



Call for Papers

Next-Generation Networking and Internet

Co-Chairs

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Scope and Motivation

Recent years are witnessing unprecedented advances in next generation Internet-networking research that has to deal with many innovations triggered by high-performance computing, programmable network equipment, and computing harvesting next generation services. Thanks to the continuous enhancements in computing processor and interface architectures, communication networks can now handle network functions implemented as virtualized machines or docker containers making use of robust software elements. Many salient issues are affecting next-generation networks, such as, network densification, network slicing, mobile cloud computing, mobility management, cross-layer activities, self-organization, security, performance predictability, and energy efficiency operations. Networks, applications, and clouds control layers can leverage intelligent decision-making solutions to target full automation in the Internet and next-generation service delivery. In addition, quantum networking, with its vast amounts of computing power, is emerging and that opens new and many possibilities. These trends greatly affect the next-generation broadband wireless networks, such as their spectrum efficiency, energy efficiency, and mobility management. The Next Generation Networking and Internet (NGNI) Symposium at IEEE ICC 2025 aims at consolidating and disseminating the latest developments and advances in these emerging focus areas. This symposium invites participation from academic, industry, and government researchers working in the broad area of next-generation networking and Internet, including architectures, communication protocols, modelling, measurements, and applications. The NGNI Symposium will provide a forum for academic, industry, and government researchers to get together and present a latest snapshot of their cutting-edge research, and foster technical debate on future directions in this exciting area.

Topics of Interest

Original research articles are solicited in, but not limited to, the following topics:

- Centralized-RAN, Cloud-RAN, and Fog-RAN, Open RAN architectures
- Cloud-based and fog-based networking
- Content-centric networking and named data networks
- Data center network architectures and performance

- Deep space and Interplanetary Networks
- Deterministic and Time-Sensitive Networking (TSN)
- Edge-to-Cloud Continuum Management and Orchestration
- Free Space Optical (FSO) networks and Visible Light Communication (VLC)
- Future Internet and next-generation networking architectures
- Energy-efficient green communications
- *Sustainable and inclusive networks*
- Heterogeneous multi-layer and multi-domain wireless-wireline internetworking
- Emerging cable and last mile access networks
- Hybrid fiber-coax (HFC) networks
- Internet economics, pricing, accounting, and growth modeling
- Internet of Things (IoT), M2M, D2D, MTC
- Artificial Intelligence in Networking
- Integrated networking, storage and computing
- Mobile Cloud Computing (MCC) and Mobile Edge Computing (MEC)
- Mobile security: device, application, and data
- Network Function Virtualization (NFV)
- Network Slicing
- Networking flying vehicles such as UAVs and drones
- Next-generation access networks
- Next-generation anomaly, intrusion, and attack detection/prevention
- Next-generation flow management: resource sharing, congestion control
- Next-generation Internet applications and services
- Next-generation networking protocols
- Next-generation network management and control
- Overlay and Peer-to-Peer (P2P) networking
- Quality of Service (QoS) and Quality of Experience (QoE) in next-generation networks
- Quantum Internet
- Resource/Service orchestration in next-generation networks
- Routing and switching
- Self-protection and self-organization networking
- Zero-touch Networks
- Software Defined Networking (SDN) and programmable dataplanes
- Software Defined Radio (SDR) and cognitive radio networks
- Terahertz wireless networks
- Traffic measurement, analysis, modeling, visualization, and engineering
- Vehicular networking (IoV/V2V/V2I/V2X)
- Digital twin-enabled next-generation networks
- Architectures and protocols for VR and AR
- Network intelligence
- AI-native networks
- AI model Security for next-generation networks

Biographies of the Co-Chairs

Kapal Dev is currently serving as Lecturer at Department of Computer Science, Munster Technological University (MTU), Ireland. He was awarded the PhD degree by Politecnico di Milano, Italy in 2019 under the prestigious fellowship of Erasmus Mundus funded by the European Commission. He is awarded as *IEEE ComSoc EMEA Outstanding Young Researcher 2022 for promising research activities for the benefit of the Society*. He received The Tom Brazil Excellence in Research Award 2023 from SFI Funded CONNECT Research centre. He received 2022 Irish Research Council Research Ally Prize for his mentoring/supervision services. He is among the top 45 researchers/scientist selected as a member of the Global Young Academy (GYA) 2024 in the world. He received Best workshop Paper award at the prestigious IEEE WCNC 2024 conference! He is very active in leading successful projects as Principal Investigator under Horizon Europe MSCA Staff exchange, Erasmus + International Credit Mobility (ICM), Capacity Building for Higher Education, and H2020 CO-FUND projects and won over 1.7 million Euros

funding in total. He is serving as Funded Investigator (FI) at one of top European research centres--CONNECT, Trinity College Dublin (TCD) funded by Science Foundation. His research interests include Wireless Communication Networks, Blockchain and Artificial Intelligence targeting applications majorly towards industry 4.0/5.0 and SDG goals. He has published over 80 plus research papers majorly in top IEEE Transactions, Magazines, and Conferences. He is an expert external evaluator of most prestigious European Research Council (ERC) starting grant, several MSCA Co-Fund schemes.

Ilhem FAJJARI is a senior researcher and project leader at Orange Innovation, specializing in cloud native orchestration. With a strong background in computer sciences, she obtained her PhD with honors from Pierre & Marie Curie University (Paris 6) in France in 2012. Prior to her current position, Ilhem served as a research project leader at VirtuOR Startup, focusing on network virtualization from 2012 to 2014. Her extensive research experience encompasses various areas, including cloud computing, network function virtualization, and the orchestration and optimization of communication networks. Ilhem has made significant contributions to the academic community, serving as a TPC co-chair in several prestigious international conferences such as GIIIS'25, NoF'24, Globecom'23, Globecom'21, and ClOT'18. She has also co-authored numerous papers in recognized conferences and played a key role in coordinating activities within European-funded projects such as IPCEI-CIS, NGPaaS, Scaler, and Horizon.

Panagiotis Papadimitriou is an Associate Professor at the Applied Informatics department of University of Macedonia in Thessaloniki. Before that he was an Assistant Professor at the Institute of Communications Technology in Leibniz University Hanover and a member of L3S research center. Panagiotis received a Ph.D. in Electrical and Computer Engineering from Democritus University of Thrace in 2008, an M.Sc in Information Technology from University of Nottingham in 2001, and a B.Sc. in Computer Science from University of Crete in 2000. He has been the (co-)PI in several EU-funded (e.g., NEPHELE, T-NOVA, CONFINE, and NECOS) and nationally-funded projects. His research activities span next-generation Internet architectures, network processing, programmable dataplanes, deterministic networking, and edge computing. He was a recipient of the Best Paper Awards at IFIP WWIC 2012 and IFIP WWIC 2016, and the Runner-Up Poster Award at ACM SIGCOMM 2009. He has co-chaired several international conferences and workshops, such as IEEE ICIN 2024, IFIP/IEEE CNSM 2022, IFIP Networking TENSOR 2020-2024, IEEE NetSoft S4SI 2020, IEEE CNSM SR+SFC 2018–2019, IFIP WWIC 2016-2017 and IEEE INFOCOM SWFAN 2016. Panagiotis is also an Associate Editor of IEEE Transactions on Network and Service Management, and a Senior Member of IEEE.

How to Submit a Paper

All papers for technical symposia should be submitted via EDAS. Full instructions on how to submit papers and important deadlines are posted at <https://icc2025.ieee-icc.org/>

The authors of selected papers from this symposium will be invited to submit an extended version of their work for fast-track review and possible publication in the IEEE Open Journal of the Communications Society.