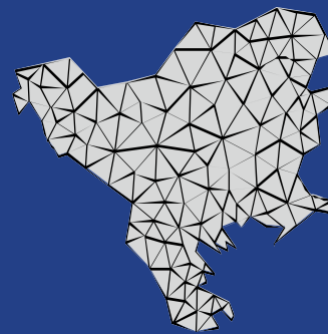# BalkanCom 2025

Eighth International Balkan Conference on Communications and Networking

Piraeus, Greece, June 17-20, 2025

Empowering connections, enabling innovation

PROGRAM

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TIMETABLE

	Tuesday - June 17	Wednesday - Jun 18	Thursday - June 19	Friday - June 20
08:30		Opening and welcome ceremony	Session 3 - 6G Networks	Session 6 - AI and ML for Communication and Networking
08:45				
09:00		Session 1 - MIMO and RIS for mmWave and THz Communications		
09:15				
09:30				
09:45				
10:00				
10:15			Coffee break	Coffee break
10:30		Coffee break	Keynote 2 - Deniz Gunduz	Invited Session: Usage scenarios and spectrum challenges in 6G
10:45		Keynote 1 - Raouf Boutaba		
11:00				
11:15			Break	Break
11:30		Break	Session 4 - Student Session	Special session on Digital Technologies for Future Cities
11:45				
12:00	Tutorial - From Automation to Orchestration: The New Frontiers of Network Softwarization Gianluca Davoli, Domenico Scotece, Luca Foschini	Session 2 - Security and Blockchain Technology		
12:15				
12:30				
12:45				
13:00		Lunch	Lunch	Lunch
13:15				
13:30				
13:45				
14:00		Session 2 - Security and Blockchain Technology	Panel - AI in communications and networking	Special session on Exploring New Architectures, Physical Layer and Programmable Solutions for 6G Networks
14:15				
14:30				
14:45		Coffee break + Poster session 1		
15:00	Coffee break			
15:15	Tutorial - Integrating Quantum Security in 6G Communication Systems: A Conceptual Framework, Engin Zeydan, Abdullah Aydeger	Special session on Resource Optimization in Next Generation IoT and Networking Environments		
15:30			Coffee break	Coffee break + Poster session 2
15:45			Session 5 - Networking / Tutorial - Exploring the Frontiers of Nanonetworks and Their Applications, Christos Liaskos	Tutorial - AI/ML Integration in 5G and Beyond 5G, Dejan Vukobratovic, Carolina Fortuna
16:00				
16:15				
16:30				
16:45				
17:00		End of Day 2	End of Day 3	
17:15				Closing session
17:30				End of Day 4
17:45				
18:00	End of Day 1			
18:15				
18:30				
		18:30 Welcome reception	20:00 Gala Dinner, Salty Restaurant, Mikrolimano, Piraeus	

SESSIONS

MIMO and RIS for mmWave and THz Communications

Realizing RF-Video Generation with Programmable Wireless Environments	Stavros Tsimpoukis (University of Ioannina and AUTH, Greece); Dimitrios Tyrovolas (Aristotle University of Thessaloniki, Greece & Technical University of Crete, Greece); Sotiris Ioannidis (Technical University of Crete, Greece); Ian Fuat Akyildiz (Editor in Chief for ITU-Journal for FET, International Telecom Union & Truva Inc., USA); George K. Karagiannidis (Aristotle University of Thessaloniki, Greece); Christos Liaskos (University of Ioannina, Greece & Foundation of Research and Technology Hellas, Greece)
Impact of Beam Misalignment Fading on Modulation Selection and Diversity Order in Terahertz Band Drone Communications	Akhtar Saeed (Sabanci University, Turkey); Wolfgang Gerstacker (University of Erlangen-Nuernberg, Germany); Ozgur Gurbuz (Sabanci University, Turkey)
Predictive Beamforming With Distributed MIMO	Hasret Taha Akçalı (TOBB University of Economics and Technology, Turkey & Aselsan Inc., Turkey); Özlem Tuğfe Demir and Tolga Girici (TOBB University of Economics and Technology, Turkey); Emil Björnson (KTH Royal Institute of Technology, Sweden)
Stackelberg Game for Downlink NOMA User Clustering via Base Station Selection	Evangelos Spyrou (University of Ioannina, Greece & Centre for Research and Technology Hellas, Greece); Vassilios Kappatos (Centre for Research and Technology Hellas, Greece); Chrysostomos Stylios (PLATANI, Greece & Industrial Systems Institute, Athena RC, Greece)
Path Loss Analysis for RIS-Aided Wireless Systems with Direct Paths and Elevation Effects	Vinay Kumar Chapala and Sanju Sharma (BITS Pilani, India); Pratham Sharma (Birla Institute of Technology and Science, India); Sameer Sharma (BITS PILANI, India); Syed Mohammad Zafaruddin (BITS Pilani, India)

Security and Blockchain Technology

Session 2

Wednesday, June 18
11:45 -13:00
14:00-14:45
Chair:
Vassilis Tsaoussidis

Blockchain Based Transparent and Trustworthy E-Voting System	Mustafa Tosun and Serif Bahtiyar (Istanbul Technical University, Turkey)
Implementation of a dynamic malware analysis environment using ELK-Stack	Ioannis Dermentzis (Democritus University of Thrace, Greece & Athena Research Center, Greece); Vassilis Tsaoussidis and Marios Anagnostopoulos (Democritus University of Thrace, Greece)
A Key Update Mechanism for Social Media based on Tangle	Halil Efe Aköz and Serif Bahtiyar (Istanbul Technical University, Turkey)
Harnessing Large Language Models for Passive SCADA Security Risk Assessment: A Case Study	Basheer N. Al-Duwairi (Jordan University of Science and Technology, Jordan); Ahmed Shatnawi (Jordan University of Science & Technology, Jordan); Ahmad T. Al-Hammouri (Dakota State University, USA)
Secure Image Transmission: Integrating Image Encryption with Adaptive Modulation and Coding	Wassim Alexan and Eyad Mamdouh (German University in Cairo, Egypt); Youstina Kamal (The German University in Cairo, Egypt); Mai Adel (German University in Cairo, Egypt)
Enhancing IoT Security with Homomorphic Encryption and Privacy Preserving Document Search Using Microsoft SEAL	Mihrije Kadriu (University of Prishtina, Kosovo); Bujar Krasniqi (University of Prishtina, Faculty of Electrical and Computer Engineering, Kosovo); Blerim Rexha (University of Prishtina, Kosovo & Blerim Rexha, Kosovo)

Session 3

Thursday, June 19
08:30-10:15
Chair:
Symeon Papavassiliou

6G Networks

Analysis of a Visible Light Communication/Radio Frequency Sensor Network	Alexandros Aslanidis and Thomas Kamalakis (Harokopio University of Athens, Greece); Stanislav Zvanovec (Czech Technical University in Prague, Czech Republic)
AI-Driven Orchestration of 6G-Enabled Services Across the Computing Continuum	Grigorios Kakkavas (Institute of Communication and Computer Systems (ICCS) & National Technical University of Athens (NTUA), Greece); Ioannis Tzanettis (National Technical University of Athens & Institute of Communication and Computer Systems, Greece); Alexandros Stylos (National Technical University of Athens, Greece); Ignacio Labrador (EVIDEN, Spain); Enrique Lluesma Marti (Eviden, Spain); Adam Zahir and Constantine Ayimba (Universidad Carlos III de Madrid, Spain); Nassima Toumi and Belma Turkovic (TNO, The Netherlands); Anastasios Zafeiropoulos and Symeon Papavassiliou (National Technical University of Athens, Greece)
Defending Against Adversarial Attacks in 6G: Practical Mitigation Approach	Sogo Pierre Sanon (German Research Center for Artificial Intelligence, Germany); Akshay Manoj Sant (University of Rochester, USA); Hans Dieter Schotten (Deutsches Forschungszentrum für Künstliche Intelligenz GmbH, Germany)
AI-Driven Vehicle Condition Monitoring with Cell-Aware Edge Service Migration	Charalampos Kalalas (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain); Pavol Mulinka (Centre Tecnologic de Telecomunicacions de Catalunya, Spain); Guillermo Candela Belmonte (Optare Solutions, Spain); Miguel Fornell (Idneo Technologies, Spain); Michail Dalgitsis (Nearby Computing, Spain); Francisco Paredes Vera (Idneo Technologies, Spain); Javier Santaella Sanchez and Carmen Vicente Villares (Cellnex Telecom, Spain); Roshan Sedar (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain); Eftychia Datsika and Angelos Antonopoulos (Nearby Computing, Spain); Antonio Fernandez Ojea (Optare Solutions, Spain); Miquel Payaró (CTTC, Spain)
Alternate Approaches to Quantization and Compression Using Higher Order Medians	Unnikrishna Pillai (New York University, USA); Sai Meghana Kuchana (NYU Tandon School of Engineering, USA & New York University, USA)
Simultaneous Intrusion Detection and Localization Using ISAC Network	Usama Shakoor (Istanbul Medipol University, Turkey); Muhammad Bilal Janjua (Oredata, Turkey); Muhammad Sohaib J. Solaija (Gebze Technical University, Turkey); Huseyin Arslan (Istanbul Medipol University, USA)

Session 4

Thursday, June 19
11:30-13:00
Chair:
Gordana Gardasevic

Student Session

Evaluation of machine learning techniques for wireless link quality prediction	Konstantinos Gkioulis (University of Ioannina, Greece); Christos Liaskos (University of Ioannina, Greece & Foundation of Research and Technology Hellas, Greece)
THz ISAC for 6G Drone Networks: Adaptive Beam Scanning and Communication Rate Optimization	Isabella Roppelt (Friedrich-Alexander-Universitat Erlangen-Nurnberg, Germany); Akhtar Saeed (Sabanci University, Turkey); Wolfgang Gerstacker (University of Erlangen-Nuernberg, Germany); Ozgur Gurbuz (Sabanci University, Turkey)
Ensemble-Based Intrusion Detection for 5G-IoT Networks: A Comparative Machine Learning Approach	Vasileios Panagiotis Rekkas (Aristotle University of Thessaloniki, Greece); Panagiotis Sarigiannidis (University of Western Macedonia, Greece); Sotirios Goudos (Aristotle University of Thessaloniki, Greece)
Emergent Multi-View Fidelity in Autonomous UAV Swarm Sport Injury Detection	Yu Cheng and Harun Šiljak (Trinity College Dublin, Ireland)
Unsupervised Deep Learning for Behavioral and Quality Anomaly Detection in 5G Networks: Early Methods and Challenges	*Maham Fatima Kayani (CNAM, France); Selma Boumerdassi (Conservatoire National des Arts et Métiers, France)*
Reliability Analysis of mMTC Slotted ALOHA Systems Under Finite-Length Constraints	Tijana Devaja (University of Novi Sad, Serbia); Slavisa Tomic (COPELABS/ULHT, Lisbon & ISR/IST, LARSyS, Lisbon, Portugal); Dejan Vukobratović (University of Novi Sad, Serbia); Milica Petkovic (Faculty of Technical Sciences, University of Novi Sad, Serbia)

Networking

Extension School Laboratory Local Area Network to the remote building lab classroom, using the Air High-Speed Link	Labros Brakatsoulas and Jakobos Stellas (3rd Laboratory Center of Piraeus, Greece); Panagiotis S. Makrygiannis (University of West Attica & 3rd Laboratory Center of Pireas, Greece); Dimitrios Kotsifakos (University West Attica, Greece & Secondary Education West Athens, Greece); Michael Dossis (University of Western Macedonia, Greece); Christos Douligeris (University of Piraeus, Greece)
On Meeting Age of Information Constraints via Energy Harvesting and Wireless Power Transfer	Eleni G Stai (NTUA, Greece); Georgios Kallitsis (National Technical University of Athens, Greece); Vasileios Karyotis (Ionian University & NETMODE Lab, NTUA, Greece); Symeon Papavassiliou (National Technical University of Athens, Greece)
Comparative Stress Testing of Kubernetes Distributions and CNI Plugins	George Koukis (Democritus University of Thrace, Greece); Sotiris Skaperas (University of Macedonia & ATHENA Research and Innovation Center, Greece)
Study on 6G Use Cases and Service Requirements for Future Cities	Dragorad Milovanovic (University of Belgrade, Serbia); Gordana Gardašević (University of Banja Luka, Bosnia and Herzegovina); Vladimir Terzija (Newcastle University, United Kingdom (Great Britain)); Qi Li (Chongqing University, China)
Multi-objective Routing for Dense and Distributed Networks	Gabdullin (Innopolis University, Russia); Shinnazar Seytnazarov (Nazarbayev University, Kazakhstan)
A Hybrid Architecture for WebRTC-based Group Videoconferencing	Ilya Siluyanov (Innopolis University, Russia); Shinnazar Seytnazarov (Nazarbayev University, Kazakhstan)

AI and ML for Communication and Networking

Formation Control for Swarm Underwater Vehicles Using Multi-Agent Deep Reinforcement Learning	Tolga Girici (TOBB University of Economics and Technology, Turkey); Hongzhi Guo (University of Nebraska Lincoln, USA); Ian F Akyildiz, Kristinn Andersen and Saemundur E Thorsteinsson (University of Iceland, Iceland)
Decentralised, Self-Organising Drone Swarms using Coupled Oscillators	Kevin Quinn, Cormac Molloy and Harun Šiljak (Trinity College Dublin, Ireland)
Emergence of Roles in Robotic Teams with Model Sharing and Limited Communication	Ian O'flynn and Harun Šiljak (Trinity College Dublin, Ireland)
Cross-technology Localization Dataset Analysis with Interpretable ML Models	Shih-Kai Chou (Jozef Stefan Institute, Slovenia); Anja Trebovac (Jožef Stefan Institute); Carolina Fortuna (Jozef Stefan Institute, Slovenia)
A New Access Control Mechanism for IoT Based on Human Activity	Emre İşleyen (Istanbul Technical University, Turkey & ASELSAN Inc., Turkey); Serif Bahtiyar (Istanbul Technical University, Turkey)
Accelerating Molecular Bioimaging by Predicting Optimal Initial and Subsequent Frequency Offsets for CEST MRI Acquisition	Adarsha Bhattarai (University of Nebraska - Lincoln, USA); Chathumi Samaraweera (University of Nebraska-Lincoln, USA); Mariano Uberti, Aditya N. Bade and Yutong Liu (University of Nebraska Medical Center, USA); Dongming Peng (University of Nebraska-Lincoln, USA)

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Resource Optimization in Next Generation IoT and Networking Environments

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Energy Consumption Evaluation in Wireless Sensor Networks Under a Reward-based Routing Policy	Georgios Tsoumanis, Athanasios Tsipis, Konstantinos Oikonomou and Katia Kermanidou (Ionian University, Greece); Ioannis Stavrakakis (National and Kapodistrian University of Athens, Greece)
Queueing Model for Load Balancing Virtual Network Functions through Packet Delegation	Alexandros Zervopoulos and Konstantinos Oikonomou (Ionian University, Greece)
Placing Multiple Microservice-based Applications in the Multi-access Edge Computing	Asterios Papamichail (Ionian University, Greece)
Comparison of Pull and Push Based Communication for Goal Oriented Communication	Sokipriala Jonah, Seong Ki Yoo and Saurav Sthapit (Coventry University, United Kingdom (Great Britain))

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Digital Technologies for Future Cities

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METACITIES Open Digital Twin Framework	Spyros Denazis, Ioannis Tsampras, Vasileios-Martin Nikiforidis (University of Patras, Greece), Christina Tanya Politi, Evanthia Faliagka, Christos P. Antonopoulos, Nikolaos Voros (University of Peloponnese, Greece) Eleni Christopoulou (Ionian University, Greece), Nikos Kostis (Yodiwo, Greece), Christos Tranoris (P-net, Greece), Vasos Vassiliou (University of Cyprus & CYENS Center of Excellence, Cyprus), Vladimir K. Poulkov (Technical University of Sofia, Bulgaria), Vasileios-Martin Nikiforidis (Municipality of Patras, Greece)
Efficient Pattern-Based Analysis of Network Flows in IoT Systems	Christos Tzagkarakis (Foundation for Research and Technology - Hellas (FORTH), Greece); Themis Palpanas (LIPADE, Universite Paris Cite, France); George Tzagkarakis (Foundation for Research and Technology-Hellas, Greece)
Edge deep learning for low capabilities devices	Fotios Filippou, Fotis Foukalas and Theodoros A. Tsiftsis (University of Thessaly, Greece)
Toward Seamless Interaction with the Applications of the Greek Smart Cities Ecosystem	Asterios Leonidis (Foundation for Reseach and Technology - Hellas (FORTH), Greece & University of Crete, Greece); Dimokratis Stathakis, Antonis Prinianakis and Spiridon Tzagkarakis (Foundation for Research and Technology - Hellas (FORTH), Greece); Constantine Stephanidis (FORTH, Greece)
Enhancing Fall Detection in Urban Environments: Edge-AI Solutions for Safer Cities	Evanthia Faliagka, Theodoros Skandamis, Alexandros Spournias, Christos Panagiotou, Despoina Kioulachoglou and Christos P. Antonopoulos (University of Peloponnese, Greece); Nikolaos Voros (University of the Peloponnese, Greece)
The MARVEL Data Corpus: A Secure and Privacy-Aware Multimodal Big Data Repository for Smart Cities Research	George Hatzivasilis and Emmanouil Michalodimitrakis (FORTH-ICS, Greece); Manos Papoutsakis (Foundation for Research and Technology - Hellas (FORTH), Greece); Sotiris Ioannidis (Technical University of Crete, Greece)
Network Architectures and Technologies for Smart Culture Applications	Nikos Dimitriou and Maria Christopoulou (NCSR Demokritos, Greece); Ioannis Koufos (Research Associate at National Center for Scientific Research Demokritos, Greece); Lida Arnellou, Anna Gradou and Ioanna Papoutsi (NCSR "Demokritos", Greece)

Exploring New Architectures, Physical Layer and Programmable Solutions for 6G Networks

Ensemble-Based Intrusion Detection for 5G-IoT Networks: A Comparative Machine Learning Approach	Vasileios Panagiotis Rekkas (Aristotle University of Thessaloniki, Greece); Panagiotis Sarigiannidis (University of Western Macedonia, Greece); Sotirios Goudos (Aristotle University of Thessaloniki, Greece)
Switchable Reflective Metasurface Polarizer for Improving Polarization Robustness in GNSS-R/SoOP-R Systems	Dwi Andi Nurmantris (Telkom University, Indonesia); Mohammad Ridwan Effendi (ITB, Indonesia); Nana Sutisna and Achmad Munir (Institut Teknologi Bandung, Indonesia)
Assessment on Bandwidth Extension of Spearhead-Shaped Monopole Antenna in Supporting THz Communications	Agus D. Prasetyo (Telkom University, Indonesia & Institut Teknologi Bandung, Indonesia); Sulistyaningsih Sulistyaningsih (National Research and Innovation Agency, Indonesia); Achmad Munir (Institut Teknologi Bandung, Indonesia)
Capacitor-Loaded Crossover- and Phase Shifter-Free Butler Matrix Integrated with Planar Array for Compact Switched-Beam Antenna	Zulfi Zulfi and Dwi Andi Nurmantris (Telkom University, Indonesia); Achmad Munir (Institut Teknologi Bandung, Indonesia)
Integrated Resource Optimization for Communication and Computing in O-RAN-Enabled Vehicular Networks	Mohammed Balfaqih (University of Jeddah, Saudi Arabia)

Usage Scenarios and Spectrum Challenges in 6G

6G for AI Agents Interaction and AI for 6G Resource Efficiency	Nancy Alonistioti (University of Athens, Greece)
AI Based Ultra-Reliable Wireless Networked Control Systems in 6G	Sinem Coleri (Koc University, Turkey)
6G Empowered Robotics: Use Cases, Requirements and Challenges	Dejan Vukobratovic (University of Novi Sad, Serbia)

Poster Session	*On-the-Move EMF Exposure Assessment: A Study of Wireless Network Emissions in Urban and Suburban Environments*	Vullnet Laniku and Enver Hamiti (University of Prishtina, Faculty of Electrical and Computer Engineering, Kosovo); Mimoza Ibrani (University of Prishtina & Faculty of Electrical and Computer Engineering, Kosovo); Bujar Krasniqi (University of Prishtina, Faculty of Electrical and Computer Engineering, Kosovo)
Wednesday, June 18 14:45-15:15 Friday, June 20 15:30-15:45	*Dynamic Expert Module for Tool Selection in Online-CADCOM Platform*	Lavdim Menxhiqi (UBT, Kosovo); Galia Marinova (Technical University of Sofia, Bulgaria & Technical University-Sofia, Bulgaria)
	Open-Source O-RAN Testbeds for Research and Deployment of ML/AI-Driven Solutions	Tijana Devaja, Dejan Vukobratović and Srdjan Sobot (University of Novi Sad, Serbia); Milica Petkovic (Faculty of Technical Sciences, University of Novi Sad, Serbia); Vukan Ninkovic (University of Novi Sad, Serbia & The Institute for Artificial Intelligence Research and Development of Serbia, Serbia); Goran Martic (UNS, Serbia)

TUTORIAL

Tuesday, June 17 12:00 -15:00		*From Automation to Orchestration: The New Frontiers of Network Softwarization*	Gianluca Davoli, Domenico Scotece, Luca Foschini (University of Bologna, Italy)
Tuesday, June 17 15:15 -18:00		*Integrating Quantum Security in 6G Communication Systems: A Conceptual Framework*	Engin Zeydan, Abdullah Aydeger (Florida International University, USA)
Thursday, June 19 15:45-17:00		*Exploring the Frontiers of Nanonetworks and Their Applications*	C. Liaskos (Univ. of Ioannina & FORTH, Greece), M. Lestas, N. Ntetsikas (Frederick Univ., Cyprus), K. Kantelis (Aristotle Univ. of Thesaloniki)
Friday, June 20 15:45-17:15		**AI/ML Integration in 5G and Beyond 5G**	Dejan Vukobratovic (University of Novi Sad, Serbia), Carolina Fortuna (Jozef Stefan Institute)

KEYNOTE

Wednesday, June 18 10:45-11:30	Chair: Symeon Papavassiliou	*Zero-touch Networks: Past, Present, and Future*	Raouf Boutaba (University of Waterloo, Canada)
Thursday, June 19 10:30-11:15	Chair: Tolga Girici	*Implicit Neural Representations Meet Semantic Communications*	Deniz Gunduz (Imperial College, London, UK)

PANEL

Thursday, June 19 14:00-15:30	Chair: Wolfgang Gerstacker	*AI in communications and networking*

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