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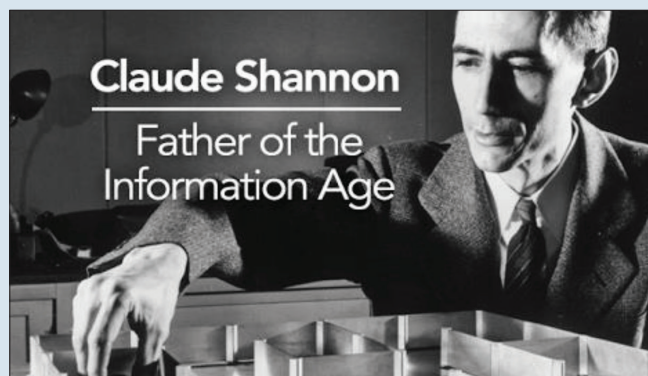
#### CHAPTER REPORT

## IEEE ComSoc Student Branch Chapter, IISc, Bengaluru: Shannon's Day Talk Series, 2021

By Varkey M. John, IEEE ComSoc Student Branch Chapter Chair, Indian Institute of Science, Bengaluru, India

The IEEE-IISc ComSoc chapter (IEEE ComSoc Student Branch Chapter, Indian Institute of Science, Bengaluru, India), in association with the IEEE Student Branch Chapter, IISc, Bengaluru, India, is pleased to announce that it successfully organized a two-day event, "Shannon's Day Talk Series, 2021" from 30 April – 1 May 2021. Though the event was conducted amid the COVID-19 pandemic, we were able to host online multiple internationally acclaimed speakers from academia as well as from industry. The event was a commemoration of the outstanding contributions of Claude E. Shannon, "The Father of Information Theory", whose work in digital communications and information theory revolutionized the world and paved the way for modern digital communication systems in use today.

The pandemic opened multiple doors for us to host the event. In particular, we could use the latest version of Google Meet to accommodate speakers and attendees from across the globe virtually at the leisure of their homes. For those who preferred to just view the event, the additional portal of YouTube livestreaming was provided. Added to this, we have made available the recorded talks at our official YouTube channel for the public to view free of cost: [https://youtube.com/playlist?list=PLXPoHF4G\\_kDWRUTzmqF-1js\\_FmkB8YyFT](https://youtube.com/playlist?list=PLXPoHF4G_kDWRUTzmqF-1js_FmkB8YyFT). The event was well-received with more than 40 participants attending the event, both ComSoc members and guests from various universities and industry

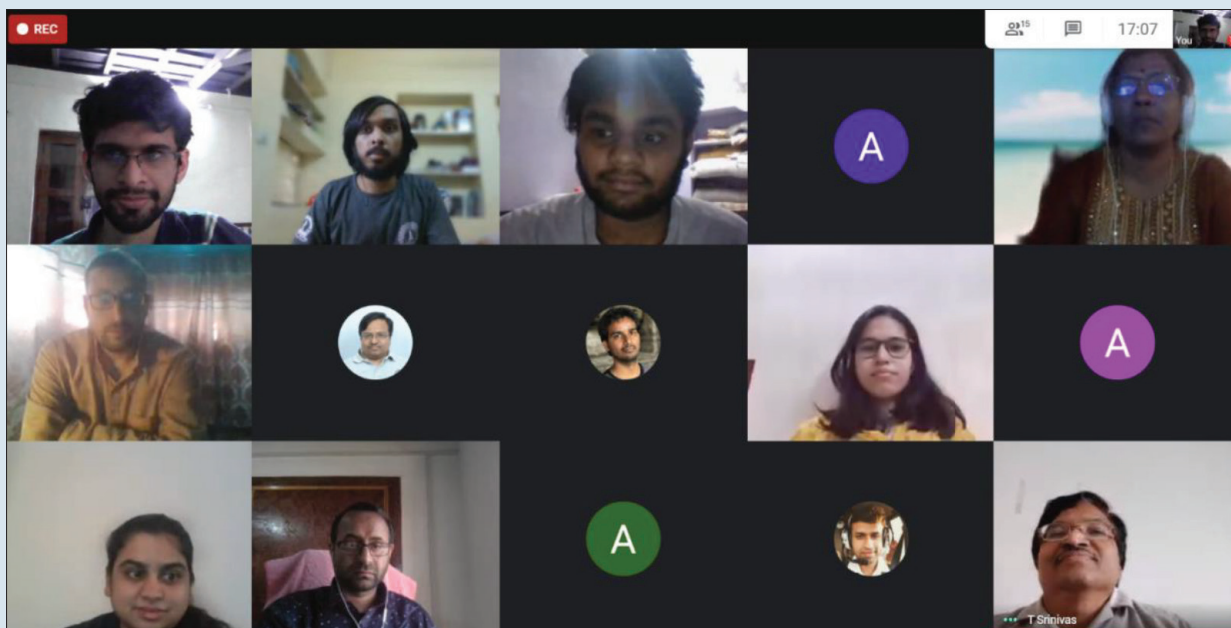


Claude E. Shannon, The Father of Information Theory (Source: University of California Television (UCTV)).

eager to know the latest trends in research in the areas of Signal Processing and Quantum Information Theory. The event included multiple talks from researchers in academia in the afternoon on day one; on day two industry leaders showcased the latest applications of Signal Processing and Quantum Computing. Each session had a duration of about an hour, including a ten-minute Question and Answer session. The entire details of the event, including the schedule and talk abstracts, were updated on the official IEEE-IISc ComSoc website: <https://ece.iisc.ac.in/IEEE/events/past-events/shannons-day-2021/>

The proceedings of the first half of day one started off with Dr. Ayush Bhandari (Imperial College, London) as the keynote speaker in the Signal Processing track. In his talk titled "Computational Sampling via Signal Folding: Variations on a Theme by

(Continued on Newsletter page 4)



Closing remarks by Mrs. Anandi Giridharan and Prof. T. Srinivas.

## TeleWeek and Telecom 2021: Challenges and Opportunities in the ComSoc Ecuador Chapter

By Román Lara-Cueva, Universidad de las Fuerzas Armadas, IEEE ComSoc Ecuador Chapter Chair

The pandemic has changed our normal life, and during the last year, social distancing, quarantine, and isolation have been induced, but has made it possible to consolidate Telework, E-commerce, Telemedicine, and of course, E-learning. For the latter, many congresses, symposiums, summits and professional courses have been offered in a virtual way during 2020. All of these opportunities have allowed students and professionals to access valuable information.

In this sense, our chapter has found an effective opportunity by developing the second version of Teleweek and Telecom, with the main aim to allow researchers to share results of their work with academia, and at the same time to keep our IEEE ComSoc members updated in knowledge related to trending topics about communications and related technologies.

The IEEE ComSoc Ecuador Chapter has consolidated their collaborative work with the IEEE ComSoc Student Chapters, and with professional members, who have presented an extraordinary availability to collaborate with the proposed activities by the IEEE ComSoc Ecuador Chapter. With the opportunities that ComSoc provided with the Virtual Distinguished Lecturer (VDL) Program in order to share relevant topics for their members, we have decided to take advantage of the VDL program in order to recruit/maintain members.

### TELEWEEK 2021

This event was co-organized with the support of the Engineering in Medicine and Biology Society (EMBS), and we presented five researchers associated with the Universidad de las Fuerzas Armadas – ESPE, Universidad Politécnica Salesiana, and Universidad de las Américas. Three of the five talks were given by our professional members. These talks were given from April 5 through 9.

The figure below shows the professionals who were part of TeleWeek, with themes related to communications fields. Our first talk was with Eng. Fernando Lara, who talked about “Machine learning applied to telecommunications: practical cases”. The topic of the second talk was “Supervised learning applied to failure detections” by Dra. Mariela Lozada. Another interesting topic was related to emergency systems, entitled “A management proposal of launching emergency warning alert by using digital terrestrial television”, by Dr. Gonzalo Olmedo. On our fourth presentation day, Dr. Henry Carvajal spoke on the topic “Non Orthogonal Multiple Access in 5G”. Finally, TeleWeek was closed with a presentation on the topic “Artifi-

cial intelligence and 5G networks” by Dr. Andrés Cornejo. The reached audience for Teleweek reached a peak of 45 people, with a mean of 30 people per day. The main audience was from Ecuador.

### TELECOM 2021, CELEBRATING THE WORLD TELECOMMUNICATION AND INFORMATION SOCIETY DAY

After TeleWeek, we celebrated World Telecommunication and Information Society Day. Telecom 2021 was organized in coordination with the ComSoc Student Chapters of the Universidad Politécnica Salesiana de Cuenca - UPS, Escuela Superior Politécnica del Litoral - ESPOL, and the Universidad de las Fuerzas Armadas – ESPE. A total of 12 researchers participated in talks related to 5G, IoT, and Smart Cities, among other topics.

Telecom 2021 was divided into five days from May 17 through 21, and scheduled in order to make possible the major participation of all IEEE ComSoc members. The first day was hosted by the IEEE ComSoc Ecuador Chapter, and we had the honor of presenting our Distinguished Lecturer Dr. Giovanni Geraci with the talk entitled “The future of UAV cellular communications”. This talk was followed by a Workshop presenting the benefits of being part of IEEE ComSoc, hosted by Nury Ramírez (ComSoc Director), and Andrés Navarro (Industry Relations Committee).

On the second day, we had the participation of three researchers from UDLA, ESPE and UPS universities. We started with Dr. Henry Carvajal, who spoke on the topic “Key aspects and challenges in 6G networks”. Then Dr. Vinicio Carrera spoke on the topic “Non supervised learning as a tool for digital signal processing (DSP)”, during which non supervised algorithms to solve computational problems related to DSP were discussed. Finally, day ended with Eng. Juan Jara, who spoke on the topic “Smart cities: an approach in pandemic times”. On this day the UPS Cuenca ComSoc student chapter was in charge of event organization.

On the third day, ESPE’s ComSoc student chapter was in charge of event organization. The day started with Dr. Luis Escobar presenting a talk on the topic “Mobile robotics and its application to Industry 4.0”. Then an interesting topic related to “SDR’s application in experimental learning during pandemic” was presented by Mg. Manuel Quiñónez. Finally, Eng. Guillermo García gave a talk on the topic “Edge computing in the 5G era”. These researchers are affiliated with ESPE and UTPL universities.

On the fourth day, we had the participation of researchers and volunteers in charge of the day belonging to ESPOL university. The day started with Dr. Darwin Alulema, who gave a talk on the topic “IoT system integration based on services and models”. Then Eng. Carlos García spoke about “Digital Transformation and Smart Cities”, during which he explained

*(Continued on Newsletter page 4)*

Teleweek 2021 official announcement.

## HealthCom Talks in Thailand: “New Normal” Opportunities after the Pandemic

By Keattisak Sripimanwat, IEEE ComSoc Thailand Chapter Chair

In parallel with the 10th anniversary of the Thai Telecommunication Knowledge Management (TTKM) Forum on 25 November 2020, the Thai IEEE ComSoc Chapter organized two online keynote talks to with the year-long situation of the COVID-19 pandemic as well as the serious air pollution locally. The presentations focused on communications engineering combining with health monitoring devices and urgent solutions to fight those national health issues. Experiences from the front lines were shared at these talks presented to IEEE members in the morning session of the IEEE Thailand section annual meeting, and also open to the public.

The first topic was “Sensors for healthcare applications with communications”, given by Dr. Supab Choopan, Head of the Physics and Materials Science Department at Chiangmai University. In his 20-minute talk, he shared an impressive story from the sensor laboratory through fabrication and implementation into a basic health monitoring device, and finally to adoption. His project is also involved with the implementation of PM2.5 detection and monitoring, whereas all are equipped with wireless communication functions for easy use. Remarkably, those locally-made equipments have been serving one of the most

polluted cities where the Air Quality Index (AQI) has often been ranked on top of the world list.

The next talk was related to how Covid-19 poses a serious risk of infection to medical personnel, which may in turn cause nosocomial spread at healthcare sites. To overcome this fear and reduce that risk, the talk entitled “Electronics: wireless stethoscope” discussed another brilliant piece of equipment. During the uncertain times in early 2020, this device was delivered following a special request from the university hospital to the engineering school. Then Dr. Sarawuth Chaimool, an associat professor from the Department of Electrical Engineering, Khon Kaen University, decided to join. His experiences on that accelerated project (low cost and prompt solution with available local components when related supply chains were on pause), was shared in a 40-minute talk.

Hundreds of people have watched those stories about crisis solutions. All “new normal opportunities after the pandemic” videos are still serving as another contemporary local HealthCom milestone at [www.quantum-thai.org/10th-ttkm-anniversary](http://www.quantum-thai.org/10th-ttkm-anniversary). Although our 10th year of TTKM was celebrated silently online with these talks, winning the fight against pollution and the pandemic is wished for every site nationwide in the future.

Fighting serious air pollution and the Covid-19 pandemic will certainly still be a years-long effort ahead. There are many other engineering solutions waiting to be developed to combat those health risks. Members and students have been invited to join us, as our actions today will weigh on our own conscience tomorrow.

**IEEE Thailand section: 2020 annual meeting**

การประชุมวิชาการประจำปีของ IEEE Thailand 2020

การพัฒนาการเซ็นเซอร์สำหรับเครื่องตรวจสุขภาพพื้นฐานพร้อมการสื่อสาร

**Online Keynote Speech #II**  
New Normal Opportunities after the Pandemics  
by IEEE Communications Society Thailand chapter

**พัฒนาการเซ็นเซอร์สำหรับเครื่องตรวจสุขภาพพื้นฐาน พร้อมการสื่อสาร**  
โดย รศ.ดร.สุภาพ ชูพันธ์ ภาควิชาฟิสิกส์ คณะวิทยาศาสตร์ มหาวิทยาลัยเชียงใหม่

พบกับการพัฒนาเซ็นเซอร์ที่บูรณาการวงจรอุปกรณ์การแพทย์ที่พร้อมบรรจุกับอุปกรณ์พกพา ที่สามารถใช้งานได้ทั้งในโรงพยาบาล และในชุมชน การพัฒนาเซ็นเซอร์เหล่านี้จะช่วยลดการพึ่งพาการนำเข้าอุปกรณ์การแพทย์จากต่างประเทศได้ ซึ่งจะช่วยลดต้นทุนการนำเข้าอุปกรณ์การแพทย์ได้เป็นอย่างมาก ซึ่งจะช่วยลดต้นทุนการนำเข้าอุปกรณ์การแพทย์ได้เป็นอย่างมาก ซึ่งจะช่วยลดต้นทุนการนำเข้าอุปกรณ์การแพทย์ได้เป็นอย่างมาก

**ร่วมฉลองสืบปี**  
โครงการบริหารการความรู้ โทเทคนิคไทย (TTKM) กับ การบรรณาธิยพิเศษ “งานวิจัยสุขภาพกับการสื่อสาร” การรวมกลุ่มความร่วมมือทางสุขภาพของสังคม เพื่อศึกษาวิจัยไปเป็นประโยชน์สู่สังคมไทยต่อไป

web: [www.quantum-thai.org/10th-ttkm-anniversary](http://www.quantum-thai.org/10th-ttkm-anniversary)  
email: [thailand\\_chapter@ieee.org](mailto:thailand_chapter@ieee.org)

Keywords: HealthCom, sensors, engineering, telemedicine, healthcare, Pandemics

**IEEE Thailand section: 2020 annual meeting**

**Online Keynote Speech #III**  
การประยุกต์เครื่องฟังเสียงการแพทย์แบบไร้สาย  
โดย รศ.ดร.สุวาท ชัยมูล ภาควิชาวิศวกรรมไฟฟ้า มหาวิทยาลัยขอนแก่น

**COVID-19**  
CORONAVIRUS DISEASE 2019

**New Normal Opportunities after the Pandemics**  
by IEEE Communications Society Thailand chapter

**ร่วมฉลองสืบปี**  
โครงการบริหารการความรู้ โทเทคนิคไทย (TTKM) กับ การบรรณาธิยพิเศษ “งานวิจัยสุขภาพกับการสื่อสาร” การรวมกลุ่มความร่วมมือทางสุขภาพของสังคม เพื่อศึกษาวิจัยไปเป็นประโยชน์สู่สังคมไทยต่อไป

web: [www.quantum-thai.org/10th-ttkm-anniversary](http://www.quantum-thai.org/10th-ttkm-anniversary)  
email: [thailand\\_chapter@ieee.org](mailto:thailand_chapter@ieee.org)

Keywords: HealthCom, sensors, engineering, telemedicine, healthcare, Pandemics

Posters for the online keynote talks “Sensors for healthcare applications with communications” by Dr. Supab Choopan and “Electronics - wireless stethoscope” by Dr. Sarawuth Chaimool.

## BENGALURU/Continued from page 1

Shannon”, he spoke about a new paradigm shift in signal processing using modulo ADCs to overcome the bottleneck of acquiring measurements that lie in a high dynamic range. Following his speech, Prof. Chandra Murthy dovetailed Dr. Ayush’s talk by further enlightening the audience on the specific aspect of compressed sensing using modulo ADCs. The signal processing track ended on day one with student researchers Ms. Prachi Singh and Dr. Srikanth discussing speech processing and speaker diarization. In this talk, machine learning algorithms that could be used to partition the audio input stream to identify different individuals in the audio input were discussed.

The second half of day one, the Quantum Information Theory track, was resumed after a short 15 minute break. The event started with an introductory talk on Quantum Technologies by Dr. R. Srikanth, during which he explained the foundations of quantum mechanics, quantum information theory and quantum cryptography. His talk was followed by student researcher Dr. Priya J. Nadkarni who talked about Entanglement-assisted Reed Solomon codes over Qudits. As a precursor to Dr. Mark’s keynote talk, a wonderful overview of Quantum Information Theory was delivered by Prof. Vinod Sharma. Day one ended on a high note with Dr. Mark M. Wilde of Louisiana University presiding as the keynote speaker with his speech “Quantum Entanglement: Applications in Communication and Cryptography”, in which he talked about quantum computing, quantum communications and channel capacities and presented some of his recent results on capacities of certain quantum channels.

The Signal Processing track of day two featured eminent industry professionals, Mr. Satheesh P K, Dr. Pratik Shah, Dr. Praful Pai and Ms. Kirthi Krishnamurthy of Samsung, Apple, MathWorks, and Adobe, respectively, who described how the theoretical topics in signal processing are implemented in practice to deliver an end product for public use. While Mr. Satheesh and Dr. Pratik spoke on similar themes of echo cancellation, Dr. Praful provided detailed insight into the use of Machine Learning and Signal Processing tools of MATLAB. Ms. Kirthi ended the Signal Processing track of day two with a wonderful talk on Image Processing.

After a short one-hour lunch break, the final half of the two-day talk series resumed with Quantum Computing as the focus of the talks. Dr. Amlan Mukherjee (QpiAI), Dr. Rukhsan Ul Haq (IBM) and Dr. Arun Sehrawat (QpiAI) spoke about the practical aspects of quantum computing, showcasing the latest develop-

ments and real-world applications of the field in the industry. Dr. Amlan gave a quick overview of the advances and applications of Quantum Computing and its advantages over classical computers. Dr. Rukhsan followed Dr. Amlan to give his take on the quantum nature of information and how this gives a practically more efficient way of information processing and communication over both classical and quantum channels. The two-day talk series was culminated by an exciting talk by Dr. Arun on the real-world application of quantum computing in the area of solving NP-hard combinatorial optimization problems. He ended his talk by describing the practical use of solving such problems in the area of supply chain and logistics.

At the end of each talk, the speaker was presented with a plaque by IEEE-IISc ComSoc acknowledging their immense contribution to this event. The talk series was finally concluded with closing remarks by Mrs. Anandi Giridharan and Prof. T. Srinivas, IISc Bangalore, in which immense appreciation was given to the eminent speakers and the organizing team committee for making the event a grand success.

## TELEWEEK/Continued from page 2

how Smart Cities could improve the lives of citizens in the main cities. Finally, we had the participation of Engs. David Medina and Diana Placencia from ComWare, who spoke on the topic “Social engineering, how to detect it”.

On our final day, we decided to have an extended meeting with members and non-members, in order to obtain information about “what do you want from my membership”. We organized a workshop, and we used some interesting tools to make possible collaborative working.

### TELECOM EXPECTATIONS

We had the same expectations for developing a new version of Telecom, but we had an audience a little bigger than Teleweek, reaching a peak of 60 people, with a mean of 45 people per day, in comparison with the previous version in which around 300 persons participated each day. This is an effect of having many conferences, workshops, and summits around the world. In fact, on these same dates, we had at least three talks in order to celebrate the World Telecommunication and Information Society Day. This demonstrates the effectiveness of virtual education, but as an audience, we had the opportunity to select a talk at our convenience. In this sense, it is recommendable to schedule our talks among our countries, regions and in general around the world.

**GLOBAL COMMUNICATIONS NEWSLETTER**

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