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CONFERENCE REPORT

9th IEEE International Conference on Communications, Network, and Satellite 2020 (COMNETSAT 2020), Indonesia – Virtual (originally planned in Batam)

By Arief Hamdani Gunawan and Sukrisno Mardiyanto, Indonesia

The 9th 2020 IEEE International Conference on Communications, Network, and Satellite (COMNETSAT 2020) was held successfully on December 17–18, 2020 through the support of 472 TPC members. The conference had 133 total reviewed papers from 367 authors from 18 countries with 81 accepted papers. Moreover, due to the COVID-19 pandemic, this year COMNETSAT 2020 was held as a synchronous video conference.

The first COMNETSAT was held in 2012 in Bali, Indonesia; every year after that it was held in different cities. All conference proceedings from COMNETSAT can be accessed on IEEE Xplore at <https://ieeexplore.ieee.org/xpl/conhome/1802000/all-proceedings>. In 2020, COMNETSAT was originally planned in Batam, Indonesia and organized by the Batam Institute of Technology.

If you have take vacation to Batam, it doesn't feel complete if you don't stop by the Bareleng Bridge, which is Batam's icon. Bareleng Bridge itself stands for Batam, Rempang, and Galang. This bridge connects many islands, such as Batam Island, Tonton Island, Nipah Island, Rempang Island, Galang Island, and Galang Baru Island. The hot afternoon and evening sun makes a glimpse of this bridge similar to the Golden Gate Bridge in San Francisco.

However, the pandemic conditions forced the meeting to not be held in Batam, and in the end COMNETSAT 2020 had to be carried out using synchronous video conferencing. Similar to previous COMNETSAT, this year the conference also had four solid conference tracks as follows: Communications track,



Jembatan Bareleng, Batam (source: <https://blue.kumparan.com>).

Network track, Satellite track, and Broadband and Photonics track, with the Communications track being the most demanding track. Meanwhile the most demanding topics in the conference were Radio Communications and Internet of Things. Many important updates were delivered at COMNETSAT 2020 during 11 technical sessions and two keynote sessions.

Some of the important updates in the keynote sessions were delivered by Dr. Mohammad Mohammadi Amiri from the Department of Electrical Engineering, Princeton University, USA; Dr. Yang Liu from Beijing University of Posts and Telecommunications, China; and Dr. Zhi Liu from The University of Electro-Communications, Japan. Dr. Amiri presented Federated Edge Learning: Advances and Challenges, pointing out some challenges, such as bandwidth-limited device-to-PS links, mobile devices with no CSI, device scheduling, noisy PS-to-device links, and convergence guarantees. Dr. Yang Liu presented Endogenously Secure Radio Access Networks, pointing out authentication and authorization for wireless access network endogenous security toward deployment simplicity, design miniaturization technical refinement, and functional integration. Dr. Zhi Liu presented updates on advanced research on VR video and Point Cloud Video Streaming.

In the closing session, COMNETSAT 2020 presented four best papers as follows:

“Supervised Learning for Enhanced Early HARQ Feedback Prediction in URLLC” by Saleh AlMarshed, Dionysia Triantafyllou and Klaus Moessner from the University of Surrey, U.K. in the Communications track.

“Performance Analysis and Optimization of Novel Hybrid Communication Mode for Vehicular Network” by Xueying Jiang, Wei He, and Tao Han from Huazhong University of Science and Technology, China in the Network track.

“Energy Efficiency and Delay Trade-off over Multi-beam Satellite Downlinks” by Kaiwei Wang and Shuo Wang from China Electronics Technology Group Corporation in the Satellite track.

“Design and Analysis of Bandpass Filter Using SIW Techniques and CPW Feed” by

(Continued on Newsletter page 4)



Closing session of COMNETSAT 2020.

IEEE Joint New Zealand Communications Society: A Summary of Exceptional Activities over 2019-2020

By Nurul I Sarkar, IEEE Joint NZ North, South, and Central ComSoc Chair, New Zealand

This article highlights and reflects on professional activities, including community development programs, hosting the International Telecommunication Networks and Applications Conference (ITNAC), and IEEE Virtual Distinguished Lecturer (VDL) programs conducted during 2019-2020.

The year 2019 was a productive year for us as far as our professional development of the members of the wider community are concerned. Our main activities throughout the year include a community development workshop, hosting the ITNAC Conference in Auckland, and an IEEE Distinguish Lecturer (DL) tour to New Zealand (NZ). In this report, we first focus on the IEEE Community Development Workshop held in Auckland. We then share our experience in organizing an international conference (ITNAC 2019) in Auckland. We also report on the effectiveness of 2019 IEEE DL tour to NZ covering three main cities (Auckland, Wellington, and Christchurch). We also share our experience organizing 2020 IEEE VDL programs in NZ.

IEEE Community Development Workshop

Being a joint Communications Society (ComSoc) Chapter Chair of the IEEE NZ North, South, and Central Sections, we continue to work with community schools and play an active role in community development in NZ.

Just before the COVID-19 pandemic spread worldwide, we had a successful community workshop at IQRA Academy (YMCA Complex, Rocket Park, Auckland) on Saturday, 16 November, 2019. The IQRA Academy is a distinct Auckland-based community school run by a group of dedicated volunteers. It aims to provide students (ages 5 to 15) a good foundation of Islamic knowledge and faith/ethics in supplementing religious education to the traditional schools.

About 60 people attended the event, mostly students and their parents. This workshop provided an overview of IEEE resources for students and offered an interactive session on some aspects of emerging technologies for humanity. Organizing Chair, Associate Professor Nurul I Sarkar, opened the workshop by introducing the IEEE mission, vision, and benefits.

Dr. Sonia Gul (Auckland University of Technology) gave an interesting lecture on recent advances in autonomous cars, followed by interactive quizzes. A short video on driverless cars was presented, highlighting the latest industry development and

market of the technology. The students enjoyed the video presentation and were excited to learn more about emerging communication technologies and IEEE's contributions world-wide. After the lecture, quizzes were given to the students to test their knowledge and understanding of various aspects of IEEE and emerging technologies for autonomous cars. Finally, we had a panel discussion on the topic by Dr. Sonia Gul, Dr. Afsar Rahman, and Dr. Afsar Uddin (Principal, IQRA Academy).

Hosting 2019 ITNAC International Conference in Auckland

We have been involved in organizing and sponsoring the ITNAC series of conferences over many years. 2015 was the first year where the conference carried the title of ITNAC, to mark its more international profile, and it was held in Sydney, Australia. In 2019, ITNAC returned to New Zealand and was held in Auckland from November 26-29 at the Auckland University of Technology (AUT). Due to COVID-19, 2020 ITNAC was held entirely online (Melbourne-based) with Dr. Mark Gregory (RMIT) as the General Chair, and a committee drawn from numerous Melbourne and Australian universities. ITNAC 2021 will be held in Sydney. It is anticipated that ITNAC will next return to NZ in 2022.

Organising Committee and Venue

Associate Professor Nurul Sarkar (AUT) served as general co-chair together with Professor Adnan Al-Anbuky (AUT) and A/Professor Mark Gregory (RMIT). We started working on producing a call for papers (CFP) for circulation, applying for IEEE co-sponsorship, and venue selection, website design, and other logistics about one year before the actual conference being held in November 2019. Subsequently, we focused on marketing and circulating the CFP through various national and international fora. We then focused on selecting/appointing high quality keynote speakers for the conference.

The local organizing committee, comprising five AUT staff and a couple of Ph.D. students, was initially led by A/Professor Nurul Sarkar; later, Dr. Krassie Petrova joined the team as the local chair. We had a world-class conference venue situated on the ground floor of the WG building AUT Wellesley campus. The facilities included an auditorium and the conference open space, which was used for networking at lunch time and during the conference breaks. Seminar rooms were available for the conference sessions on the upper levels of the same building. The conference ran smoothly, with sessions and social events well attended; the later included a cocktail reception, a walk in the Auckland domain, and a conference dinner. Karen Phipps was instrumental in organizing the social program and liaising with the AUT catering unit. Compared to the Australian ITNACs



IEEE-IQRA Community workshop participants.

in recent years, the number of attendees was a little lower than had previously been the case. Nevertheless, there were 84 people registered to attend, with a total of 87 papers submitted (including both full and short papers plus workshop). Overall, there were 40 full papers, seven workshop papers and 18 short papers accepted.

Keynote Speakers

Professor Guy Littlefair (Pro Vice Chancellor and Dean of the Faculty of Design and Creative Technologies) gave an opening talk and outlined the program for the day. We had six excellent world-class keynote speakers: Professor Peter Smith (Victoria University of Wellington, NZ); Associate Professor Venkatesha Prasad (Delft University of Technology, Netherlands); Professor Franco Davoli (University of Genova, Italy); Professor Yonghong Tian (Peking University, China); Professor Huadong Ma (Beijing University of Posts and Telecommunications, China); and Emeritus Professor Richard Harris (Massey University, NZ).

On the first day of the conference (Wednesday, 27 November, 2019), Professor Smith gave an interesting talk on "What Can We Learn About 5G Performance from Clustered Ray-based Channel Mode." The tutorial style presentation helped the audience understand the technical subjects very well. Participants had the opportunity to ask questions after the talk. Our second keynote speaker, Associate Professor Venkatesha Prasad, gave his keynote on "Murphy Loves Constructive Interference", which was quite interesting and has practical significance. People enjoyed the interactive presentation and understand the highly technical subjects well. A/Prof Prasad was sponsored as an IEEE Distinguished Lecturer, as part of a speaking tour around New Zealand.

On day 2 of the conference, Professor Franco Davoli spoke about "Mobile Edge Computing in the 5G Era: Bridging Applications and Networking Environments." This emerging topic was covered in-depth and participants had the opportunity to ask questions and engage in a discussion. Professor Yonghong Tian gave a lecture on "When AI Meets High-speed Networking Making AI Computing and Services Anywhere Anytime." On day 3 of the conference, Professor Huadong Ma offered lecture on "MCS2.0: A Development Direction of Urban Sensing." Emeritus Professor Richard Harris (Massey University Palmerston) talked about "5G for Rural and Remote Communities Communications?" These lectures were well attended and stimulated questions during their question and answer periods, as well as during the breaks.

The reception desk was open throughout the conference and was expertly staffed by Dr. Maria Villapol and the Ph.D. students (Maria also served as a local treasurer). The sessions and the guest speaker presentations in the auditorium were filmed. Photos were taken at the social activities as well as at the sessions, with the video and film materials being forwarded

to the ITNAC 2019 Chair. Overall delegate and conference committee feedback about how the conference was organised, including the facilities, the catering, and the work of the local committee, was very positive. A comment was made that the conference venue and especially the dinner venue could have been somewhat 'flashier'. Thank you to all involved in the local arrangements, and for the invaluable behind the scenes support from Mark Gregory. Despite the reduced numbers, the conference was judged to be a success. The next two ITNAC conferences will be in Australia. We thank Dr. Graeme Woodward, Richard Harris, and Krassie Petrova for their 2020 ATNAC annual report, which forms the basis of this article.

2020 IEEE Virtual Distinguished Lecturer (VDL) Program

The professional development activities have been constrained by the COVID-19 conditions which have applied throughout 2020. The organization of the DL program has been challenging while working under the ever-changing NZ COVID-19 Alert Levels. However, we managed to run two virtual DL events in 2020 through the end of October. These events are briefly highlighted below.

The first IEEE ComSoc Virtual DL we organized with Professor Mohammed Atiquzzaman (University of Oklahoma, USA), who gave an interesting talk on "Connecting Space Assets to the Internet: Challenges and Solutions" on Wednesday, 16 September, 2020 via Zoom. The talk generated a lot of interest among the participants for further discussion and collaboration. The tutorial style presentation helped the audience understand the technical subjects very well. There was an opportunity for further questions and answers after the presentation.

Our second Virtual DL was Prof. Arumugam Nallanathan (Queen Mary University of London, UK), who gave a lecture on "Artificial Intelligence in Massive IoT Networks" on Wednesday, 28 October, 2020. We really enjoyed the talk and learned more about AI for massive IoT networks, modelling, and wireless communication technologies and protocols.

Conclusion

Last year was a very challenging year for us due to the worldwide COVID-19 pandemic. However, we managed to host several high-quality events, such as IEEE ComSoc Virtual DL programs, community workshops, and invited talks for the professional development of the members of the wider community. These events provided excellent opportunities for discussion and international collaboration. We keep our momentum active to organize more professional activities this year. Thanks to IEEE ComSoc and NZ North, South and Central Sections for their support throughout. Thanks go to Dr. William Liu (Chair, IEEE NZ VTS Chapter) for his kind collaboration in hosting some of the professional activities jointly.



2019 ITNAC International conference participants.

IEEE Spanish Communications and Signal Processing Joint Chapter Activities 2020: A Hard Year (but Several Lessons Learned)

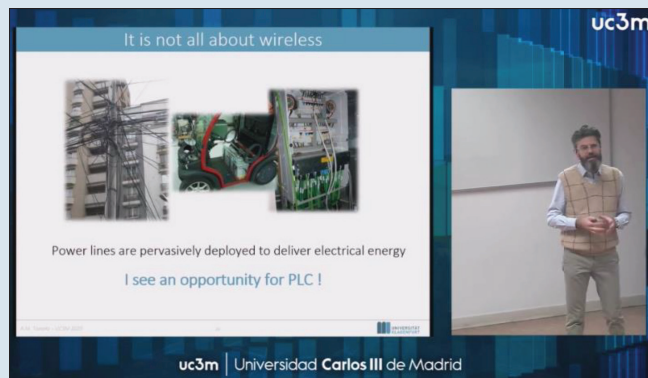
By Víctor P. Gil Jiménez, University Carlos III de Madrid, IEEE Spanish Signal Processing and Communications Joint Chapter Chair, Spain

It used to be named Horizon 2020, but it finally became Wall 2020, a wall where all our dreams and hopes crashed and our world changed.

The year 2020 started fine. We began with a technical talk by Dr. Andrea Tonello (Chair of the Embedded Communication Systems Group, University of Klagenfurt, AT) at University Carlos III. You can find his bio at <http://www.andreatonello.com/>. The topic was “Where PLC Meets Wireless for Massive IoT and Smart Grids.” In this talk, Dr. Tonello presented a summary of the evolution of power line communications (PLC), and how the evolution of this wired technology is to be combined also with wireless technologies for novel services, improved reliability, and increased capability, especially considering the benefits of and for the Internet of Things (IoT) of smart grids. It was a quite successful talk and it was in person. We did not know at that moment, but it would be the last in person activity of the chapter in a while.

After that, we had prepared several DLT events for March in the framework of the IEEE Spanish (Student, Women in Engineering and Young Professional) SWYP 2020 conference. The two Distinguished Lecturers were Dr. Marco di Renzo and Dr. Gaurav Sharma. Some of the events were cancelled before they even started due to the situation, others were not. We have already talked about Dr. Sharma’s adventure in Spain in another issue of this Newsletter, and you can read the story there.

After the first months of uncertainty, the chapter re-started activities, this time in an online fashion. We re-launched the DLT by Gaurav Sharma (Professor of Electrical and Computer Engineering, University of Rochester, US) and that event was one of the first Virtual Distinguished Lectures (VDL) in ComSoc. The topic was “Probabilistic Decoding in Communications and Bioinformatics: A Turbo Approach.” In this talk, Prof. Sharma introduced and described the turbo approach to probabilistic decoding and reviewed its application in the original communica-



A moment during Technical Talk by Dr. Andrea Tonello.

tions setting that was developed, and in the decoding of an RNA secondary structure, a key problem in bioinformatics. You can find his biography in <http://www2.ece.rochester.edu/~gsharma/>.

Looking back, we realized that it could be too early for that. The VDL was in April. At that early stage, people were overpassed by work and they were adapting to new situations, and we did not publicize enough. Despite the adversities, the attendees (not as many as we expected) were satisfied, and there were a very nice discussion time after the talk. You can access the recorded session at:

<https://ieeemeetings.webex.com/recording/service/sites/ieeemeetings/recording/3525718858004f06af5b9e39a391872a/playback>

After the summer holidays, the chapter organized the VDL by Dr. Marco Di Renzo (Senior Researcher, Supelec, FR). You can find his biography at <http://l2s.centralesupelec.fr/u/di-renzo-marco/>. The topic of the talk was “Wireless 2.0: Towards a Smart Radio Environment Empowered by Reconfigurable Intelligent Metasurfaces and Artificial Intelligence.” It was one of the most successful activities in the chapter. More than 180 registered and approximately 100 attended. There could have been more but some people were not able to access the WebEx tool. In the talk, Dr. Di Renzo introduced a new parameter to be tuned and optimized in wireless communications: the environment. So far, wireless engineers have estimated the environment and optimized transmission to cope with it. The revolutionary proposal here is to also optimize this scenario through some active tunable reflective metamaterials to improve performance. After the talk, the speaker spent more than an hour answering questions from the audience. The link for the recorded session is: <https://ieeemeetings.webex.com/ieeemeetings/lr.php?RCID=47564716ef2d4babbf0948104eb5671a>

After this successful activity, we also organized two more technical talks on the topic of 3GPP and the standardization process, by Dr. José León Calvo (Ericsson Researcher, 3GPP RAN1 Delegate). The two talks were similar in content but with a different target audience. One of them was focused on students and the opportunities for them to work in this interesting area of telecommunications, while the other focused on IEEE senior researchers and how they can contribute. These events also had many attendees and the discussion time was very interesting.

Lesson learned: wait until the appropriate time, provide enough publicity, and make the event registered.

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Rashmita Mishra from B.P. Poddar Institute of Management and Technology, Kolkata, India, and Kailash Chandra Rout from Capital Engineering College, Bhubaneswar, India in the Broadband and Photonics track.

Finally, we all don’t know whether the COVID-19 pandemic can be overcome quickly or not, but for sure, we all still have to conduct engineering and research with passion and we look forward to your participation in COMNETSAT 2021.

GCN

GLOBAL COMMUNICATIONS NEWSLETTER

STEFANO BREGNI
Editor-in-Chief
Politecnico di Milano, Italy
Email: bregni@elet.polimi.it, s.bregni@ieee.org

FABRIZIO GRANELLI
Associate Editor
University of Trento, Italy
Email: fabrizio.granelli@unitn.it

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REGIONAL CORRESPONDENTS WHO CONTRIBUTED TO THIS ISSUE
EWEEL TAN, SINGAPORE (EWEEL.TAN@IEEE.ORG)

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