**IEEE
Information
Theory
Society**

**The 2020 IEEE International
Symposium on Information Theory
Los Angeles, CA, USA**

Awards Ceremony
June 23, 2020

IEEE Technical Field Awards

2020 IEEE Control Systems Award

Recognizes outstanding contributions to control systems engineering, science, or technology—sponsored by the IEEE Control Systems Society

Anders Lindquist

For contributions to optimal filtering, stochastic control, stochastic realization theory, and system identification.

2020 IEEE Koji Kobayashi Computers and Communications Award

Recognizes outstanding contributions to the integration of computers and communications, sponsored by NEC Corporation

Balaji Prabhakar

For contributions to the theory and practice of network algorithms and protocols, in particular Internet routers, data centers, and self-programming networks.

2020 IEEE Fourier Award For Signal Processing

Recognizes an outstanding contribution to the advancement of signal processing, other than in the areas of speech and audio processing—sponsored by the IEEE Circuits and Systems Society and the IEEE Signal Processing Society

Alfred O. Hero, III

For contributions to the foundations of statistical signal processing with applications to distributed sensing and performance benchmarking.

2020 IEEE Leon K. Kirchmayer Graduate Teaching Award

Recognizes inspirational teaching of graduate students in the IEEE fields of interest, sponsored by the Leon K. Kirchmayer Memorial Fund

Shu Lin

For transforming graduate education in the fields of coding theory, information theory, and digital communications.

Recognizes consistent and profound contributions to the field of information theory.

Charles H. Bennett was born in 1943, the son of music teachers. He received his PhD from Harvard in 1971 under David Turnbull and did a postdoc at Argonne Laboratory under Aneesur Rahman. Since coming to IBM Research in 1972, he has worked on various aspects of the relation between physics and information. In 1973, building on the work of IBM's Rolf Landauer, he showed that universal computation can be performed by a logically and thermodynamically reversible apparatus, which can operate with arbitrarily little energy dissipation per step because it avoids throwing away information about past logical states. Based on this he proposed the currently accepted resolution of the Maxwell's demon paradox, attributing the demon's inability violate the second law to the thermodynamic cost of information destruction rather than acquisition. This was not a new discovery but rather a reaffirmation of Smoluchowski's correct 1914 analysis of the demon, which had been partly forgotten in the interim due to confusion over the different ways quantum mechanics and thermodynamics constrain measurement. In other early work Bennett introduced the complexity measure "logical depth"---the computation time needed to compute a digital object from a near-incompressible algorithmic description---and studied of the role of dissipation in improving the copying of genetic information and absolutely stabilizing states of locally-interacting systems that in the absence of dissipation would be merely metastable.

In 1984, Bennett and Gilles Brassard of the Université de Montréal, building on the seminal insights of Stephen Wiesner, developed a practical system of quantum cryptography, allowing secure communication between parties who share no secret information initially, and with the help of their students built a working demonstration of it in 1989. In 1993, in collaboration with Claude Crepeau, Richard Jozsa, Asher Peres, and William Wootters, they discovered "quantum teleportation," in which the complete information in a system is decomposed into a classical message and quantum entanglement, then reassembled from these ingredients in a new location to produce an exact replica of the original quantum state that was destroyed in the sending process. In subsequent years Bennett contributed to a

comprehensive rebuilding of the theory of information processing on quantum foundations, including quantum error correction, the recognition of entanglement as an independent quantifiable resource, the multiple (e.g. classical, private, and quantum) capacities of quantum channels, and the "quantum reverse Shannon theorem" establishing the ability of any quantum or classical channel with nonzero classical capacity to efficiently simulate any other in the presence of a strong entanglement resource, or a combination of ordinary entanglement and classical back-communication.

With IBM colleagues DiVincenzo, Linsker, Smolin, and Donkor he devised "time bracketed authentication" a method for protecting audio/visual and other recordings from falsification, even by an untrusted recording apparatus, using low-bandwidth bidirectional communication between the process being recorded and an outside world trusted to be beyond the control of would-be falsifiers. Incoming signals establish a prior time bracket by unpredictably influencing the process being recorded, while outgoing signals, e.g. hashed digests of the ongoing recording, establish a posterior time bracket.

Recently he has become interested in the application of quantum information to cosmology, and characterizing the conditions (including thermodynamic disequilibrium) that lead to the emergence of classical correlations and computationally complex structures from quantum laws.

Bennett is an IBM Fellow, a Fellow of the American Physical Society, and a member of the US National Academy of Sciences. He is a recipient of the Rank, Harvey, Okawa, Wolf, and Micius Quantum Prizes. He has served as a Divisional Associate Editor for Physical Review Letters, and as both Secretary and Chair of the National Academy of Sciences Class III (Engineering and Applied Physical Sciences).

2020 Aaron D. Wyner Distinguished Service Award

Recognizes an individual who has shown outstanding leadership in—and provided long-standing exceptional service to—the Information Theory community.

To Be Announced During Awards Ceremony

2019 Information Theory Society Paper Award

Recognize exceptional publications in the field and to stimulate interest in, and encourage contributions to, fields of interest of the Society.

Emmanuel J. Candès, Xiaodong Li, and Mahdi Soltanolkotabi for "Phase Retrieval via Wirtinger Flow: Theory and Algorithms," *IEEE Transactions on Information Theory,* Vol. 61, No. 4, pp. 1985-2007, April 2015.

Emmanuel Candes is the Barnum-Simons Chair in Mathematics and Statistics, and Professor of Electrical Engineering (by courtesy) at Stanford University. He graduated from the Ecole Polytechnique in 1993 with a degree in science and engineering, and received his Ph.D. in Statistics from Stanford University in 1998.

Candes is very grateful for the awards he has received over the years. These include the 2006 Alan T. Waterman Award from NSF, the George Polya Prize awarded by the Society of Industrial and Applied Mathematics (SIAM) (2010), the AMS-SIAM George David Birkhoff Prize in Applied Mathematics (2015), the Prix Pierre Simon de Laplace from the Société Française de Statistique (2016), the Ralph E. Kleinman Prize from SIAM (2017). He was selected as the Wald Memorial Lecturer by the Institute of Mathematical Statistics (2017). He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences. In 2017, He received a MacArthur Fellowship.

Candes' work lies at the interface of mathematics, statistics, information theory, signal processing and scientific computing, and is about finding new ways of representing information and extracting

information from complex data. For example, he helped launch the field known as compressed sensing, which has led to advances in the efficiency and accuracy of data collection and analysis, and can be used to significantly speed up MRI scanning times. In the last ten years, he has developed statistical techniques to address the reproducibility of scientific results and the validity of predictions made by very complex machine learning systems.

Dr. Xiaodong Li is an assistant professor in the statistics department at UC Davis since 2015. Prior to that, he worked in the statistics department of Wharton School at University of Pennsylvania for two years. He got Ph.D of mathematics at Stanford University in 2013, and BS at Peking University in 2008. He has general research interests in statistics and machine learning. His papers have been published in various journals of statistics, mathematics and engineering such as AoS, Bernoulli, JMLR, ACHA, FOCM, JACM, IEEE TIT, etc. He got the NSF Career Award from Division of Mathematical Sciences in 2019.

Mahdi Soltanolkotabi is an assistant professor in the Ming Hsieh Department of Electrical and Computer Engineering and Computer Science at the University of Southern California where he holds an Andrew and Erna Viterbi Early Career Chair. Prior to joining USC, he completed his PhD in electrical engineering at Stanford in 2014. He was a postdoctoral researcher in the EECS department at UC Berkeley during the 2014- 2015 academic year. His research focuses on developing the mathematical foundations of data science, machine learning and signal processing spanning (non)convex optimization and high-dimensional probability to computational imaging. Mahdi is the recipient of Packard Fellowship in Science and Engineering, a Sloan Research Fellowship, an NSF Career award, an Airforce Office of Research Young Investigator award (AFOSR-YIP), and a Google faculty research award.

2020 IEEE Communications Society & Information Theory Society Joint Paper Award

Recognizes the author(s) of outstanding papers appearing in any publication of the IEEE Communications Society or the IEEE Information Theory Society in the previous three calendar years.

Kangwook Lee, Maximilian Lam, Ramtin Pedarsani, Dimitris Papailiopoulos, and Kannan Ramchandran,
"Speeding up Distributed Machine Learning Using Codes", IEEE Transactions on Information Theory, vol. 64, no. 3, pp. 1514-1529, March 2018

Kangwook Lee is an Assistant Professor of the Electrical and Computer Engineering department at the University of Wisconsin-Madison. Previously, he was a Research Assistant Professor at Information and Electronics Research Institute of KAIST, working with Prof. Changho Suh. Before that, he was a postdoctoral scholar at the same institute. He received his Ph.D. in May 2016 from the Electrical Engineering and Computer Science department at UC Berkeley and my Master of Science degree from the same department in December 2012, both under the supervision of Prof. Kannan Ramchandran. He was a member of Berkeley Laboratory of Information and System Sciences (BLISS, aka Wireless Foundation) and BASiCS Group. He received my Bachelor of Science degree in Electrical Engineering from Korea Advanced Institute of Science and Technology (KAIST) in May 2010.

Maximilian Lam graduated with a B.A. in CS from UC Berkeley in 2017 and with a M.S. in CS from Stanford in 2019 and is currently pursuing a PhD at Harvard. His research interests include parallel/distributed systems, machine learning and hardware performance/efficiency.

Ramtin Pedarsani is an Assistant Professor in ECE Department at the University of California, Santa Barbara. He received the B.Sc. degree in Electrical Engineering from the University of Tehran, Tehran, Iran, in 2009, the M.Sc. degree in Communication Systems from the Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, in 2011, and his Ph.D. from the University of California, Berkeley, in 2015. His research interests include networks, machine learning, stochastic systems, information and coding theory, and transportation systems. Ramtin is a recipient of the IEEE International Conference on Communications (ICC) Best Paper Award in 2014.

Dimitris Papailiopoulos is an Assistant Professor of Electrical and Computer Engineering and Computer Sciences (by courtesy) at the University of Wisconsin-Madison, a faculty fellow of the Grainger Institute for Engineering, and a faculty affiliate at the Wisconsin Institute for Discovery.

His research interests span machine learning, information theory, and distributed systems, with a current focus on communication-efficient training algorithms and coding-theoretic techniques that guarantee robustness during model training and inference.

Between 2014 and 2016, Dimitris was a postdoctoral researcher at UC Berkeley and a member of the AMPLab. Dimitris earned his Ph.D. in ECE from UT Austin in 2014, under the supervision of Alex Dimakis. In 2007 he received his ECE Diploma and in 2009 his M.Sc. degree from the Technical University of Crete, in Greece.

Dimitris is a recipient of the NSF CAREER Award (2019), a Sony Faculty Innovation Award (2019), the Benjamin Smith Reynolds Award for Excellence in Teaching (2019), the IEEE Joint Communications Society/Information Theory Society Best Paper Award (2020), and the IEEE Signal Processing Society, Young Author Best Paper Award (2015).

In 2018, he co-founded MLSys, a new conference that targets research at the intersection of machine learning and systems. In 2018 and 2020 he was program co-chair for MLSys, and in 2019 he co-chaired the 3rd Midwest Machine Learning Symposium.

Kannan Ramchandran (Ph.D.: Columbia University, 1993) is a Professor of Electrical Engineering and Computer Sciences at UC Berkeley, where he has been since 1999. He was on the faculty at the University of Illinois at Urbana-Champaign from 1993 to 1999, and with AT&T Bell Labs from 1984 to 1990. He is an IEEE Fellow, and a recipient of the 2017 IEEE Kobayashi Computers and Communications Award, which recognizes outstanding contributions to the integration of computers and communications. He has received several awards for his research including an IEEE Information Theory Society and Communication Society Joint Best Paper award in 2012, an IEEE Communication Society Data Storage Best Paper award in 2010, two Best Paper awards from the IEEE Signal Processing Society in 1993 and 1999, an Okawa Foundation Prize for outstanding research at Berkeley in 2001, an Outstanding Teaching Award at Berkeley in 2009, and a Hank Magnuski Scholar award at Illinois in 1998. His research interests are at the intersection of signal processing, machine learning, coding theory, communications and networking with a focus on theory and algorithms for large-scale distributed systems.

2020 James L. Massey Research & Teaching Award for Young Scholars

Recognizes outstanding achievement in research and teaching by young scholars in the information theory community.

Yury Polyanskiy is an Associate Professor of Electrical Engineering and Computer Science and a member of IDSS and LIDS at MIT.

Yury received M.S. degree in applied mathematics and physics from the Moscow Institute of Physics and Technology, Moscow, Russia in 2005 and Ph.D. degree in electrical engineering from Princeton University, Princeton, NJ in 2010. His research interests span information theory, statistical learning, error-correcting codes, wireless communication and fault tolerance.

Dr. Polyanskiy won the 2013 NSF CAREER award and 2011 IEEE Information Theory Society Paper Award.

2020 Thomas M. Cover Dissertation Award

Recognizes the author of an outstanding doctoral dissertation contributing to the mathematical foundations of any of the information sciences within the purview of the Society.

Pengkun Yang for "Polynomial Methods in Statistical Inference: Theory and Practice".

Pengkun Yang is from the Department of Electrical Engineering at Princeton University. He is a Postdoctoral Research Associate advised by Professor Yuxin Chen. His research interests include statistical inference, learning, optimization, and systems. He received a Ph.D. degree (2018) and a master's degree (2016) from the Department of Electrical and Computer Engineering at the University of Illinois at Urbana-Champaign, and a B.E. degree (2013) from the Department of Electronic Engineering at Tsinghua University. He is a recipient of the Shun Lien Chuang Memorial Award for Excellence in Graduate Education in 2018, and a recipient of Jack Keil Wolf ISIT Student Paper Award at the 2015 IEEE International Symposium on Information Theory (semi-plenary talk).

2019 Jack Keil Wolf ISIT Student Paper Award

Recognizes up to three outstanding papers at the ISIT for which a student is the principal author and the presenter. The award is based on the paper's technical contribution as well as the quality of its presentation.

Parthe Pandit and Mojtaba Sahraee for "Asymptotics of MAP Inference in Deep Networks," (co-authored with Sundeep Rangan and Alyson K. Fletcher).

Parthe Pandit is a Ph.D. candidate at the University of California, Los Angeles (UCLA) in the Department of Electrical Computer Engineering. He is also working towards an MS degree in Statistics at UCLA. His research focusses on providing rigorous theoretical guarantees for computational and statistical aspects of Machine Learning and Deep Learning algorithms. He applies tools from large-scale optimization, statistical physics, and high dimensional statistics.

He completed his B.Tech and M.Tech in Electrical Engineering from IIT Bombay, with a minor in Computer Science. Apart from Machine Learning, he has also published articles on problems in mechanism design, network economics, coding theory, graph theory, and music information retrieval. He is a recipient of the Jack K. Wolf best student paper award, the Guru Krupa Foundation fellowship, the J. N. Tata scholarship, and the K. C. Mahindra scholarship.

He has been a research intern with two teams at Amazon, working on problems in Natural Language Processing and Deep Generative modeling.

Mojtaba Sahraee is a PhD student in Electrical and Computer Engineering and a MS student in Statistics at University of California, Los Angeles. The focus of his research is on theoretical machine learning and statistics problems with applications in machine learning and computational neuroscience. Prior to joining UCLA, he received his BS and MS from University of Tehran and Sharif University of Technology respectively both in Electrical Engineering. He has done two internships at Microsoft Research working on using machine learning techniques to solve fundamental problems in mathematics in topology and abstract algebra, and is doing another internship at Adobe Research working on training ML models from sketched data.

Sundeep Rangan is currently a Professor at New York University and Associate Director, NYU Wireless.

Alyson K. Fletcher is currently an Assistant Professor at the University of California, Los Angeles.

Jin Sima for " Optimal k-Deletion Correcting Codes," (co-authored Jehoshua Bruck).

Jin Sima is a PhD candidate in the Department of Electrical Engineering at the California Institute of Technology. He received a B.Eng. and a M.Sc. in Electronic Engineering from Tsinghua University, China, in 2013 and 2016 respectively. His research interests include information and coding theory, with its applications in data storage systems.

Jehoshua Bruck is the Gordon and Betty Moore Professor of Computation and Neural Systems and Electrical Engineering at the California Institute of Technology.

2020 Padovani Lecturer

The Padovani Lecture is held annually at the North American School of Information Theory. The Lecturer is selected by the Membership Committee.

David Tse

2020 Goldsmith Lecturer

The Goldsmith Lecturer Program was established with a generous gift of Dr. Andrea Goldsmith in 2019. The Goldsmith Lecture will be delivered by an early-career woman researcher at one of the ITSoc's Schools of Information Theory, held for the benefit of students and postdoctoral researchers. The Lecturer is selected by the Membership Committee.

Ayfer Özgür

2020 Chapter of the Year Award

The Chapter of the Year Award annually recognizes a chapter that provides their membership with outstanding programs and activities. The prize includes $1,000 to support local chapter activities.

Republic of North Macedonia Chapter

For educational programs, outreach activities, and the promotion of information-theory research.

2020 IEEE Fellows

Amir Avestimehr, for contributions to the analysis of communication and computation over wireless networks

Chong-yung Chi, for contributions to convex analysis and optimization for blind source separation

Wan Choi, for contributions to the analysis and design of multi-cell communication systems

Octavia Dobre, for contributions to the theory and practice of signal intelligence and emerging wireless technologies

Christoforos Hadjicostis, for contributions to distributed and discrete event systems

Philippe Jacquet, for contributions to wireless protocols and communication networks

Eduard Jorswieck, for contributions to resource allocation in wireless interference networks

Markku Juntti, for contributions to multiuser and multiantenna communications

Panagiotis Papadimitratos, for contributions to wireless mobile network security and privacy

Christ Richmond, for contributions to adaptive array processing algorithms

Aaron Wagner, for contributions to distributed data compression

Richard Wesel, for contributions to channel coding and reliable communication

Recognition of Special Service

The Information Theory Society recognizes the exceptional service and leadership of the following individuals:

Frank R. Kschischang
Junior Past President (2018)
Senior Past President (2019)

Alexander Barg
Transactions Executive Editor (2017-2018)
Transactions Editor-in-Chief (2018-2019)

Thomas Fuja
James L. Massey Research and Teaching Award for Young Scholars Selection Committee Chair (2019)

Elza Erkip
Diversity and Inclusion Committee Chair (2018-2019)

Vincent Y. F. Tan
Student and Outreach Subcommittee Chair (2018-2019)

Recognition of Service for the Board of Governors

The Information Theory Society recognizes the exceptional service and leadership of the following individuals:

Andrew R. Barron
Member of the Board of Governors (2014-2019)

Stephen Vaughan Hanly
Member of the Board of Governors (2015-2019)

Michele Wigger
Member of the Board of Governors (2017-2019)

Gregory W. Wornell
Member of the Board of Governors (2017-2019)

Recognition of Editors

The Information Theory Society recognizes the contributions of the following individuals whose terms as Associate Editor have ended since the last ISIT:

Emmanuel Abbe
Machine Learning (March 2017 – March 2020)

Jean-Francois Chamberland
Communications (March 2017 – March 2020)

Philipp Grohs
Signal Processing (March 2017 – March 2020)

Albert Guillen Fabregas
Communications (February 2013 – June 2020)

Gitta Kutinyok
Signal Processing (March 2017 – March 2020)

Michael Lentmaier
Coding Theory (March 2017 – March 2020)

Neri Merhav
Shannon Theory (March 2017 – March 2020)

Klaus-Robert Muller
Machine Learning (March 2017 – July 2019)

Frederique Oggier
Coding Theory (October 2016 – October 2019)

Holger Rauhut
Signal Processing (March 2016 – April 2020)

Paratsoo Sadeghi
Coding Techniques (August 2016 – August 2019)

Rei Safavi-Naini
Cryptography (March 2017 – March 2020)

Aslan Tchamkerten
Shannon Theory (August 2016 – August 2019)

Vinay Vaishampayan
Source Coding (March 2017 – March 2020)

Shun Watanabe
Shannon Theory (July 2017 – July 2020)

Michele Wigger
Shannon Theory (October 2016 – October 2019)

Recognition of Conference Organizers

The Information Theory Society recognizes the following individuals, who have been General Co-Chairs or Program Committee Co-Chairs since and including the last ISIT:

2019 IEEE International Symposium on Information Theory, Paris, France

General Co-Chairs:
Alfred Hero
Pablo Piantanida

Technical Program Committee Co-Chairs:
Giuseppe Caire
Venugopal V. Veeravalli
Aaron B. Wagner
Gilles Zémor

2019 IEEE Information Theory Workshop, Visby, Gotland, Sweden

General Co-Chairs:
Tobias Oechtering
Mikael Skoglund
Lars Rasmussen

Technical Program Committee Co-Chairs:
Michael Lentmaier
Sennur Ulukus
Serdar Yüksel