

IEEE Information Theory Society Newsletter



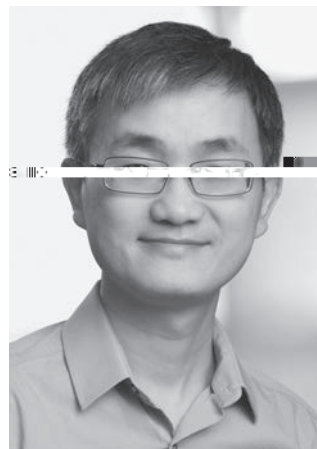
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EDITOR: Changho Suh

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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, Olga 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)

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 **CHRISTOPHER 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.*





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 *up-side 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 re-



-
- 4) 28 technical tracks
 - 5) 196 micro-sessions
 - 6) 571 papers
 - 7) 767 breakout engagement rooms
 - 8) ~1000 attendees
 - 9)

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:

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. of. (informal T*{pr}18 (nformaesented. nformatioymanifolnterior wal (and

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).



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.

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



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
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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).

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 event¹. 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

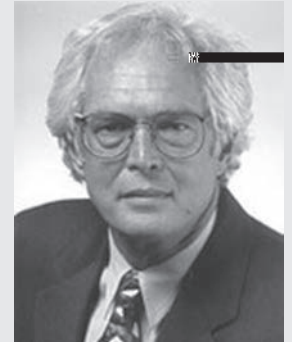


(ordered by deadline date)

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>

multi-access coded caching), Deekshith P K, IISc Bangalore (Second-order Rates for a Block Fading Channel with an Energy Harvesting Transmitter), and Mohammad Ishtiyah 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

Location: Remote

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

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 mmitt41S-sf.6 (e)-5.4 (r)T-

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

SHANNON THEORY AND INFORMATION MEASURES

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A G C O D	855
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F LT F R C L -S D M MA, ., .A, ., ., .	893
D T S D M M	907
S G C P -L N, ., ., ., .A.	919
M -P P G QAP-B -SNARKA, ., .A, ., .-A	931
C -E B -R D L E FA, ., ., ., .A, ., ., .	942
SQ ARM-SGD: C -E M SGD D O	954
C G E T C M -SGDB, A, ., .C.	970
Q D D LA, ., ., ., .C, ., .	987
O C -C T -O H G CA, ., .-A	1002
S S G C R, ., ., ., ., .	1012
S D C CA, C, ., ., ., ., ., ., .	1025
F L B O N	1041
T C R D M -U S SA, ., ., ., .A, ., .-A	1057
COMMENTS AND CORRECTIONS		
C G B I D C I D	1072



IEEE INFORMATION THEORY SOCIETY

**Call for Papers
Special Issue on**

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
-



2022 IEEE
INTERNATIONAL SYMPOSIUM
ON INFORMATION THEORY
JUNE 20-JULY 1 AT AALTO UNIVERSITY
IN ESPOO, FINLAND



CALL FOR PAPERS

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

optional extra page containing references only

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isit2022.org



MINISTER OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT
LE MINISTRE DES AFFAIRES INDIANES ET DU DÉVELOPPEMENT DU NORD

The 17th Canadian Workshop on Information Theory

Ottawa, Ontario, Canada June 5-8, 2022



General Chair

University of Ottawa

TPC Chair

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.



Important Deadlines:

Paper submission: February 21, 2022

Notification of Acceptance: April 25, 2022

Final manuscript upload/author registration May 5, 2022:



1

The annual Joint Graduate School of Information Theory and Communications (JITC) 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.

IIT 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 nestled in a beautiful valley on the bank of the river Uhl, a tributary to the river Beas.

The summer school is planned as a hybrid event, with some sessions in the in-person mode¹ 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.

The school 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.

David Tse · Raymond W. Yeung · Aylin Yener

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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.esit22.tuwien.ac.at/>



2022 North American School of Information Theory

Initial website: <http://www.seas.ucla.edu/csl/#/learn/NASIT-2022>
Eventual website: <https://www.itsoc.org/conferences/schools/NASIT2022>

Alon Orlitsky

Urbashi Mitra

Victoria Kostina

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We thank our sponsors Qualcomm, the National Science Foundation, and SK Hynix. Interested in being a sponsor?



2022 IEEE INFORMATION THEORY WORKSHOP
Mumbai, India
November 6-9 2022

Call for Papers

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

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
- Blockchain and Distributed Communication
- Information Theory Through Prisms
- 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://www.itw2022.org/>

April 2022
Paper submission
deadline

July 2022
Acceptance
notification



