IFIP TC6 50th Anniversary – Program of Special Session

June 12, 2023, 14.00-18.00 hours CEST, UPC, Barcelona, Spain

This TC6 Anniversary meeting is collocated with IFIP Networking 2023. The anniversary's program contains four talks embedded into a few TC6 perspectives provided (cf. below).

Details on the full program of IFIP Networking 2023 are available at the following URL https://networking.ifip.org/2023/. To its first day keynotes all TC6 National Representatives as well as all WG Officers are invited by the IFIP Networking 2023 local host Prof. Dr. Jordi Domingo-Pascual.

The venue is Universitat Politécnica de Catalunya (UPC) premises in Barcelona, Spain, at the Conference Room of the "Edifici Vèrtex", which is placed at Campus Nord of the UPC, Plaça Eusebi Guell, 6. (cf. for details https://networking.ifip.org/2023/index.php/local/venue).

Program

14.00 Welcome and a Short Look Back
Burkhard Stiller, TC6 Chair, University of Zürich, Switzerland

14.15 Talk 1: Artificial Intelligence and Decentralized Privacy Preserving Mechanisms for "Future" Networks
Diego Perino, Tech Lead and Scientist, Spain

15.00 Talk 2: What is still to be done after 50 years of research on networking?
Edmundo Monteiro, University of Coimbra, Portugal

15.45 Coffee Break

16.15 Talk 3: Powering the Next Generation Networks with Privacy-Preserving Artificial Intelligence
Nicolas Kourtellis, Telefonica I+D, Spain

17.00 Talk 4: Revolutionizing Localization: The Advancements Enabled by 5G and 6G Technologies
Gonzalo Seco-Granados, Universitat Autonoma of Barcelona, Spain

17.45 Closing and Looking Forward
Burkhard Stiller, TC6 Chair, University of Zürich, Switzerland

18.00 Welcome Reception with IFIP Networking 2023

Talk 1: Artificial Intelligence and Decentralized Privacy Preserving Mechanisms for "Future" Networks; Diego Perino, Tech Lead and Scientist

Artificial Intelligence (AI) is recognized as a main driver for the current and future networking industry. It leads towards increasingly autonomous and intelligent networks, can improve customer experience, and generate significant economic impact.

In this talk we will present research and innovation experiences on the interaction of AI and networks. We will overview several use cases including fixed and mobile networks, platforms, digital twin. We will then discuss potential privacy, security and fairness concerns and describe approaches (e.g., federated learning) to deal with some of them. Finally, we will discuss lessons learned and the relevant research and innovation directions.

Dr. Diego Perino is an organization manager, technical leader and scientist with passion to work in cutting edge projects with industrial impact. He has been working for different companies in the ITC sector and covered different technologies and research areas. Apart from his industrial experience, he has also been very active in the research community with several publications, participation in conference committees, and editorial board contributions. He holds a PhD from the Paris Diderot-Paris 7 University and an MSc from Politecnico di Torino, Eurecom Institute, and Université de Nice-Sophia Antipolis.

Talk 2: What is still to be done after 50 years of research on networking?
Edmundo Monteiro, University of Coimbra, Portugal

This talk will analyze the main achievements and pitfalls of the networking research community over the last 50 years and will extrapolate from these to identify new scientific challenges and research directions in the field of networking and communication systems.

Prof. Dr. Edmundo Monteiro is a Full Professor at the University of Coimbra, Portugal, from where he graduated in Electrical Engineering (Informatics Specialty) in 1984 and received the PhD in Electrical Engineering (Computer Communications) in 1996. He is currently the Head of the Informatics Engineering Department of the University of Coimbra. Edmundo has 40 years of research and industry experience in the field of Computer Communications, Wireless and Mobile Communications, Quality of Service, Network and Service Management, Cybersecurity, Critical Infrastructure Protection, Cloud Networking, Internet of Things and Sensor Networks. He is the Portuguese representative in IFIP TC6 (Communication Systems).

Talk 3: Powering the Next Generation Networks with Privacy-Preserving Artificial Intelligence; Nicolas Kourtellis, Telefonica I+D, Spain

Today's (telco) networks are highly complex, distributed ecosystems composed of very diverse sub-environments. With the arrival of faster, more demanding (5G, 6G, ...) networks and the envisioned applications they will support, traditional solutions for network management are reaching their limits, both with respect to performance and protection they can offer. Within Telefonica, we investigate how novel, beyond state-of-art methods based on privacy-preserving artificial intelligence, cloud, and edge computing, can enable more secure, private, and scalable systems and networks that will accommodate the needs of future networks and applications.

Dr. Nicolas Kourtellis is Head of the Systems AI Lab (SAIL) and Co-Director of Telefonica Research, in Barcelona. He holds a PhD in Computer Science & Engineering from the University of South Florida, USA (2012) and has over 90 published peer-reviewed papers and 6 filed patents. Currently, he focuses on privacy-

preserving AI and federated learning on the edge, modeling/detecting with AI user online privacy leaks, as well as inappropriate/fraudulent behavior on social media. He has served in many technical committees of top conferences and journals and presented his work in top academic and industrial venues including Mobile World Congress 2021 and 2023 and Apache Big Data. His work has been covered by major news outlets such as Nature, New York Times, The Atlantic, New Scientist, Washington Post, Wired, and others. In 2022, he was ranked among the World's Top 2% Scientists (2021) in the list prepared by Elsevier BV, Stanford University, USA.

Talk 4: Revolutionizing Localization: The Advancements Enabled by 5G and 6G Technologies
Gonzalo Seco-Granados, Universitat Autonoma of Barcelona, Spain

Mm-wave and massive MIMO technologies are some of the elements that have enabled the improvement of the communication capacity and reliability, and the reduction of the latency in 5G systems. These technologies have also made possible the advent of new positioning solutions characterized by very high accuracy, provision of orientation information, and inclusion of sensing capabilities, with reduced network-side infrastructure. The term "5G Localization" was coined to encompass this class of solutions, which have already impacted the standardization process. Elements considered in the ongoing research towards 6G systems, such as reconfigurable intelligent surfaces (RIS), are also showing large potential for localization, as they extend the position availability to problems that were previously unfeasible. In the first part of the talk, we will analyze some specificities of 5G localization beyond legacy cellular localization solutions, such as single base-station and carrier-phase positioning, and 6D problems. The second part of the talk will address how the presence of passive and hybrid RIS can be exploited for localization and sensing when they operate in the near and far fields.

Prof. Dr. Gonzalo Seco-Granados received the PhD degree in electrical engineering from the Universitat Politecnica de Catalunya, Spain, in 2000, and the MBA degree from the IESE Business School, Spain, in 2002. From 2002 to 2005, he was technical staff of the European Space Agency, The Netherlands, where he was involved in the design of the Galileo system and receivers. In 2015, 2019 and 2022, he was a Fulbright Visiting Scholar at the University of California, Irvine, CA, USA. He is currently a Professor with the Department of Telecommunication Engineering, Universitat Autonoma de Barcelona, where he was Vice Dean of the Engineering School, from 2011 to 2019. His research interests include localization based on GNSS and cellular systems. In the case of cellular systems, he contributed to the seminal works on "5G positioning". In the area of GNSS, he has developed techniques to increase the robustness against of interference, multipath and spoofing attacks, and to improve energy efficiency of GNSS receivers. He is co-founder of Loctio, a start-up providing low-energy positioning solutions for IoT. He is an IEEE Fellow. He serves as a member of the IEEE Signal Processing Society Sensor Array and Multichannel Technical Committee (SAM TC), and of the EURASIP Signal Processing for Multisensor Systems Technical Committee, since 2018 and 2022, respectively. Since 2019, he is the President of the Spanish Chapter of the IEEE Aerospace and Electronic Systems Society.