

2023



**COMMUNICATIONS SYSTEMS INTEGRATION
AND MODELING TECHNICAL COMMITTEE**

CSIM-TC

NEWSLETTER

November 2023

Luca Foschini (Chair)
Jonathan Rodriguez (Vice-chair)
Petros Spachos (Secretary)

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2. About CSIM

The Communications Systems Integration and Modeling technical committee focuses its activities on simulation, analytical tools and measurement of communications links and networks. CSIM has been sponsoring activities on traffic modeling, performance and integration of next generation wireless and wireline networks.

CSIM sponsors its traditional workshop CAMAD, as well as special issues in the IEEE Communications Magazine and in the IEEE Journal on Selected Areas in Communications. CSIM is very active in ICC and in GLOBECOM and was one of the co-founders of MILCOM. CSIM has its roots on the Communications Systems Engineering technical committee and its past chairs are:

2023-now – Luca Foscini
2021-2023 – Nizar Zorba
2018-2021 – Burak Kantarci
2015-2018 – Christos Verikoukis
2013-2015 – Stefano Giordano
2011-2013 – Harry Skianis
2009-2011 – Fabrizio Granelli
2007-2009 – Pascal Lorenz
2005-2007 – Nelson L.S. da Fonseca
2002-2005 – Mike Devetsikiotis
2000-2002 – Mohammad Ilyas
1999-2000 – Hussein Mouftah
1996-1999 – Guy Omydar
1994-1996 – Bill Tranter

For more information: <http://csim.committees.comsoc.org/>

3. Awards/Distinctions for CSIM members

Dr. Melike Erol-Kantarci received the Special Jury Recognition in **AI Awards North America 2023!**

These awards recognize and celebrate the outstanding contributions of women in the field of Artificial Intelligence across Canada, USA, and Mexico. Women in AI (WAI) is a global network of female experts and professionals in the field of Artificial Intelligence working towards gender-inclusive AI that benefits a global society.



Dr. Mubashir Husain Rehmani

- Appointed as an Associate Editor for IEEE Transactions on Cognitive Communication and Networking (TCCN).
- Appointed as an Area Editor (Wireless Communications) for IEEE Open Journal of Communications Society (OJCOM)
- Received the Top Cited Article in Wiley Engineering Reports



WILEY

Top Cited Article 2021-2022



Congratulations to:

Mubashir Husain Rehmani

whose paper has been recognized as a top cited paper* in:

ENGINEERING REPORTS

Parking recommender system privacy preservation through anonymization and differential privacy

*Among work published in an issue between 1 January 2021 – 15 December 2022.

Kapal Dev, PhD, Senior Member, IEEE
Assistant Lecturer, Munster Technological University Ireland.

- "Survey on 6G Frontiers: Trends, Applications, Requirements, Technologies and Future Research" is among the 6th most popular article in IEEE Open Journal of the Communications Society from last 24months.
- Honored to receive 2023 The Tom Brazil Excellence in Research Award from SFI Funded CONNECT Research centre.



4. Past Events



IEEE CAMAD 2023

6-8 November 2023, Edinburgh, Scotland

IEEE CAMAD 2023 was held as a stand-alone event in Edinburgh Napier University, Scotland. This year IEEE CAMAD focused on "*Connected and Collective Intelligence for Beyond 5G and 6G Technologies*".



The conference include three keynote speeches, panel and demo sessions.

- KEYNOTE 1: PROF. ÖZGÜR BARIŞ AKAN, UNIVERSITY OF CAMBRIDGE, IEEE FELLOW, TURING FELLOW
TITLE: INTERNET OF EVERYTHING (IOE) - FROM MOLECULES TO THE UNIVERSE
- KEYNOTE 2: PROF. HARALD HAAS, UNIVERSITY OF STRATHCLYDE, IEEE FELLOW
TITLE: RECENT ADVANCES IN LIGHT-BASED WIRELESS NETWORKING
- KEYNOTE 3: DR. CAROL MARSH, OBE, VP OF INSTITUTION OF ENGINEERING AND TECHNOLOGY IET
TITLE: TRACKING THE FUTURE



- Damla Turgut, IEEE ComSoC Distinguished Lecture on “Bringing privacy into the picture: new optimization goals for ML/AI in smart environments,” hosted by IEEE Washington Chapter, University of District of Columbia, September 18, 2023
- Damla Turgut, IEEE ComSoC Distinguished Lecture on “Bringing privacy into the picture: new optimization goals for ML/AI in smart environments,” hosted by IEEE Baltimore Chapter, University of Maryland at Baltimore County, September 19, 2023
- Damla Turgut, Invited Talk on “Bringing privacy into the picture: new optimization goals for ML/AI in smart environments,” Università degli Studi Roma Tre, Rome, Italy, June 1, 2023
- Damla Turgut, Keynote Address on “When homes are too smart for their own good: physical and computational modeling of smart homes,” SBRC, Brasilia, Brazil, May 23, 2023
- Damla Turgut, Invited Talk on “Bringing privacy into the picture: new optimization goals for ML/AI in smart environments,” Colorado School of Mines, Golden, Colorado, May 17, 2023
- Damla Turgut, Keynote Address on “Growing the Community in Tech,” NCWIT Aspirations in Computing Award Ceremony, University of Central Florida, April 15, 2023
- Damla Turgut, CRA Congressional Day Visit, One of the two faculty representatives from the state of Florida, Washington, DC, September 20, 2023
- Damla Turgut, TPC Co-Chair, IEEE SmartGridComm 2024
- Damla Turgut, One of the co-organizers of N2Women and WICE Workshop at Globecom 2023
- Kapal Dev, invited talk on “Unlocking the Future: Exploring the Enchanting Possibilities of 6G” under IEEE ComSoc Distinguish Speaker Program at MUET, Jamshoro, Pakistan.



5. Ongoing Research Projects/Grants

ETHER: sELf-evolving terrestrial/non-Terrestrial Hybrid nEtwoRks

by Konstantinos Ntontin (University of Luxembourg, Luxembourg), Agapi Mesodiakaki (Aristotle University of Thessaloniki, Greece), Angelos Antonopoulos (Nearby Computing, Spain)

Web: <https://www.ether-project.eu/>

Twitter: @ETHER_eu

Currently, more than 50% of the world's population, about 4 billion people, do not have access to Internet services. To solve this, the integration of terrestrial with non-terrestrial networks has been studied for the 4G and 5G specifications and the investigations up until now have focused on providing individual solutions for key technical challenges. However, a complete solution still lacks that considers the efficient management of the resources of the highly complex and heterogeneous integrated network apart from solution to key technical challenges that are relevant to the integration. Due to this, a fully software programmable, low latency, and zero-touch architecture is pertinent. In addition, a concrete business model is also missing for this ecosystem that identifies potential opportunities for CAPEX/OPEX reduction and resulting short and long-term revenues so to attract infrastructure investments from the required stakeholders.

ETHER relies on the following innovations:

- Unified RAN advancements that enable broadband connectivity from every corner of the world even with handheld devices.
- Intelligent management of the 3D network resources for meeting predefined KPIs, allowing the network to self-adapt to rapidly evolving traffic conditions and situations on the ground without human intervention.
- A distributed 3D computing and caching medium enabling the reduction of response delays by alleviating congestions towards cloud data center.

To realize this novel system concept, ETHER relies on a multi-layered and unified space-aerial-terrestrial architecture, leveraging the benefits of Artificial Intelligence/ Machine Learning (AI/ML) for the optimization of the highly complex and heterogeneous “network of networks” and optimized by means of:

- A collection and processing of a massive amount of data that spans the terrestrial, aerial, and space networks.
- AI/ML advances for self-evolving network capability.
- Full-scale softwarization across the network layers
- Direct handheld device access at the Ka band and unified waveform design together with seamless horizontal/vertical handovers
- Edge computing and caching capabilities across the 3D network continuum

The ETHER innovations will be showcased by the following 3 use cases:

- **Use Case 1-ETHER flexible payload-enabled service provisioning to semantics-aware and delay-tolerant IoT applications:** This use case focuses on the provision of network coverage from low Earth orbit (LEO) satellites with service and feeder link discontinuity, bringing global coverage to delay-tolerant mMTC applications. In addition, information semantics will be leveraged, based on the particular IoT application, for reducing the amount of data that is exchanged, hence boosting the network energy efficiency.
- **Use Case 2-ETHER unified RAN for direct handheld device access at the Ka-band:** The use case focuses on providing broadband coverage to ground handheld devices from LEO satellites at the propagation challenging millimeter-wave Ka band. Towards this, distributed beamforming from a LEO satellite swarm will be leveraged for creating a large virtual array in space together with a suitable high-gain and low-energy consumption antenna design at the user device.
- **Use Case 3-ETHER architecture demonstration for air-space safety critical operations:** The aim of this use case is to provide safety-critical urban air mobility and U-space operations for a fleet of unmanned aerial vehicles that move across multiple ground-based network cells covered by LEO satellites. In the particular use case a multitude of ETHER innovations are going to be showcased, such as the horizontal and vertical handover processes, the unified waveform design, the edge computing and caching continuum across the integrated networks, and the end-to-end network performance optimization algorithms.

ETHER started on 01/01/2023 and will be completed on 31/12/2025. It has received funding from the Smart Networks and Services Joint Undertaking (SNS JU) under the European Union's Horizon Europe research and innovation programme under Grant Agreement No. 101096526 with a total budget of €4.9 million. It brings together strong consortium of 8 industry and 5 academic stakeholders. The great potential of the ETHER innovations and their exploitation is further substantiated by the large participation of small and medium-sized enterprises in the consortium, in particular 5 in total.

Specifically, the project consortium consists of: 1. University of Luxembourg (project coordinator, Luxembourg); 2. Aristotle University of Thessaloniki (Greece); 3. Collins Aerospace (Ireland); 4. Avanti Communications (Cyprus); 5. SatelloT Services, S.L. (Spain); 6. Ubiwhere (Portugal); 7. Fundació Privada I2CAT, Internet i Innovació Digital a Catalunya (Spain); 8. Nearby Computing (Spain); 9. National Centre for Scientific Research – “Demokritos” (Greece); 10. Linkopings Universitet (Sweden); 11. Orange Polska Spółka Akcyjna (Poland); 12. Martel GmbH (Switzerland); 13. Net AI Tech Ltd (United Kingdom).

6. Upcoming Events



2024 IEEE Wireless Communications and Networking Conference
Wireless Communications for Growing Opportunities

Call for Papers

The IEEE Wireless Communications and Networking Conference (WCNC) is one of the premier annual events of IEEE in the wireless research arena bringing together researchers, academics, industry, and government. WCNC 2024 will be held in the vibrant city of Dubai, United Arab Emirates (UAE), the capital of the Emirate of Dubai.

WCNC 2024 will include technical sessions, tutorials, workshops, and technology and business panels. You are invited to submit papers, and proposals for panels, tutorials, and workshops, in all areas of wireless communications, networks, services, and applications. The proposals for panels, tutorials, and workshops should be sent to the appropriate Chairs listed.

The submissions of technical papers should be made on EDAS in the following four tracks. Submissions should be in PDF and are limited to 6 pages, double column, 10-point font.

The technical program is organized in four technical tracks.

Visit Our Website

To learn more about WCNC 2024 in Dubai, and how to submit your paper, please visit:

<https://wcnc2024.ieee-wcnc.org/>

Important Dates:

Paper Submissions Deadline: 11 September 2023

Notification of Acceptance: 4 December 2023

Camera-Ready Papers: 12 January 2024

ORGANIZING COMMITTEE 21-24 April 2024 // Dubai, United Arab Emirates

General Chair

Raed Shubair, NYU Abu Dhabi, UAE

General Vice Chair

Marwa Chafii, NYU Abu Dhabi, UAE

Senior Conference Advisor Eesa Bastaki, University of Dubai, UAE

TPC Chair

Marco Di Renzo, Univ. of Paris-Saclay, FR

TPC Co-Chair

Ana Garcia Armada, Univ. of Madrid, ES

Plenary Speaker Chair

Slim Alouini, KAUST, SA

Operations Chair

Mohamed AlHajri, MIT, USA

Special Sessions Chair

Leyre Azpilicueta, Public Univ. of Navarre, ES

Awards Chair

Tolga Duman, Bilkent University, TR

Panel Co-Chairs

Trung Duong, Queen's University Belfast, NIR Lingyang Song, Peking University, CN Yuanwei Liu, Queen Mary Univ. of London, UK

Workshop Co-Chairs

Osvaldo Simeone, King's College London, UK Swades De, Indian Inst. of Technology Delhi, IN Ramon Agüero, Univ. of Cantabria, ES

Tutorial Co-Chairs

Ertugrul Basar, Koc University, TR

Cunhua Pan, Queen Mary Univ. of London, UK Jalel Ben-Othman, University of Paris 13, FR

IEEE Future Networks World Forum

13-15 November 2023 // Baltimore, MD, USA

Imagining the Network of the Future



TOPICS OF INTEREST

Our goal is to foster collaboration and knowledge-sharing among academic researchers, industrial practitioners, and professionals working in this exciting and emerging field of research. We invite individuals from diverse backgrounds to share their innovative ideas, latest findings, and perspectives on potential use cases, open research problems, technical challenges, and solution methods in this context. Topics will include but not limited to:

- Spectrum sharing and allocation in future networks
- Spectrum sensing techniques for cognitive radio networks
- Dynamic spectrum access in future networks
- AI/ML techniques for spectrum management
- Interference management in shared spectrum networks
- Spectrum efficiency in future networks
- Policy and regulatory issues related to spectrum management in future networks
- Coexistence of different wireless technologies in shared spectrum environments
- Spectrum auction mechanisms for future networks
- Spectrum pricing models in future networks
- Spectrum measurement and monitoring techniques in future networks
- Spectrum database management for dynamic spectrum access
- Spectrum aggregation techniques in future networks

IMPORTANT DATES

Symposium Paper Submission: 21 July 2023

Symposium Paper Acceptance Notification: 1 September 2023

Camera-Ready Submission: 15 September 2023

7. Special Issues organized by CSIM members

Blockchain based Smart Grid: A Leap in the Future

Frontiers in Communications and Networks Smart Grid Communications

Topic Editors



Muneeb Ul Hassan

Deakin University
Burwood, Melbourne.,
Australia



Muhammad Amjad

Swansea University
Swansea, United Kingdom



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