
- Big Data Analytics
- Statistical Inference
- Networks, Systems & Control
- Coding Theory
- Signal Processing
- Reinforcement Learning
- Security and Privacy
- Deep Learning
- Image Processing
- Machine Learning
- Optimization
- Energy Systems
- Biological Systems

Electronic submissions of up to 6 pages (in Adobe PDF format) including 3-4 keywords must be submitted by **December 1, 2021**. Submissions should be of sufficient detail and length to permit careful reviewing. Authors will be notified of acceptance no later than **January 11, 2022**. Final manuscripts of accepted papers are to be submitted in PDF format no later than **January 18, 2022**. These are firm deadlines that will permit the distribution of electronic proceedings at the conference. Accepted papers will be allotted 20 minutes for virtual presentation, and will be reproduced in full (up to 6 pages) in the conference proceedings. IEEE reserves the right to exclude a paper from post-conference distribution (e.g., removal from IEEE Xplore) if the paper is not presented by the author at the conference.

For more information visit us at: http://ee-ciss.princeton.edu/

CONFERENCE COORDINATORS	PROGRAM DIRECTORS	IMPORTANT DATES
Lisa Lewis **Xuezhou Zhang** Dept. of Electrical and Computer Engineering Princeton University Princeton, NJ 08544 Phone: (609) 258-6227 **Email: ciss@princeton.edu**	**Mengdi Wang** **Chi Jin** Dept. of Electrical and Computer Engineering Princeton University Princeton, NJ 08544	**Paper submission deadline:** December 01, 2021 **Notification of acceptance:** January 11, 2022 **Final accepted manuscript due:** January 18, 2022

ISIT 2022

2022 IEEE INTERNATIONAL SYMPOSIUM ON INFORMATION THEORY

JUNE 26–JULY 1 AT AALTO UNIVERSITY IN ESPOO, FINLAND

CALL FOR PAPERS

Organizers

General co-chairs
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Razane Tajeddine

Webmaster
Antonia Wachter-Zeh

IEEE International Symposium on Information Theory (ISIT) is the flagship international conference dedicated to the advancement of information theory and related areas.

Interested authors are encouraged to submit previously unpublished contributions from a broad range of topics related to information theory, including but not limited to the following areas:

- Coding Theory and Applications
- Coded and Distributed Computing
- Combinatorics and Sequences
- Communication Theory
- Compressed Sensing and Sparse Representation
- Cryptography
- Decoding
- Detection and Estimation
- Distributed Storage
- Emerging Applications of IT
- Fairness in Machine Learning
- Information Measures
- Information in Decision and Control
- Information Theory in Biology and Neuroscience
- Information Theory in Computer Science and Computation
- Information Theory in Data Science
- Learning Theory
- Network Coding and Applications
- Network Data Analysis
- Network Information Theory
- Optical Communication
- Machine Learning
- Privacy
- Quantum Information Theory
- Security
- Shannon Theory
- Signal Processing
- Statistics
- Source Coding and Data Compression
- Wireless Communication

Submitted and published manuscripts should not exceed 5 pages in length, **plus an optional extra page containing references only**. Submitted manuscripts should be of sufficient detail to be evaluated by expert reviewers in the field.

We look forward to your participation in ISIT 2022!

Important dates

January 15, 2022 23.59 ET
Paper submission deadline

April 22, 2022
Acceptance notification

IEEE Advancing Technology for Humanity

IEEE Information Theory Society

Aalto University

isit2022.org

Canadian Society of Information Theory
Société canadienne de théorie de l'information

The 17th Canadian Workshop on InformationTheory

Ottawa, Ontario, Canada June 5-8, 2022

General Chair
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University of Ottawa

TPC Chairs
Masoud Ardakani
University of Alberta
Dmitry Trukhachev
Dalhousie University
(regular papers)
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Caltech

Muriel Medard
MIT

Yi Ma
University of California
Berkeley

Amin Shokrollahi
EPFL, Kandou

Wei Yu
University of Toronto

The 17th Canadian Workshop on Information Theory (http://cwit.ca/2022/) will be held on the University of Ottawa campus, Ottawa, Ontario, from Sunday, June 5 to Wednesday, June 8, 2022.

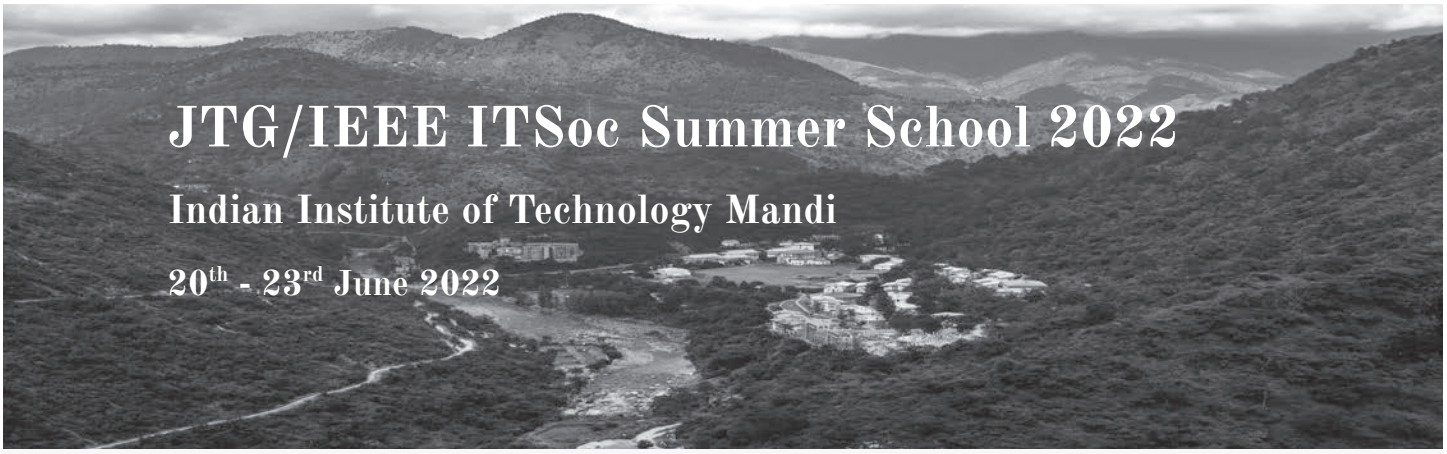
Papers in (but not exclusive to) the following fields of research are solicited:

- Shannon Theory
- Big Data Analytics
- Multiuser Information Theory
- Quantum Information Processing
- Coding Theory and Practice
- Coded Modulation
- Data Compression and Source Coding
- Optical Communications
- Cooperative Communication
- Low-latency Communication
- Information Theory in Biology
- Cryptology and Data Security
- Information Theory and Statistics
- Signal Processing
- Pattern Recognition and Learning
- Sequences and Complexity
- Machine Learning and Inf. Theory
- Data Networks
- Detection and Estimation
- Cognitive Radio
- Underwater Communications
- Network Coding and Applications

Authors wishing to have papers considered for the workshop should electronically submit their full papers (suggested length: five pages, maximum length: six pages) in PDF format through EDAS (https://edas.info/) using the standard IEEE two-column format (https://www.ieee.org/). Accepted papers will be published on IEEE Xplore.

Important Deadlines:

Paper submission: February 21, 2022
Notification of Acceptance: April 25, 2022
Final manuscript upload/author registration May 5, 2022:



Call for Participation

JTG/IEEE ITSoc Summer School is one of the most important annual events in India for the communications and information theory community. The summer school attracts world-renowned academics, researchers, and a large number of research students.

Indian Institute of Technology Mandi will host the 13th edition of this school. It will be the first time IIT Mandi will host the summer school. IIT Mandi was established in 2009 in the northern state of Himachal Pradesh and is the only IIT in the Himalayas. The institute is nested in a beautiful valley on the bank of the river Uhl, a tributary to the river Beas.

The summer school is planned as a **four-day event** in the in-person mode[1] to maximize the learning experience and interactions for participants. It will have some online lectures and live Q&A sessions. The keynote speakers will deliver expert lecture series on the most cutting-edge as well as foundational ideas in communication technology and information engineering. In addition, the summer school will have sessions from prominent academics and industry researchers. The MTech/MS/PhD participants will present their work during poster sessions. Special sessions are planned to mentor students and early career researchers on opportunities and career paths in industry and academia.

Registration will open in early 2022. The registration fee will include meals and accommodation. There will be an attractive low registration fee for students and postdocs.

Keynote & Distinguished Speakers

David Tse
Stanford University

Raymond W. Yeung
The Chinese University of Hong Kong

Aylin Yener
The Ohio State University

IEEE Advancing Technology for Humanity

IEEE Information Theory Society

Indian Institute of Technology Mandi

Contact

For any query send us a mail at
jtg2022@iitmandi.ac.in
or write to us at
Satyajit Thakor
School of Computing & Electrical Engineering
IIT Mandi, Kamand - 175075, HP, India

[1] Due to COVID-19 uncertainty, the summer school may be rescheduled as an online event.

ESIT'22 Call for Participation

The IEEE European School of Information Theory (ESIT) is an annual educational event, organized by the IEEE Information Theory Society (ITSoc), for graduate students, postdocs and researchers from institutes throughout Europe and beyond. The objective of the school is to provide participants with the opportunity (i) to learn from distinguished lecturers by attending long-format tutorials, (ii) to present their own work to obtain feedback and to start up collaborations, (iii) to hear about applications of information theory in industry, and (iv) to participate in a stimulating and inviting forum of scientists.

In 2022, we plan to bring the school back to an on-site format at Technical University (TU) Wien in Vienna, Austria, to fully embrace the community experience through on-site plenary talks, an online lecture with live Q&A session, and interactive attendee poster sessions, complemented by social events. In case an on-site event is still not possible, due to the global pandemic situation, we will offer a hybrid/virtual format.

Dates: The school starts on Sunday, **July 3rd**, evenings with a welcome reception and ends on Thursday, **July 7th**, afternoons.

Venue: The school is hosted by **Technical University (TU) Wien**, Austria's largest technical university teaching approximately thirty thousand students.

Location: The school takes place in **Vienna, Austria**'s capital city with approximately 1.9 million inhabitants, famous for its rich culture, imperial sights, palaces, museums, theaters and opera houses, as well as, its cozy wine taverns and coffee houses.

Program: The school will feature five on-site plenary tutorial lectures plus two online lectures with live Q&A sessions. In addition, there will be two poster sessions, including elevator pitches, with contributions from attendees. The technical program will be complemented by a number of social events.

Registration: The registration platform will open in early 2022. Reduced registration fees for IEEE members and especially for IEEE ITSoc members will be offered.

Additional information will be provided on our school website:

https://www.itsoc.org/conferences/schools/ESIT2022

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Kangqi Qiu, Tsinghua SIGS

2022 IEEE East Asian School of Information Theory (IEEE EASIT 2022)

August 2-5, 2022

Shenzhen, China

The 2022 IEEE East Asian School of Information Theory (IEEE EASIT 2022) is jointly organized by The IEEE Information Theory Society Guangzhou Chapter, Tsinghua Shenzhen International Graduate School, Sun Yat-sen University and The Chinese University of Hong Kong (Shenzhen). It will take place during August 2-5, 2022, at Shenzhen Institute for Talents Development. IEEE EASIT 2022 will feature 8 tutorials delivered by distinguished lecturers and cover the most cutting-edge research in information theory, including information theory and statistics, information theory and machine learning, coding for communications, and coding for storage. The School will include a series of events that provide graduate students the opportunity to interact with senior researchers of the area, which will be a stimulating forum for the sciences in information theory. Participants can also seek for potential collaborations and strengthen their connections with the community.

Venue: Lecture Hall,1F, Block B, Talents Center, Shenzhen Institute for Talents Development.

Location: No. 4589 Qinyuan Rd., Nanshan District, Shenzhen, Guangdong, China.

Registration: The registration platform will open in early 2022.

Website: https://easit.sigs.tsinghua.edu.cn

Co-hosts: Guangzhou Chapter 清華大學深圳国际研究生院 Tsinghua Shenzhen International Graduate School 中山大學 SUN YAT-SEN UNIVERSITY 香港中文大學(深圳) The Chinese University of Hong Kong, Shenzhen

Sponsors: IEEE Information Theory Society HUAWEI

Save the date!

2022 North American School of Information Theory

NASIT-2022
August 16-19, 2022

This will be an in-person event at UCLA in Los Angeles, California.
Registration opens February 1, 2022.
Travel Grants available thanks to the National Science Foundation.
Initial website: http://www.seas.ucla.edu/csl/#/learn/NASIT-2022
Eventual website: https://www.itsoc.org/conferences/schools/NASIT2022

Each year the IEEE Information Theory Society holds a workshop to help graduate students working on problems in information theory across the continent and the world come together to learn about the latest research frontiers in information theory and to form a community across the many universities. This year we have a wonderful slate of speakers including the following:

Alon Orlitsky

Urbashi Mitra

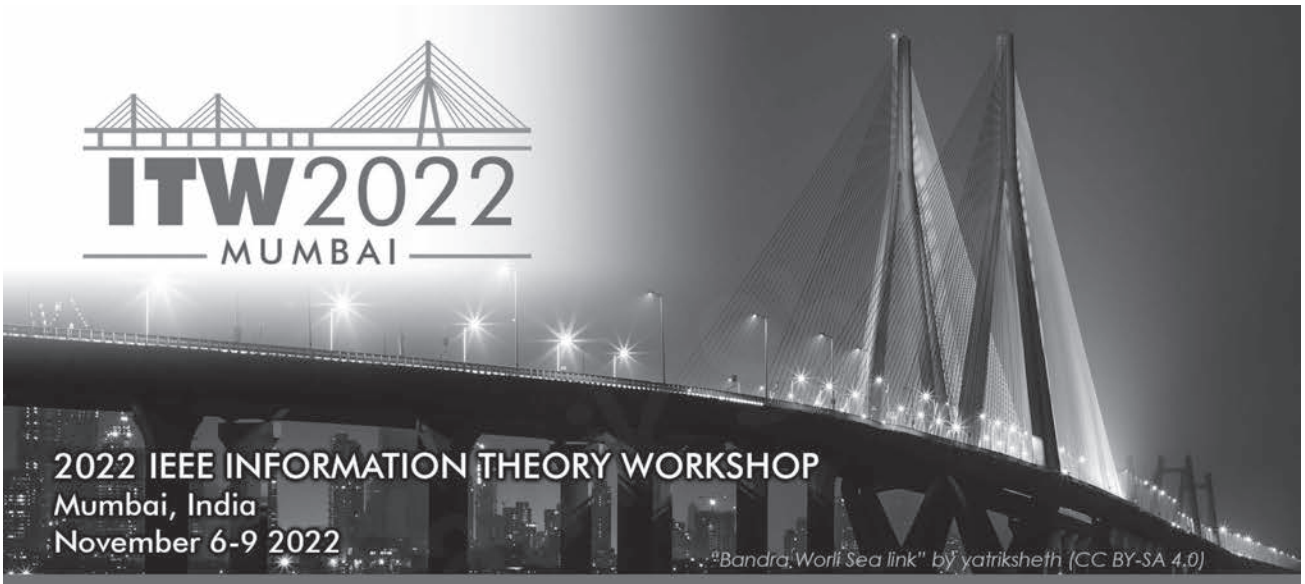
Victoria Kostina

Christina Fragouli

Andrea Ghez

Among other talks, Shannon Award winner Alon Orlitsky will reveal the information theoretic foundations for data science. Professor Urbashi Mitra from the University of Southern California will investigate active learning for numerous applications including wireless body area sensor networks. Professor Victoria Kostina from Cal Tech will explore information bottlenecks in distributed control and computation, Professor Christina Fragouli will show how group testing can take community correlations into account. Phil Regalia will provide an overview of NSF's Information Theory programs.

We thank our sponsors Qualcomm, the National Science Foundation, and SK Hynix. Interested in being a sponsor? Email NASIT 2022 organizer Richard Wesel wesel@ucla.edu.



Call for Papers

The 2022 IEEE Information Theory Workshop (ITW 2022) will be held in Mumbai during November 6-9, 2022 as a hybrid in-person/online event. The in-person component will be held at Victor Menezes Convention Center in IIT Bombay, India.

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Prasad Krishnan (IIIT Hyderabad)

April 2022	July 2022
Paper submission deadline	Acceptance notification

PAPER SUBMISSION

Interested authors are invited to submit papers describing previously unpublished contributions in all areas of coding and information theory including, but not limited to:

- Security, Privacy, and Fairness
- Machine Learning and Applications to Communication
- Quantum Information and Computation
- Blockchains and Distributed Computing
- Information Theory and Bioinformatics
- Applications in Optical Communications
- Codes for Clouds
- Information Theory and Computer Science
- Latency-Sensitive Communication

Guidelines for submitting manuscripts will be available later at the following website

https://itw2022.in

IEEE

IEEE INFORMATION THEORY SOCIETY

Conference Calendar

DATE	CONFERENCE	LOCATION	WEB PAGE	DUE DATE
December 6–14, 2021	The 35th Conference on Neural Information Processing Systems (NeurIPS)	Virtual Conference	https://nips.cc/	Passed
December 7–11, 2021	IEEE Global Communications Conference (GLOBECOM)	Madrid, Spain (hybrid)	https://globecom2021.ieee-globecom.org/	Passed
February 7–10, 2022	62nd Annual IEEE Symposium on Foundations of Computer Science (FOCS)	Boudler, Colorado, USA (in person)	https://focs2021.cs.colorado.edu/	Passed
February 22–March 1, 2022	36th AAAI Conference on Artificial Intelligence (AAAI)	Vancouver, BC, Canada (in person)	https://aaai.org/Conferences/AAAI-22/	Passed
March 9–11, 2022	56th Annual Conference on Information Sciences and Systems (CISS)	Princeton University, NJ, USA (virtual)	https://ee-ciss.princeton.edu/	December 1, 2021
March 28–March 30, 2022	The 25th International Conference on Artificial Intelligence and Statistics (AISTATS)	Valencia, Spain (in person)	https://aistats.org/aistats2022/	Passed
April 10–13, 2022	IEEE Wireless Communications and Networking Conference (WCNC)	Austin, TX, USA (in person)	http://wcnc2022.ieee-wcnc.org/	Passed
April 25–29, 2022	The 10th International Conference on Learning Representations (ICLR)	Virtual Conference	https://iclr.cc/	Passed
May 2–5, 2022	IEEE International Conference on Computer Communications (INFOCOM)	Virtual Conference	https://infocom2022.ieee-infocom.org/	Passed
May 16–20, 2022	IEEE International Conference on Communications (ICC)	Seoul, South Korea (hybrid)	https://icc2022.ieee-icc.org/	Passed
June 5–8, 2022	The 17th Canadian Workshop on Information Theory (CWIT)	Ottawa, Ontario, Canada (in person)	http://cwit.ca/2022/	February 21, 2022
June 20–24, 2022	The 54rd Annual ACM Symposium on the Theory of Computing (STOC)	Rome, Italy (in person)	http://acm-stoc.org/stoc2022/	Passed
June 26–July 1, 2022	IEEE International Symposium on Information Theory (ISIT)	Aalto University, Espoo, Finland (in person)	http://isit2022.org/	January 15, 2022
July 2–5, 2022	The 35th Annual Conference on Learning Theory (COLT)	London, UK (in person)	http://learningtheory.org/colt2022/index.html	February 9
July 17–23, 2022	The 39th International Conference on Machine Learning (ICML)	Baltimore, Maryland, USA (in person)	https://icml.cc/	January 20 (abstract), January 27 (full paper)
November 6–9, 2022	IEEE Information Theory Workshop (ITW)	Mumbai, India	https://itw2022.in	April 29, 2022