GCN GLOBAL COMMUNICATIONS NEWSLETTER

DISTINGUISHED LECTURER TOUR

Distinguished Lecturer Tour of Sudhir Dixit in Nicaragua, El Salvador and Mexico

By Carlos Eugenio Martínez-Cruz, El Salvador Section Chair

In May 2019, IEEE Communication Society Distinguished Lecturer Sudhir Dixit was invited by the Nicaraguan, El Salvador and three Mexican ComSoc Chapters to conduct a Lecturer Tour. Nicaragua and El Salvador asked for two lectures while the Mexican Sections had just one each.

The tour started in Nicaragua where the local Communication Society chapter in cooperation with Nicaraguan Engineering University organized a day long conference event where Sudhir gave two talks. On the morning of May 22, people gathered at the auditorium 'Salomon de la Selva' at the Universidad Nacional de Ingenieria. With more than 100 participants, the first talk was on Software Defined Networks (SDN) and it was called: 'SDN, OpenFlow and Virtualization'. Later in the afternoon, the second talk was on 'Technologies for 5G'. Several university higher officials attended the talks, including the university vice president. They had high expectations about having cooperation projects.

Sudhir Dixit arrived in El Salvador very early in the morning on May 23. That day in the afternoon he was taken from his hotel to the Universidad Don Bosco where he gave his first talk on SDN. Several professors from the Electronics and Telecommunication departments attended the talk. Also, students from several undergraduate programs were invited. The next day he gave a talk for undergraduate students from the Electrical Engineering Department at the University of El Salvador. More than 100 undergraduate students attended the meeting. The talk was on the latest mobile communication technologies, among which were 5G and beyond. Sudhir proved to be a great communicator. It is not an easy task to show how the future would be, neither to explain what will become of the mobile communication industry.

As it has been our tradition with several DLTs, we took our guest to El Boqueron, a place at the top of the San Salvador volcano, about 1800 meter above sea level. San Salvador's capital city is about 600 meters above sea level, so weather differences could be felt very sharply. New restaurants and coffee shops have been developed lately. Our guest enjoyed the small

From left to right, Mauricio Quiñonez, IAS chapter chair, Walter Zelaya, El Salvador ComSoc chapter chair, Carlos Eugeio Martínez-Cruz, Section Chair, and DLT Sudhir Dixit.

At the top of San Salvador volcano, having a cup of coffee.

luxury of having a gourmet cup of coffee right at the top of a volcano. Several great ideas were discussed about helping the undeveloped world to get Internet access. As a Senior Fellow and Evangelist of Basic Internet at the Basic Internet Foundation in Norway, he could be a valuable asset to develop projects regarding Internet for rural areas.

On the same day, May 24, Sudhir departed to Mexico where he visited the cities of Morelos, Puebla and Guadalajara. On May 28, he gave a lecture at the National Institute of Astrophysics, Optics and Electronics (INAOE). The talk was focused on New Directions in Technology Innovations for 5G and Beyond. His aims were to highlight the major advances in technologies that will enable 5G to meet its objectives. Part of the talk was dedicated to explain new RAN technologies for 5G systems, more specifically, PHY layer technologies such as enhanced MIMO, Massive MIMO (also known as Large Scale Antenna Systems), mmWave ultra broadband transmission techniques and air interface adaptations for efficiently handling the massively parallel access in sensor networks for IoT applications, and networking solutions based on intra and inter technology heterogeneous networks (HetNets) as well as Cloud RAN architectures.

At the Engineering National University of Nicaragua.

IEEE 20th International Conference on High Performance Switching and Routing, 26-29 May 2019, Xi'an, China

By Guido Maier, HPSR 2019 TCP Co-Chair, and Achille Pattavina, HPSR 2019 General Co-Chair, Politecnico di Milano, Italy

Some HPSR 2019 Chairs and the volunteer students from Xidian University.

The paradigms of software-defined networking (SDN) and network function virtualization (NFV) are the two major breakthrough innovations that have most profoundly impacted the world of switching and routing in recent years. This led to novel approaches that leverage hardware-software co-design techniques, or exploit high-performance programmable data planes or fast network processing frameworks, such as P4, NetFPGA, OpenState, etc. While the outcomes of those innovations are still progressing and producing new results both in terms of research and of industrial applications, we are today welcoming another important revolution: the pervasive wave of big data has also splashed on the shore of computer networks and telecommunications. Data analytics, data mining, machine learning, network monitoring and traffic prediction are the new topics galvanizing researchers in academia and business developers in telcos, equipment-vendors and start-ups of the ITC sector.

If those are the new tools for the development of technology, we shall not forget the fast innovation that is occurring in the application scenario, with the new "verticals" of the next-to-come 5G era: Internet of Things, smart factory, Industry 4.0, content distribution, and automotive, just to mention the most popular ones.

How are the breakthrough changes occurring to networks and telecom affecting the more specific area of switching and routing? That is the question that the Chairs of IEEE HPSR 2019: the 20th International Conference on High Performance Switching and Routing (https://hpsr2019.ieee-hpsr.org/) have chosen this year as the main focus for this traditional conference. We were confident that HPSR would provide an ample overview of the most advanced research initiatives and results worldwide, by its contributed, invited and tutorial papers. Therefore, researchers were strongly solicited to submit their works on big-data, data-analytics and machine-learning techniques applied to switching and routing, especially for 5G, IoT, Industry 4.0, and other advanced verticals. This obviously has not excluded contributions about more traditional topics in switching and routing, which were welcomed as well.

As HPSR 2019 was the 20th edition of High Performance Switching and Routing, we did our best to locate HPSR 2019 conveniently in time and space. The conference started immediately after the end of ICC 2019, which was held in Shanghai, so researchers living far from China had the opportunity to attend both conferences in a single overseas trip. Moreover, to celebrate the 20th anniversary of HPSR, we chose an outstanding and regal location: Xi'an. This is the capital of Shaanxi Province, People's Republic of China. One of the oldest cities in China, Xi'an is the oldest of the Four Great Ancient Capitals, having held the position under several of the most important dynasties in Chinese history. Xi'an is very rich with historic places. In addition to traditional Chinese historic sites, such as the Bell Tower and Drum Tower, The Giant Wild Goose Pagoda and Small Wild Goose Pagoda, outstanding historic sites are located in Xi'an: the Mausoleum of Qin Shi Huang, the first Emperor of unified China, and his Terracotta Army, candidate for the eighth wonder of the world.

We, chairs and organizers, can very happily and proudly state that HPSR 2019 has proven to be up to the initial high expectations, if not even above, considering the laudatory comments we received by some participants.

Some essential data about the conference. HPRS is the flagship conference of the Communications Switching and Routing Technical Committee of IEEE ComSoc, therefore, HPSR 2019 was fully sponsored (including financial) by IEEE ComSoc. We are grateful to IEEE ComSoc, as well as to the other two sponsors of the event: Huawei Technologies Co. Ltd., and the State Key Laboratory of Integrated Services Network (ISN) of Xidian University, Xi'an, China. The organization of the conference was the result of cooperation between Politecnico di Milano, Italy and Xidian University. The latter also provided a platoon of about 20 students who volunteered to assist the local organization. The technical sessions were architected into a Main Conference and three topical Workshops. Paper numbers were as follows: 32 accepted out of 75 submitted to the Main Conference (acceptance ratio of 46 percent); 13 accepted out of 34 submitted to the Workshops (acceptance ratio of 38 percent). Authors came from 15 countries from all continents. The paper-selection work was carried out by 80 TPC members, who provided at least three reviews for each paper. All accepted papers were presented and published on IEEE Xplore (except for a single no-show). The conference was attended by approximately 60 registered participants, and ended up with a positive budget providing more that 20 percent profit.

The seven technical sessions of the Main Conference (Routing for Intra- and inter-datacenter and mobile edge computing; Virtual network function management and placement; Network security and blockchain technologies; High-per-

Views from the social program. Left: the dance and music show "Empress of the Great Tang" during the banquet at the Tang Le Gong restaurant; right: the one-day trip at the Terracotta Warriors.

The 2019 42nd International Conference on Telecommunications and Signal Processing (TSP) in Budapest, Hungary

By Norbert Herencsar, TSP General Co-Chair and IEEE Czechoslovakia Section SP/CAS/COM Joint Chapter Chair

The 2019 42nd International Conference on Telecommunications and Signal Processing (TSP) was hosted in a gem on the Danube, in Budapest, Hungary on July 1-3, 2019. Under the patronage of IEEE Region 8 (Europe, Middle East and Africa), the IEEE Hungary Section, the IEEE Czechoslovakia Section and SP/CAS/COM Joint Chapter, and Scientific Association for Infocommunications (HTE), Hungary, a Sister Society of the IEEE and the IEEE Communications Society, the conference was organized by 18 universities from Europe and Asia for academics and researchers and it serves as a premier annual interna-

tional forum to promote the exchange of the latest advances in telecommunication technology and signal processing. In line with this mission statement, the TSP provided a great opportunity to about 170 researchers from more than 30 countries on six continents to demonstrate their exciting achievements in research fields from information systems, network services and technologies, telecommunication systems, modeling, simulation and measurement, to analog, audio, speech, language, biomedical, digital, image, and video signal processing. Besides regular submissions, three special featured sessions also gave participants a great opportunity to meet several prominent representatives of emerging scientific disciplines. All presented papers are indexed by the IEEE Xplore® Digital Library.

One of the important factors for the success of the TSP 2019 Conference was the presence of world leading keynote speakers. First, Prof. Dr. Lie-Liang Yang, B.Eng., M.Eng., Ph.D., FIEEE, FIET, University of Southampton, UK, delivered a speech entitled "Diffusive Molecular Communications: Principles and Research Challenges". This keynote speech addressed four

Participants of the TSP 2019 Conference in Budapest.

Collaborating with Industry Events–IEEE Makes a Difference: IEEE Asia Pacific at 3rd INTERPOL World, Singapore

By Ewell Tan, Project Manager, IEEE Asia-Pacific Limited

The third edition of INTERPOL World took place on 2–4 July 2019 at the Sands Expo & Convention Centre, Marina Bay Sands Singapore. Owned by INTERPOL and supported by Singapore's Ministry of Home Affairs, IEEE is proud to be one of the supporting organizations for this event, with this year's theme on "Engaging Co-creation to Prepare for Future

Security Threats". The technology revolution has resulted in many advantages; however, it has also created disruption and revealed vulnerabilities for criminal attacks. This event sets the stage for all stakeholders to co-create, exhibit capabilities, and share insights to shape the future security landscape.

Staff from IEEE Asia-Pacific took this opportunity to participate in the three-day trade exhibition at INTERPOL World, to showcase and promote IEEE membership bene-

Director of Singapore Office, Leo Hwa Chiang received a token of appreciation at INTERPOL World 2019.

fits, the IEEE Xplore Digital Library, and uncover the products and services that IEEE can provide in today's most relevant technical topics.

In addition, IEEE also collaborated with the RSA Conference 2019 Asia Pacific & Japan, which was held on 16-18 July 2019 in Singapore to organize a series of IEEE Seminars. Prof. Andrew Woodward, Executive Dean of Science from Edith Cowan University, was invited to conduct two workshops, namely "Aftermath Reporting – The What, Why, How, Who and When" and "Using Honeypots to Determine Who is Targeting SCADA and Control Systems". The workshop was well attended by 199 participants with an interactive discussion.

Staff from IEEE Asia-Pacific Ltd. at 2019 INTERPOL World trade show. From left to right: Leo Hwa Chiang, Tan Ewell, Richard Chandra, Min Bia Gunawan and Ira Tan.

HPSR 2019/*Continued from page 2*

formance switching architectures; Advanced software-defined networking; Smart wireless networking; Flow routing and monitoring), as well as the three Workshops (Fog computing and caching for the future networks; Cooperative techniques for future wireless communications; Research advancements in localization for the Internet of things) provided highly-qualified scientific contributions. That was complemented by three outstanding keynote speeches: Optical Technologies for Hyper-Scale Cloud Datacenters, by Chongjin Xie, Alibaba Group; Future Switching Requirements for Long haul and Metro Networks, by David Neilson, Bell Labs Nokia; and Network Hardware and Software Co-Design for Data Centers, by Chengchen Hu, Xilinx. There were also four extremely informative tutorials: Applications of Artificial Intelligence in Network Security Management, by Yasir Naveed Malik, New York Institute of Technology (Canada); 5G Driven by AI, by Sun Junshuai, China Mobile; How to Integrate all Wireless Technologies to Stop Smart Home Going Stupid, by Howy Shu, Huawei; and AI/ML in Future Wireless Communications, by Bo Sun, ZTE. As the guest keynote and tutorial speakers were from top-class TLC companies, we were also able to offer an intriguing industrial panel about cutting-edge telecommunication technologies and current development, where the discussion of their opinions stimulated active participation from the audience.

The conference venue was the luxurious Grand Park Xi'an Hotel, conveniently located at the gates of the ancient inner walls of Xi'an. Attendees could enjoy, at walking distance, the Bell and Drum Towers, the Artists' and Muslim districts, and cultural and nightlife hearts of the city. Moreover, the social program included two top attractions: the banquet at the Tang Le Gong restaurant in Xi'an, with China's magnificent first Tang-Dynasty dance and music show "Empress of the Great Tang" performed live during the dinner, and a one-day trip to the Terracotta Warriors. This latter monument, located nearby, is one of the largest archaeological sites in the world and one of the greatest discoveries of the 20th century. It includes thousands of detailed full-size models representing the army that united China at the end of the Warring States period (476-221 BC), that were built to accompany the tomb of the First Emperor of China as a guard of the afterlife.

To close this report, we would like to thank the fantastic team of Chairs who worked very hard to make this conference successful, as well as the keynote and tutorial speakers, the TCP members, the authors, the attendees and the IEEE Communication Society and its Technical Committees who backed the event.

INTERPOL World/*Continued from page 3*

Another hot topic, "Ethical Hacking", presented by Prof. Paul Haskell-Dowland, the Associate Dean for Computing and Security, School of Science at Edith Cowan University, was very much of interest to the conference participants, attracting 285 participants to attend.

The presence of IEEE in these industry events brings value and creates awareness to the industry players, government agencies, private entities and organizations. IEEE offers ample opportunities to network and grow professionally through communities.

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research challenges in diffusive molecular communications, namely interference mitigation, error-control coding, capacity improvement, and multiple-access diffusive molecular communications. The second keynote speech by Nokia's experts, Dr. Gabor Jaro, Dr. Attila Hilt, Mr. Lorand Nagy, Mr. Akos M. Tundik, and Dr. Jozsef Varga, addressed the continuous change toward the new worlds of Telco-Cloud and 5G. The rapidly increasing amount of cloud-based Virtual Network Functions have introduced new concepts for dimensioning, deployment, operation, management, licensing, and monitoring. At the same time, the strict requirements of telecommunication networks still must be fulfilled on cloud. Several established availability and operability requirements and expectations are inherited from the legacy world. The last keynote speech, delivered by Prof. Dr. Ioannis Pitas, FIEEE, FEURASIP, Aristotle University of Thessaloniki, Greece, was related to "Multiple Drone Communications and Video/Data Streaming". This talk aimed to provide an overview of the current state of the art in drone cinematography and future perspectives of intelligent single-drone and multiple-drone platforms for media production.

Finally, in cooperation with the IEEE Czechoslovakia Section SP/CAS/COM Joint Chapter, to recognize outstanding technical contributions by students, as evidenced by the quality of papers, their presentations, and their technical excellence, the authors of the best five student papers were awarded during the conference Gala Dinner by the Technical Committee. The Best Student Paper Award consisted of a Plaque and a Certificate of Appreciation.

For 2020, the next TSP will be taking place in Milan, Italy, in the Fashion Capital of the World. For more information please visit http://tsp.vutbr.cz/.