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CONFERENCE REPORT

8th IEEE International Conference on Network Softwarization 2022 (IEEE NetSoft 2022), Milan, Italy

by Alexander Clemm and Guido Maier, NetSoft 2022 General Co-Chairs, and Prosper Chemouil, NetSoft Steering Committee Chair

The 8th IEEE International Conference on Network Softwarization (IEEE NetSoft 2022) was held from June 27 to July 1, 2022 in Milan, Italy, one of the most vibrant cities in Europe. The conference was hosted by Politecnico di Milano in its historical downtown campus, during a week of beautiful (and very toasty) weather and against the backdrop of a vibrant University full of student life with courses in full swing.

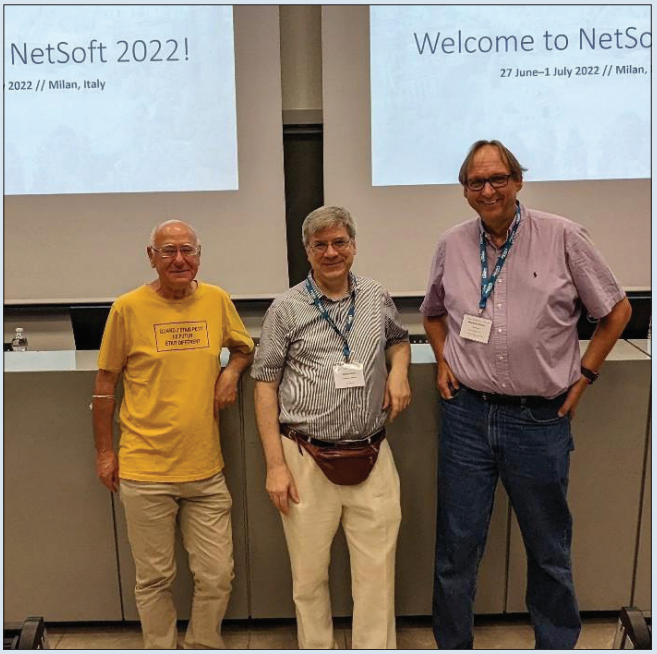
The theme of IEEE NetSoft 2022 was "Network Softwarization Coming of Age: New Challenges and Opportunities". The theme acknowledges the fact that network softwarization has reached a certain level of maturity since the first incarnation of the conference almost a decade ago. At this point, network softwarization is part of the technical mainstream and there a substantive body of experience with large-scale commercial deployments that have left the experimental stages at the lab. This provides a solid foundation from which to stage the exploration of new frontiers to push the limits of network softwarization even further, including but not limited to challenges regarding security, safety, trust and privacy in virtualized environments; advances in network programming methodologies, architectures, and languages; AI techniques to support network automation; or multi-tenant SDN/NFV.

Given the general improvement of the COVID-19 pandemic situation around the world in general and in Europe and Italy in particular, NetSoft 2022 was organized as an in-person event to provide opportunities to network and renew friendships as well as create new ones in ways that previous (virtual) conference editions could not. For this reason, NetSoft 2022 featured an extensive social program to complement the technical part of the program, including welcome reception, conference banquet, and campus and city tours. Unfortunately, the pandemic is not over and not everybody was able to travel, hence IEEE NetSoft 2022 also welcomed and accommodated participation and presentations from remote authors. All in all, 130 researchers turned out in person and were joined by another 80 colleagues from remote.

The core of the conference ran from Tuesday to Thursday. It featured a lineup of 21 long papers selected from the open submission process, organized into six Technical Sessions with the topics of Deployment and Operations, 5G and URLLC, RAN and Optimization, Intelligence and Control, Resilience, and Security. These were complemented by two short-paper sessions (selected from submissions explicitly submitted as short papers, not relegated long papers) and two demo sessions that showcased prototypes and proof-of-concept implementations of ongoing research. The acceptance rate was 24.9%.

The technical program was anchored by a range of inspiring keynote talks delivered by world-class researchers and practitioners. Walter Cerroni from the University of Bologna (Italy), had the honor of kicking things off, giving a retrospective look at how far Network Softwarization has come. His talk was followed by Nate Foster from Cornell University (USA) who discussed foundational challenges and opportunities regarding the implementation and deployment of networks whose behavior is verifiably correct. A crucial aspect of this concerns tool chains implementing provably correct transformation rules along every step of the way. Francesc Guim from Intel (Spain) reflected on the topic of smart edge architectures, drawing particular attention to the increasingly important issue of sustainability and the need of networks to be very efficient in their energy usage. Kurt Tutschku from Blekinge Institute of Technology (Sweden) presented on the idea of using Blockchain-based marketplaces for network services. Sujata Banerjee from VMware Research (USA) and Dario Rossi from Huawei (France) rounded out the keynote lineup with discussions of data-driving networking as part of edge-to-cloud infrastructure, and of AI-native networking respectively.

The keynotes were complemented by the Distinguished Expert Panel in which the theme of the conference (Network Softwarization Coming of Age: New Challenges and Opportunities) was



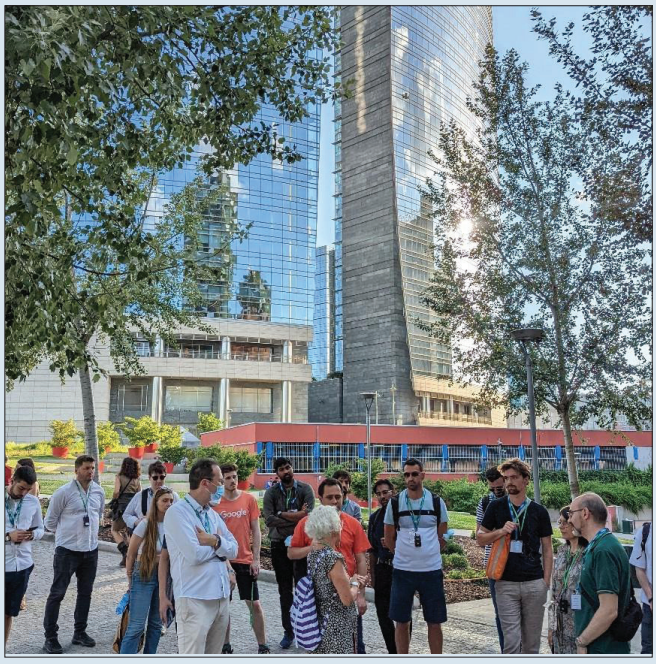
Prosper Chemouil, Steering Committee Chair, Guido Maier and Alexander Clemm, General Co-Chairs, before the first session of the conference

Socializing during the coffee break

discussed by a lineup of experts representing vastly different perspectives. Russ White from Juniper (USA) and Filip De Turck from the University of Ghent (Belgium) co-moderated the panel. Jeff Tantsura (Microsoft, USA) and Paolo Crosta (Italtel, Italy) provided a decisively industrial viewpoint, focusing on market forces, commercial opportunities and the state of actual network deployments, whereas Barbara Martini (Universitas Mercatorum, Italy) and Diogo Menezes Ferrazani Mattos (Universidade Federal Fluminense, Brazil) took a more academic perspective.

Monday and Friday focused workshops and tutorials to provide the opportunity to dive deeper into selected specialized topics. Tutorials covered dataplane programming (covering the use of P4 on a testbed with Raspberry Pis in one tutorial, and the use enhanced Berkeley Packet Filters to program packet actions and behavior in the other), O-RAN, and network availability. The workshop topics included intent-based networking (WIN), cyber-security and privacy in software-defined infrastructures (SecSoft), network energy efficiency (GreenNet), performance evaluation of SDN and virtualized networks (PVE-SDN), and edge network softwarization (ENS).

IEEE NetSoft 2022 would not have been possible without the support of its dedicated Organizing Committee members, the TPC members, the countless reviewers of papers, the authors who submitted papers, and most of all of course the participants without whom there would not have been such a lively and memorable event. A bit shout-out needs to be given to the local organization team who made sure everything ran smoothly, quite a challenge for what was in effect a hybrid event. IEEE NetSoft also received generous financial support from its patrons, Intel, Huawei, Italtel, Eolo, and Tiesse, which was crucial to absorb the financial risks at a time when it was not clear how large the physical turnout was actually going to be. Lastly, the support of our hosts, Politecnico di Milano, is gratefully acknowledged.



Beyond Network Architecture: discovering Milano City Architecture before the conference dinner at a famous gourmet restaurant in the heart of the design Isola district of Milano

While all good things have to come to an end, we are already looking forward to next year's IEEE NetSoft, to be held in Madrid, Spain from June 26–30, 2023. We are sure it will be another great one and we would like to encourage researchers in the area of network softwarization to plan on submitting a paper around the beginning of the year; please refer to the upcoming Website for detailed announcements.

CHAPTER REPORT

The 4th IEEE Turkey ComSoc Summit

by Mertcan Kuzan, Ismail Cem Tuzun, Gokcenaz Ozgel, and Tunçer Baykas, IEEE ComSoc Turkey Chapter Chair, Turkey

The 4th IEEE Turkey ComSoc Summit was held and organized by the IEEE Turkey Communications Society Chapter (Tunçer Bayka?, Chair) and hosted by IEEE Izmir Institute of Technology Student Branch. During the event, institutions and companies specializing in the electronic communication industry held technical Q&A sessions and presentations aimed at engineering students as well as other participants interested in these industries.

There were three sessions on the first day of the organization. In the first session, Turk Telekom Mobile Operations Manager Mr. Omer Zorlu talked about the current state of 5G technologies in Turkey and the world, and discussed the new technical possibilities 5G technology will bring. Afterward, in the next session, Mehmet Emin Deniz and Handenur Co?kun from Orion Innovation talked about cloud, communications and software technologies as well as their career experiences. In the last session of the day, Head of Software in Ericsson Turkey Office, Mr. Aykal Gumus, discussed the opportunities regarding the industrial usage areas of 5G technologies and their development on IoT devices in his presentation. After each session, participants were gifted plaques prepared for them as thanks for their presentations and contributions to the organization.

The second and last day of the organization started with the opening speeches and the networking session. The day continued with Hyperion Telecom Project Director Engin Demirbora's presentation. He talked about existing problems and future development

Aykal Gumus giving a presentation about 5G techologies.

Students and Engin Demirbora during the networking session.

methods of optical technologies and answered the audience's questions during the Q&A session. During the final session of the organization, Mr. Burak Görkemli from Argela Technologies gave a presentation about the innovations that 5G technology can bring to the communication industry within the scope of cloud technologies. The last day's participants were also gifted their plaques, and the organization ended with the organization's team members receiving plaques for their hard work organizing the event.

Thanks to this organization, participants learned more about the communication industry and what they should expect if they decide to pursue a career in that field. In addition to gaining information about new technologies and the possible features of 5G technologies could bring about, technical seminars, projects, and opportunities about the future of the electronic communications industry were also shared with future engineers and individuals interested in communication technologies. In addition to technical presentations and briefings, the organization also included a mobile base station observation session, technical office tours, and mock interviews.

Omer Zorlu talking about the mobile base station.

CHAPTER REPORT

Talk at IEEE ComSoc Chile Chapter: Communications in the Terahertz Band for 6G

A Successful Virtual Multi-Site Interactive Experience

by Diego Dujovne, Universidad Diego Portales, IEEE ComSoc Chile Centro Chapter Chair

During the first days of May 2022, Dr. Josep Miquel Jornet, from Northeastern University, USA, presented a talk on Terahertz Communications for 6G. He is an enthusiast and dedicated researcher, who shared with us his broad knowledge and experience on wireless communications. At the beginning of the talk, he covered basic propagation theory and provided an overview of the current battle for bandwidth availability in a wireless world. He further introduced the new electronic, fotonic and plasmonic technologies which are the main enablers to open the terahertz spectrum for commercial communications devices. The last step in his presentation was to explain the open problems and applications: plasmonic-based ultra massive MIMO for transmission, reflection and reception, new modulations, new receiver-managed medium access protocols and routing algorithms adapted to terabit speed links.

At IEEE ComSoc Chile Centro Chapter, we are grateful for his clear and interesting presentation, which captured the attention of the public, composed of almost 70 Informatics and Telecommunications students, professionals and academics.

Since the beginning of the COVID-19 pandemic we switched to the virtual meetings, while during the first months of 2022, we started to come back to face-to-face mode. During this transition, at IEEE ComSoc Chile Centro Chapter we took advantage of the hybrid meeting rooms available at different Universities.

In this opportunity, we joined a hybrid meeting room from the Engineering Faculty of Pontificia Universidad Católica de Valparaíso and the auditorium from the Engineering and Sciences Faculty of Universidad Diego Portales, also with hybrid capabilities. Consequently, we had a remote Distinguished Lecturer presenting to participants located in different institutions. IEEE ComSoc Chile Centro Chapter covers a wide territory and we are convinced we can do better to expand this experience to an increasing number of universities. Moreover, we believe this kind of configuration can contribute to IEEE ComSoc efforts in other chapters to boost participation by providing wider simultaneous coverage while making efficient use of IEEE ComSoc resources.

Students attending the talk

CHAPTER REPORT

A Summit on Artificial Intelligence in Information and Communication, Lahore, Pakistan

by Kashif Bashir, IEEE ComSoc Lahore Chapter Chair, Pakistan

IEEE Comsoc Lahore Chapter in Collaboration with Al-Khawarizmi Institute of Computer Science UET Lahore has organized A Summit on Artificial Intelligence in Information and Communication 2022 on 19th May 2022, 10AM-2PM at KICS UET Lahore Seminar Hall.70 Students and faculty members participated the event physically while others joined online via social media. Event started with the recitation of Holy Quran by Mr. Dawood Khalid. Followed by National Anthem. Ms. Amna Mir was the event moderator. Ms Amna called Prof. Dr. Waqar Mahmood for welcome message. He is currently serving as Sultan Qaboos IT Chair at UET, Lahore. In addition, he is the Director of Al-Khwarizmi Institute of Computer Science (KICS) - a center of excellence for ICT research and development in UET, Lahore. He talked about the opportunities for students in research. He also shared the projects completed at KICS UET Lahore. Secondly Mr. Kashif Bashir, Chair IEEE COMSOC Lahore Chapter came on stage. Mr. Kashif Bashir is also the Vice chair of the IEEE Lahore Section. He talked about the IEEE organization and benefits of students in joining IEEE and COMSOC chapter. He also announced COMSOC student competition details. He further said we have witnessed fast developments of various artificial intelligence (AI) technologies, and many forms of information and communication systems with AI are becoming core parts of our daily lives. With the proliferation of future information, communication, and electronic devices, there is a fast-growing interest in information and communication technology (ICT) with AI.

Thirdly speaker was Dr. Wajahat Qazi from COMSATS Lahore. He shared his research work on AI. He also told students regarding Artificial Intelligence in Cognitive Machines: Academic and Industrial Application. Fourth speaker of the summit was Prof. Dr. Muhammad Usman Ghani Khan from UET Lahore. He talked about the projects his team working under AI center. He showed real time video experiments and implementation of Artificial intelligence in crowed management, data science & information technology. Fifth speaker of the summit was Mr. Mazhar Javed from UMT Lahore. He talked about Artificial Intelligence in Business Applications. How businesses are using AI in their daily work and getting the best results. All e-commerce organizations are using AI to boost their business. He also shared real time coding from his research and showed the results of using AI in business. Sixth speaker of the summit was Dr. Yasir Niaz from University of Lahore. He is doing research in the area of agriculture and citrus production. He shared his work for the detection of different diseases in plants by using affordable drones. His team is working to boost the agriculture sector in Pakistan. He urged students to work in this area as Pakistan in mainly dependent of its agriculture. Seventh speaker of the AI summit was Prof. Dr. Adnan Abid from Virtual University Pakistan. He talked about the "Artificial Intelligence for Machine Translation-(Sign Language Translation). He shared his research work with students and showed them sign language. He also showed the importance of AI in NLP technology. How students can start their work on NLP and software's used to improve the programming in sign language interpretation. Eight Speaker of the event was Mr. Lie Wing from Huawei talked about the opportunities for students in networking and cloud computing. He also shared Huawei business model and presence in worldwide. He encourages students to avail the free Huawei certification which is for limited time. Nineth speaker of the session was Mr. Farhan Ali from Huawei Pakistan. He also told audience regarding the advancements in AI technology and its commercial application in IT industry. He also shared the statistics that by 2025 More than 97% industry will be using cloud services in their organizations. He also offered free Huawei cloud certification to audience. At last Mr. Rehman (on behalf of Dr. Majid Hussain) came on stage and shared his experience regarding the event. Mr. Kashif Bashir distributed the shield among guests and speakers. Names were Dr. Wajahat Qazi, Prof. Dr. Muhammad Usman Ghani Khan, Mr. Mazhar Javed, Dr. Yasir Niaz, Prof. Dr. Adnan Abid, Mr. Farhan Ali, Mr. Lie Weing, Amna Mir, Muhammad Hamza Ihshtiam, Rizwan Naqvi, Shahid Zulfiqar, Ali Yasin, Husnain, Muhammad Sajawal, M Rehman, M Mubeen. Group Photo was taken after the event.

From Left to Right: Fahmeed Akram, Muhammad Hamza Ihtisham, Dr Adnan Siddique, Mr. Lie Weing, Farhan Ali, Dr. Adnan Abid, Kashif Bashir, Dr. Yasir Niaz, Mazhar Javed, Shahid Zulfiqar and Syed Rizwan Naqvi

Mr. Kashif Bashir is presenting shield to Dr. Wajahat Qazi

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

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

IEEE COMMUNICATIONS SOCIETY – MEMBER AND GLOBAL ACTIVITIES
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REGIONAL CORRESPONDENTS WHO CONTRIBUTED TO THIS ISSUE
Ewell Tan, Singapore (ewell.tan@ieee.org)

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