GCN GLOBAL COMMUNICATIONS NEWSLETTER

May 2020
ISSN 2374-1082

CONFERENCE REPORT

WICE Workshop on Communications and Professional Development at GLOBECOM 2019: Promoting the Visibility and Roles of Women Communications Engineers

By Ana Garcia Armada, Univ. Carlos III de Madrid, Spain; Michele Nogueira, FUP, Brazil; Dola Saha, SUNY, USA; and Sinem Coleri, Koc Univ., Turkey

WICE represents the IEEE ComSoc Women in Communications Engineering Standing Committee whose mission is promoting the visibility and roles of women communications engineers, as well as providing a venue for their professional growth. WICE organized a workshop on Communications and Professional Development at the 2019 IEEE Global Communications Conference (Globecom), which was held in Waikoloa, HI, USA on Monday, 9 December, 2019.

The workshop featured professional training and mentoring as well as technical interactions of participants with common research interests, all in a very friendly and welcoming atmosphere where professional and technical discussions were mixed with personal experience details and advice to the young engineers.

Algorithms and learning methods for modern large-scale distributed systems: The first keynote speaker was Dr. Urbashi Mitra from the Departments of Electrical and Computer Engineering and Computer Science, University of Southern California, USA. She gave a talk about "Algorithms and Learning Methods for CPS/IoT Communication Scheduling". Modern large-scale distributed systems such as cyber-physical systems (CPS) and the Internet-of-Things (IoT) often consist of components that communicate/interact over shared networks of limited bandwidth and operate with minimal delay. In order to coordinate access to the limited communication resource, she showed some strategies to design the medium access control (MAC) scheme to optimize performance, both for a centralized scheme and for CPS/IoT nodes making arbitrarily distributed random observations.

Why a Career in Communications Engineering for a Woman: The second keynote speaker was Dr. Bhavani Thuraisingham from the University of Texas at Dallas, USA. She pointed out that in many disciplines of Engineering, such as Communications Engineering, women are vastly underrepresented. She explained that this is partly because of the number of women at first-level management are far fewer than men. "Then you have to rise up the ladder from that pool and so women are already at a disadvantage". A solution to this problem, she explained, is to engage women at a much earlier age, perhaps even in elementary school, and focus on engineering education as a subject. She shared her rich experience about why a career in Communications Engineering is a good choice for women, encouraging the young women in the audience to pursue their careers.

The keynote speakers, Urbashi Mitra (left) and Bhavani Thuraisingham (right), with WICE Past-Chair, Ana Garcia Armada (center).

Best poster award winner Yun Liao (left) with WICE Past-Chair, Ana Garcia Armada (right).

Mentoring session: We held multiple parallel mentoring sessions led by experienced personnel from industry and academia. We are very thankful to Chathu Ranaweera, Estefanía Coronado Calero, Hessa Alquwaiee, Kinda Khalaf, Melike Erol Kantarci, Mohammed Atiquzzaman, Rosa Maria Delgado, Rose Hu, and Zied Bouida, who shared their time with the youngest attendees.

There were discussions about how gender stereotypes are persistent and difficult to change: people tend to think that some qualities are exclusively male and exclusively female. It was agreed that we need to continue bringing more women into engineering and to encourage courses designed for women to capture their attention as soon as they enter college. Women often want to be in engineering to help people, to have a positive impact on society and the environment, but they do not

(Continued on Newsletter page 4)

Afternoon group picture.

CONFERENCE REPORT

IEEE NFV-SDN 2019 in Dallas, TX, USA

By Kurt Tutschku, IEEE Sweden Section, Blekinge Institute of Technology, Sweden; and Larry Horner, Intel, IEEE Dallas Section, USA

The IEEE Conference on Network Function Virtualization and Software-Defined Networking (IEEE NFV-SDN) conference series is IEEE's premier venue for the discussion and presentation of SDN and NFV technologies and methods. These technologies help communication service providers (CSPs) to evolve existing networks and build new ones for future services, to support general applications, such as smart cities, Industry 4.0, critical energy infrastructures or ubiquitous and edge-based AI.

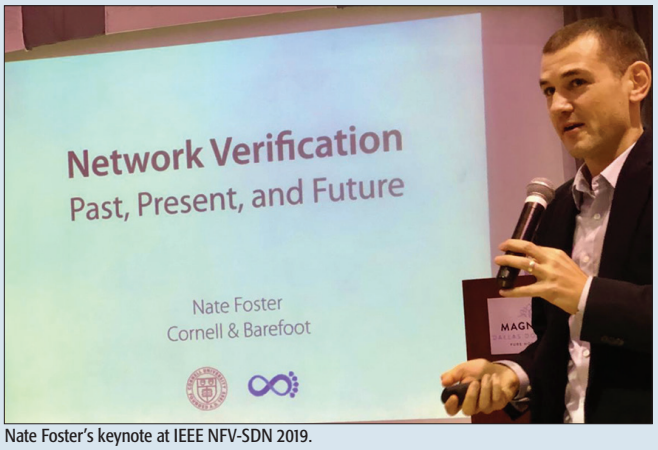
The conference understands itself as a dedicated accelerator of the continuous exchange of the latest ideas and results between all NFV and SDN ecosystem partners in academia and industry. The IEEE NFV-SDN conference originated from an industry initiative and is backed, among others, by the ETSI Industry Specification Group on Network Functions Virtualization and Intel.

The 5th IEEE NFV-SDN conference took place in Dallas, TX on November 12-14, 2019. IEEE NFV-SDN 2019 gathered approximately 80 participants. It had an exciting mix of industrial and academic keynotes. Dallas, TX provided unique access to leading companies working in SDN and NFV and our location was adjacent to AT&T world headquarters. Keynote speakers included Sridhar Rajagopal (Vice President at Mavenir Systems and 2017 IEEE Marconi Prize Paper award recipient); Ying Zhang (Facebook and listed as one of IEEE ComSoc 2017 Women Rising Stars in Computer Networking and Communications); Nate Foster (Cornell University, Barefoot Networks and 2018 SIGCOMM Rising Star Award recipient); and Professor Andrea Fumagalli (The University of Texas at Dallas).

The conference's distinct accelerator capabilities come from high quality research contributions, being a strict single-track event for the main conference, and by mixing the best academic researchers with the front-runners in industry research and their leaders. These three factors enable vivid discussions among all participants of the highest scientific and industrial significance. Thus, the event contributes to an increased understanding of real-world problems, development of new technical solutions, and prepares researchers and practitioners to provide future unique new solutions for programmable and cloudified CSP networks using virtualization technologies.

This year's discussion topics centered on the theoretical and practical challenges in operating future CSP networks using the NFV and SDN paradigms. Sridhar Rajagopal gave a keynote about the challenges and new opportunities in virtualizing the 5G RAN. Nate Foster's talk impressively demonstrated how theoretical results in network verification can be transferred and applied in the area of SDN systems and programable switches. Ying Zhang talked about the challenges in Facebook's data centers in handling Service Function Chaining and applying Network Functions Virtualization. Andrea Fumagalli (Univ. of Texas at Dallas) reported on the latest developments in making optical networks programmable.

Members of 2019 OC of IEEE NFV-SDN conference (f.l.t.r.: K. Tutschku, S. Wright, Y. Sekiya, H. Parzyjegla, G. Xilouris, S. Scott-Hayward, Q. Zhang, L. Horner, D. Clarke, C. Contoli, J. Gunn).



Nate Foster's keynote at IEEE NFV-SDN 2019.

IEEE NFV-SDN 2019 panel on System and Performance Aspects of NFV-SDN: (f.l.t.r.: Andrea Fumagalli, Sridhar Rajagopal, Ying Zhang, and Don Clarke).

Beside the keynotes, the conference featured 19 carefully selected scientific papers (regular conference and fast-tracked, latest-result papers) in areas of system and performance of NFV and SDN systems, the design of NFV and SDN systems, VNF service chaining, and security and monitoring of SDN and NFV networks. In addition, the event comprised a demo session (including papers) where seven groups of researchers from academia and industry provided hands-on demonstrations of NFV and SDN solutions. The demo session provided a social environment that also allowed for the presentation of high-quality scientific results with direct impact on daily operational issues of future virtualized CSP networks, some of which are difficult to assess by typical theoretical concepts.

Other important elements of the conference were the two joint-academia-industry panels. The first panel was on "Algorithmic and Data Aspects of NFV-SDN" and was moderated by Sandra Scott-Hayward (Queen's University Belfast). It was comprised of panelists Nate Foster, Brian Kelley (University of Texas at San Antonio), and Levi Perigo (University of Colorado). The second panel was moderated by Don Clarke (alumni of BT and CableLabs, former head of the NOC of the ETSI ISG on NFV). Clarke is one of the founders of the ETSI's initiative on NFV. This panel discussed the topic of "System and Performance Aspects of NFV-SDN". It was comprised of members Ying Zhang, Andrea Fumagalli and Sridhar Rajagopal.

Other program items of IEEE NFV-SDN 2019 included two workshops (MOBISLICE II, 5GSecAI) and three tutorials by academia (Texas A&M Univ.), research institutes (Catalan Telecommunications Technology Centre) and industry (Intel).

(Continued on Newsletter page 4)

CHAPTER REPORT

What is New in Video Communication?

By Yuwen He and Liangping Ma, InterDigital, San Diego, CA, USA

Traditional video applications such as video streaming and real-time video are using a significant portion of the capacity of the wireless systems and the Internet, and new types of video-heavy applications, such as 360-degree video, are being added on top of those. It is important to understand not only how the existing communication systems and particularly 5G effectively supports these diverse video applications, but also how the video coding technologies can be optimized for the best user experience given the network condition. To help the IEEE members and professionals in the local community better grasp the video communication field, on October 30, 2019, the IEEE San Diego Broadcast Technology Society, the Communication Society, and the Vehicular Technology Society organized a special event consisting of both technical talks and a live demo on cutting-edge video communication technologies.

Srinivas Gudumasu explaining the demo system.


From left to right: Dr. Murat Karsi (event organizer), Dr. Yuwen He (speaker), Srinivas Gudumasu (demo engineer), Dr. Liangping Ma (speaker and event organizer), and Manuel Guzman (event organizer).

Dr. Liangping Ma of InterDigital presented the latest technologies on video streaming and interactive video communication and how to design systems to optimize the Quality of Experience (QoE). The technologies include Dynamic Adaptive Streaming over HTTP (DASH) and Web Real-Time Communication (WebRTC) across various platforms spanning LTE, Wi-Fi, Internet, and 5G NR. Dr. Yuwen He of InterDigital focused on an emerging video technology and presented an end-to-end video streaming system, which offers an immersive user experience by enabling 360-degree viewing and head motion parallax. The system comprised a server, a DASH client and a head tracker. The presentation covered various optimization techniques that minimize the computational complexity and the traffic load.

The system described by Dr. Yuwen He, termed "360°/3DOF+ Video Immersive Experience", was demonstrated by Srinivas Gudumasu of InterDigital. Many of the audience tried the demo system and were amazed by the exceptional user experience that the demo system offered. The presentations and the demo complemented each other, and together they made an educational and fun event!

CHAPTER REPORT

Fourth IEEE ComSoc Karachi Seminar

By Bhawani S. Chowdhry, IEEE ComSoc Karachi Chapter Chair, Pakistan

The Fourth IEEE Communications Society–Karachi Chapter Seminar was held on October 10, 2019 at NED University of Engineering and Technology, Karachi. The theme of the seminar was "Emerging Telecom Trends and Technologies for National Industrial Growth beyond 2019". Prof. Dr. Sarosh Hashmat Lodhi, the Vice Chancellor of NED University, graced the event as the Chief Guest. Eminent personalities from academia and industry, IEEE Karachi section members, faculty members and students from various universities attended the seminar.

Mr. Salman Saad Khan, the Relationships Manager for China Mobile, gave a talk on "4G Solutions for the Financial Sector and their Positive Impact on the National Economy"; Mr. Abul Khair Muhammad Shafaat Ali, the General Manager for SUPARCO, presented a talk on "Satellite and Space Technology". Mr. S. Najamul Hassan, Senior Manager, International Business, Transworld Associates, talked about the role of communication techniques on financial growth. Prof. Dr. Bhawani Shankar Chowdhry, Chair of the IEEE ComSoc Karachi Chapter and Professor Emeritus Mehran University of Engineering and Technology, presented a talk on "Telecom Technologies Can Lead the Nation towards Prosperity".


Prof. Chowdhry addressing the audience at the seminar.

Addressing the audience, Prof. Dr. Sarosh Hasmat Lodhi, the Vice Chancellor at NED University, praised IEEE ComSoc's endeavors for holding seminars which augment students' skills and faculty's professional expertise. He pledged that NED University will be pleased to continuing hosting such events which contribute in the economic well being for a prosperous nation through technology and innovation. At the end, Prof. Dr. S. Hyder Abbas Musavi presented the vote of thanks in the capacity of Seminar Organizer.

WICE Workshop/*Continued from page 1*

think in terms of creation and innovation, and courses and messages also need to be tailored in this spirit.

Interactive posters: The students had the chance to present their research topics in an interactive poster session and discuss the details with the attendees. They covered a very wide spectrum of topics, from video analytics, online emotion recognition and deep learning to minimizing the age of information or antenna design, also covering heterogeneous networks with relays and UAVs. The best poster award was given to the work "Deep Neural Network Symbol Detection for Millimeter Wave Communications" presented by Yun Liao and performed in collaboration with Nariman Farsad, Nir Shlezinger, Yonina Eldar and Andrea Goldsmith.

Effective negotiations: For the first time the WICE workshop featured a training session with a professional coach. The topic was "Effective Negotiations in the Workplace". We had the pleasure to learn with Dr. Pushpalatha Murthy, from Michigan Technological University and member of COACh, in a very informative and interactive session. The main highlights were that "No" is the first step to "Yes", meaning that negotiation is not a one-shot deal; that we should be aware that if you are underrepresented your accomplishments are undervalued; and that negotiation is about problem solving and not winning a competition. Many of the attendees agreed that this session was the best of the workshop and we should definitely continue with this training initiative.

Concluding remarks: The attendees reported that it was a very satisfying experience for them. The more senior enjoyed being able to connect with the next generation of researchers and sharing some of their experiences with them. We received very nice comments in the feeback from the students, such as: "Nice event and initiative to empower women community. Keep it up!" "Interactive session was an eye-opener for me." "I am taking a lot from the workshop." "Simply wonderful." "The workshop was amazing! I learned so many things!" "The friendliness and the whole environment was really warm." "I have learned a lot and gained some confidence for my future career." There were also things to improve, such as including more about work-life balance and publicizing the event better to let more people know.

We would like to acknowledge the support from IEEE Comsoc and WICE. This was a wonderful event and the experience will allow us to improve in the future. See you soon at the next major ComSoc conference!

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

IEEE Communications Society – Member and Global Activities
Nei Kato, Vice-President for Member and Global Activities
Ricardo Veiga, Director of Member Services
Nury Gabriela Ramirez Cely, Director of LA Region
Fawzi Behmann, Director of NA Region
Christos Verikoukis, Director of EMEA Region
Sumei Sun, Director of AP Region
Maite Brandt Pearce, Chair of the WICE Standing Committee
Shashank Gaur, Chair of the YP Standing Committee

Regional Correspondents Who Contributed to this Issue
Ewell Tan, Singapore (ewell.tan@ieee.org)

IEEE ComSoc IEEE Communications Society

www.comsoc.org/gcn
ISSN 2374-1082

NFV-SDN 2019/*Continued from page 2*

The conference also awarded the best contributions with respect to regular conference papers, fast-track submissions and demos:

Best Paper: "Investigating Adversarial Attacks against Network Intrusion Detection Systems in SDNs" (James Aiken, Sandra Scott-Hayward, Queen's University Belfast, N. Ireland).

Best Fast Track Paper: "Flock: A Live Migration Protocol for SDN Controllers" (Chiara Contoli, Fabio Palumbo, Flavio Esposito, Franco Callegati, Antonio Pescapé; Saint Louis University, USA, University of Bologna, Italy, University of Naples Federico II, Italy).

Best Demo: Enhanced Driving with 5G: A New Approach for Alleviating Traffic Congestion (Roberto Torre, Goiuri Peraltaz, Oleksandr Zhdanenko, Alexander Kropp, Hani Salah, Giang T. Nguyen, Stanislav Mudriievskyi, and Frank H. P. Fitzek; Technische Universität Dresden, Germany, Ikerlan Technology Research Centre, Spain).

Three student travel grants were award to outstanding student results. The recipients were Akshatha Nayak Manjeshwar (Indian Institute of Technology Bombay); Nikita Jalodia (Waterford Institute of Technology); and Gourav Prateek Sharma (Ghent University).

Finally, the conference organizers wish to express their appreciation to financial sponsors of this event, Intel (Diamond) and Fujitsu (Bronze). Next year's conference (IEEE NFV-SDN 2020), will be held in Madrid, Spain from November 10–12, 2020.