2020

COMMUNICATIONS SYSTEMS INTEGRATION AND MODELING TECHNICAL COMMITTEE

CSIM-TC

NEWSLETTER

November 2020

Burak Kantarci (Chair)
Nizar Zorba (Vice-chair)
Angelos Antonopoulos (Secretary)

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1. 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 bi-annual 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:

2018- now – 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/

2. Awards/Distinctions for CSIM members

CSIM best paper awards (2019 edition)

CSIM TC has extended the **best paper award (for 2018) to 3 papers** (1 journal and 2 conference papers) by CSIM members in IEEE ICC 2020 (held online). In particular, the **Best Journal Paper Award** has been extended to:

1) H. Li, K. Ota and M. Dong, "**LS-SDV: Virtual Network Management in Large-Scale Software-Defined IoT**", IEEE Journal on Selected Areas in Communications, vol. 37, no. 8, pp. 1783-1793, Aug. 2019.

The **Best Conference Paper Award** has been extended to two papers:

1) D. Bega, M. Gramaglia, M. Fiore, A. Banchs and X. Costa-Perez, "**DeepCog: Cognitive Network Management in Sliced 5G Networks with Deep Learning**", IEEE INFOCOM 2019 - IEEE Conference on Computer Communications, Paris, France, 2019, pp. 280-288.

2) P. Vamvakas, E. E. Tsiropoulou and S. Papavassiliou, "**Dynamic Spectrum Management in 5G Wireless Networks: A Real-Life Modeling Approach**", IEEE INFOCOM 2019 - IEEE Conference on Computer Communications, Paris, France, 2019, pp. 2134-2142.

Authors of the best papers (He Li, Marco Gramaglia and Symeon Papavasileiou) gave short technical presentations during the online CSIM meeting in the context of ICC 2020.

The **eligibility rules** for the nominations were as follows:

The paper must appear in print in a peer-reviewed journal or a peer-reviewed conference proceedings (other than in the ICC and Globecom CQRM symposiums) in 2019, i.e., from January 1, 2019 to December 31, 2019, and AT LEAST one of the co-authors must be a CSIM TC member (please see here how to become a member: http://csim.committees.comsoc.org/subscribe/).

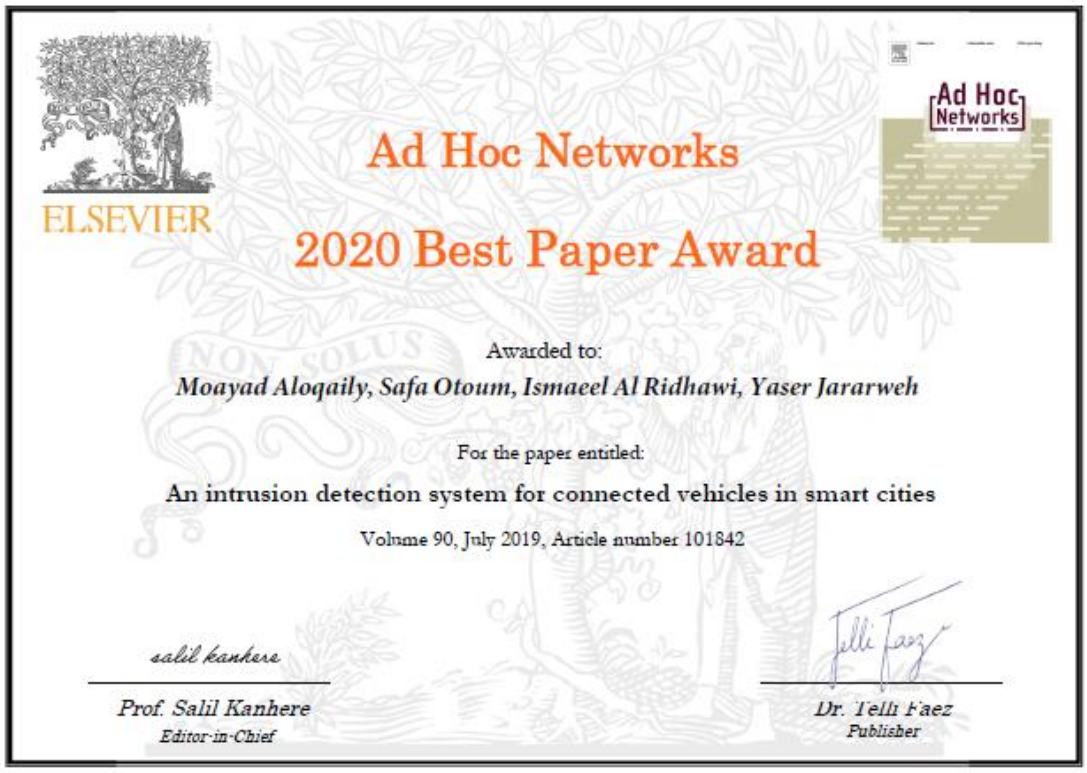
The specific technical content of the nominated paper is expected to have a clear connection to the general theme of communication systems integration and modeling. The nominated paper needs to show originality and substantial technological impact or potential technological impact on both the theory and the practice of network and communication systems integration and modeling. Please refer to the CSIM TC website for more information about the covered topics: http://csim.committees.comsoc.org/

Best Paper Award in IEEE ISNCC 2020, Montreal (held virtually)

The paper "**Proactive and Dynamic Slice Allocation in Sliced 5G Core Networks**" by **Danish Sattar and Prof. Ashraf Matrawy (CSIM member)**, was awarded the **Best Paper Award** in the 2020 IEEE International Symposium on Networks, Computers and Communications **(ISNCC'20).**

2020 Best Paper Award in Elsevier Ad Hoc Networks

The paper **"An intrusion detection system for connected vehicles in smart cities"** by **Dr. Aloqaily (CSIM member)** et al. received the **2020 Best Paper Award** for the Elsevier Ad Hoc Networks journal.



Editorial Appointments

- Dr. Mubashir Husain Rehmani (CSIM member) has been appointed as Associate Editor in IEEE Transactions on Green Communications and Networking (TGCN) in the Area 1: Green Internet and Service Provisioning.
  Link: https://www.comsoc.org/publications/journals/ieee-tgcn/editorial-board

- Nitin Gupta (CSIM member) joined the Editorial Board of International Journal of Sensor Networks (Inderscience, SCIE Indexed, IF 1.428).
  Link: https://www.inderscience.com/jhome.php?jcode=ijsnet

3. Past Events

Plenary talks and keynote speeches on "AI-enabled Wireless Networks" by Melike Erol-Kantarci

Dr. Melike Erol-Kantarci delivered a series of keynote speeches and plenary talks on the application of Artificial Intelligence (AI) in future wireless networks and smart grid applications. The details of the events are as follows:

1) **Title:** Keynote on "AI-Enabled Future Wireless Networks"
   Event: 16th IFIP International Conference on Network and Service Management (CSNM)
   Date: November 2020

2) **Title:** Keynote on "AI-Enabled Wireless Networks: A Bridge from 5G to 6G"
   Event: Global Information Infrastructure Networking Symposium (GIIS)
   Date: October 2020

3) **Title:** Plenary Talk on "AI-enabled Transactive Energy Systems and the Role of Communications"
   Event: IEEE International Conference on Advanced Communication Technologies and Networking (CommNet'20)
   Date: September 2020.

4) **Title:** Plenary Talk on "AI-enabled Energy Trading for Microgrids and Transactive Energy Systems"
   Event: IEEE Smart Energy Grid Engineering
   Date: August 2020.

IEEE International Workshop on Computer Aided Modeling and Design of Communication Links and Networks (CAMAD) 2020

IEEE International Workshop on Computer Aided Modeling and Design of Communication Links and Networks (CAMAD) was held virtually between 14-16 September 2020. This year IEEE CAMAD focused on Communication and Experimentation aspects of 5G, Industrial IoT for Industry 4.0, and beyond.

The conference hosted a rich program with various Special Sessions, bringing together a diverse group of scientists, engineers, manufacturers and providers to exchange and share their experiences and new ideas focusing on research and innovation results in the 5G and Industry 4.0 domains. In addition to 8 technical sessions, the conference included 3 keynote speeches, one tutorial, one COVID-19 panel, and one industrial panel. The conference reached 85 registered attendees and had 48% acceptance ratio.

IEEE CAMAD 2020 was successful completed under the leadership of General Co-Chairs: Stefano Giordano and Luca Foschini, and the TPC Co-Chairs: Rosario Garroppo and Melike Erol Kantarci.

"30 Golden Rules of Deep Learning Performance" Technical Talk by Siddha Ganju

Date: 13 July 2020

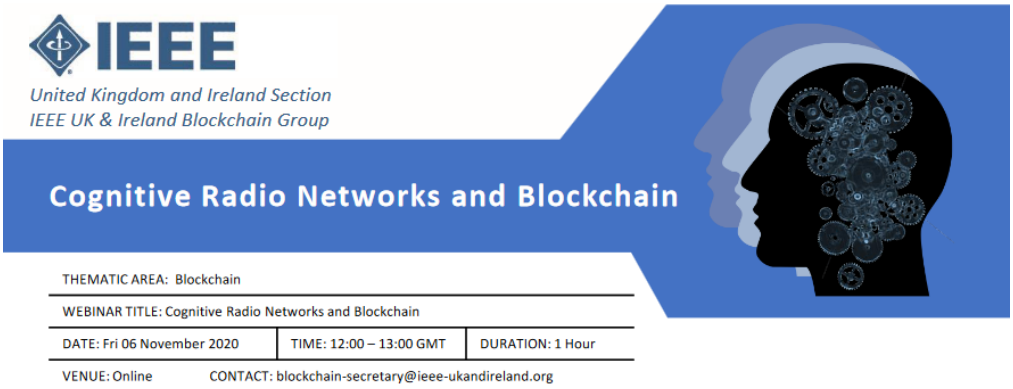
A technical online Talk was organized by **Nitin Gupta** (CSIM member), Assistant Professor, Department of Computer Science and Engineering, National Institute of Technology, Hamirpur, Himachal Pradesh, India on the topic "30 Golden Rules of Deep Learning Performance" by Siddha Ganju, Architect Nvidia, under IEEE Comsoc-Delhi Chapter on 13th July 2020.

Webinar on "Cognitive Radio Networks and Blockchain" by Dr. Rehmani

Date: 06 November 2020

Dr. Mubashir Husain Rehmani (CSIM member) delivered a webinar on Cognitive Radio Networks and Blockchain in IEEE UK and Ireland Section on 06th Nov 2020.

Link: https://www.ieee-ukandireland.org/wp-content/uploads/2020/10/Blockchain-Mubashir-Rehmani.pdf



SECRET, SPOTLIGHT and 5GSTEPFWD Final Year conference

The European Training Network (ETN) final year conference took place on 14th -16th September 2020 as a virtual event. This was a collaborative event organised by the H2020 ITN MSCA SECRET, 5GSTEPFWD and SPOTLIGHT projects, chaired by **Prof. Jonathan Rodriguez (Instituto de Telecomunicações, Portugal**), **Prof. Christos Verikoukis (*Centre* Tecnològic de Telecomunicacions de *Catalunya, Spain)*, Prof. Nikos Passas (University of Athens, Greece),** and **Dr. John Vardakas (Iquadrat, Spain)**.

The aims of the conference were to provide an ideal opportunity for Early Stage Researchers (ESRs) to not only disseminate their final project results to the research community, but also to engage in vital training on conference organization.

It was a three-day event centred around three key themes, those being **Enabling Technologies for Next Generation UDNs, Virtualization and Optical-Wireless Convergence reflecting the technical drive of participating projects. There was a total of 39 ESR presentations,** three international key note talks and "Best Presenter" awards.

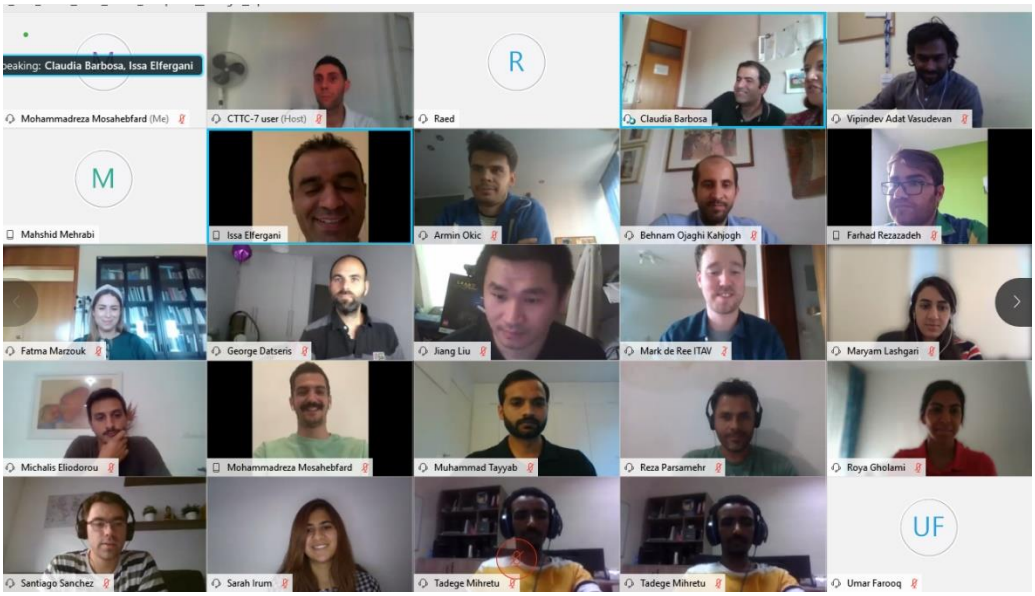
The conference was opened by **Dr. George Koudouridis (Huawei Sweden)**, both industry representative and project partner with the remaining day symposiums chaired by further project representatives, both from industry and academia.

Best presenter awards were handed out on the final day by the organizing committee for the best project presenters: the awards went to **Sarah Irum (Acticom GmbH, Germany)** for her talk on *SECRET Testbed - Enabling Mobile Small Cells* from the SECRET project; **Shammi Farhana Islam (University of York, UK)** for the talk on *Distributed 3D Massive MIMO in Millimeter Wave Communication* from the SPOTLIGHT project; and **Massimiliano Maule (Iquadrat Informática SL, Spain)** for a talk on *SLA-Based Dynamic Network Slicing* from the 5GSTEPFWD.

The best works are currently being extended for an edited book publication by Springer Press entitled "Converged and Virtual Optical-Wireless Communication Platform for Beyond 5G". The book is expected to be published in early 2021.

The conference steering committee would like to thanks all participants for their valued hard work and participation, the head of the local organizing committee **Cláudia Barbosa (Instituto de Telecomunicações, Portugal)**, and a special thanks to the keynote speakers **Dr. Natalia Stakhanova (University of Saskatchewan, Canada)**; **Prof. Rui Aguiar (Universidade de Aveiro, Portugal), and Prof. Anna Tzanakaki (Bristol University, UK)** that provided invaluable talks and contributed to the success of the conference.

For more information please visit: http://h2020-secret.eu/conference.html.



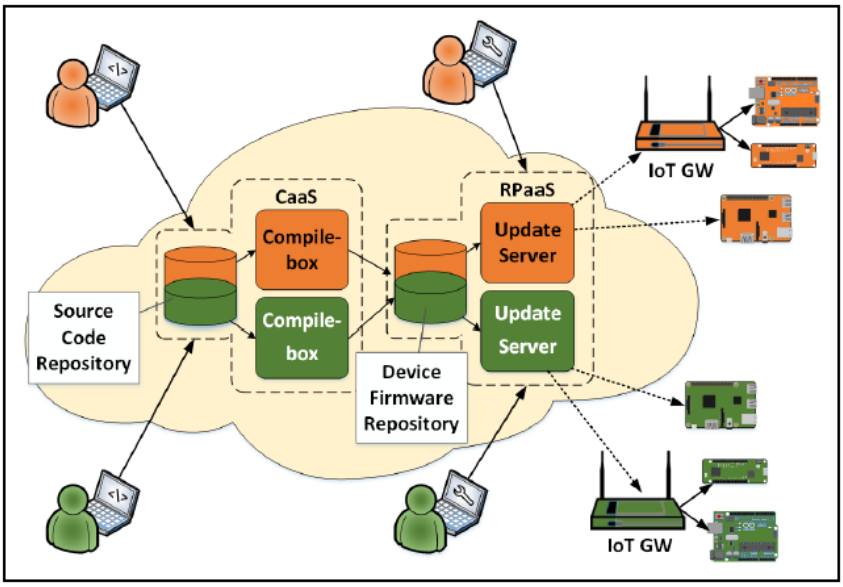
4. Ongoing Research Projects/Grants

TELERGATIS: A secure platform for Compilation- and Remote Programming-as-a-Service for the Internet-of-Things

by P. Charalampidis (FORTH-ICS, Greece) and A. Fragkiadakis (FORTH-ICS, Greece)

Web: https://www.tilergatis.gr
Twitter: https://twitter.com/telergatis

TELERGATIS aims at developing a secure and reliable cloud platform that jointly provides Compilation-as-a-Service (CaaS) and Remote Programming-as-a-Service (RPaaS) for IoT devices. The proposed platform removes from the user the burden of manually installing and maintaining various software development environments for building IoT device firmware, by following a cloud-based microservices approach and offering a web-based user interface for developing code and managing IoT devices. Additionally, it embeds source code versioning and management functionalities and automates firmware over-the-air (OTA) updates by focusing on reliability and integrity of the update process. Finally, by adopting appropriate virtualization techniques, TELERGATIS platform accounts for the inherent heterogeneity of IoT devices and easily supports different hardware platforms and embedded operating systems.



TELERGATIS Platform

TELERGATIS has the following main objectives:

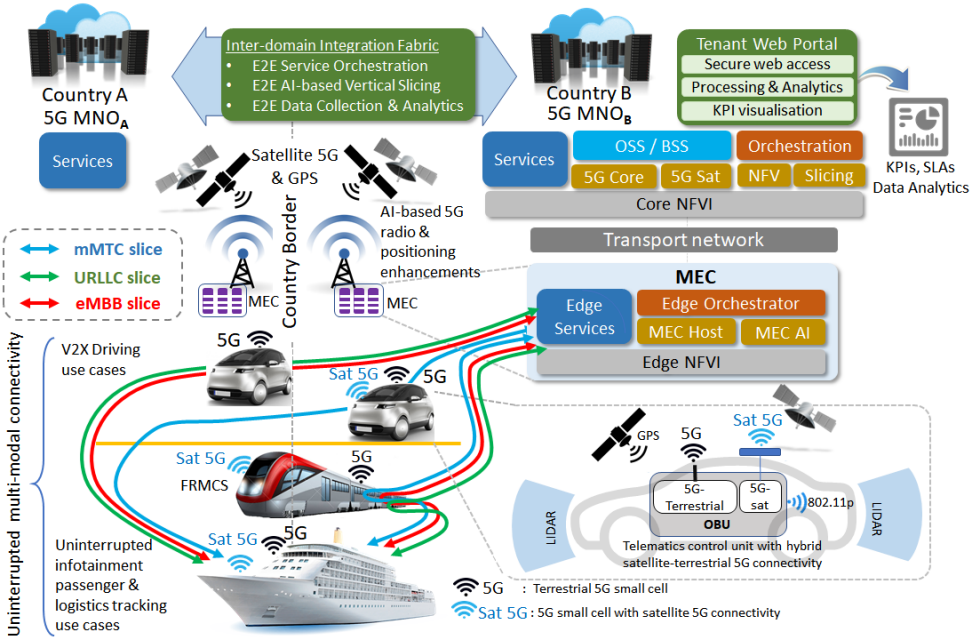
- Design, implement, and evaluate a CaaS system that facilitates development, compilation and build of firmware for IoT devices.
- Design, implement, and evaluate an architecture for providing secure and reliable RPaaS for heterogeneous IoT devices.
- Highlight and document best practices for designing a unified CaaS and RPaaS platform for heterogeneous IoT devices.

5G-ROUTES: 5th Generation connected and automated mobility cross-border EU trials

by L. Christofi (EBOS, Cyprus), K. Ramantas (Iquadrat, Spain) and C. Verikoukis (CTTC, Spain)

Web: https://www.5g-routes.eu/
Twitter: https://twitter.com/5gRoutes
LinkedIn: https://www.linkedin.com/company/5g-routes-project/

5G-ROUTES is a 5G-PPP Phase 3 project whose aim is to validate through robust evidence the latest 5G features and 3GPP specifications (R.16 & R.17) of Connected and Automated Mobility (CAM) under realistic conditions. In particular, it will conduct advanced large-scale field trials of most representative CAM applications to demonstrate seamless functionality across a prominent 5G cross-border corridor (Via Baltica-North), traversing Latvia, Estonia and Finland. This will help to boost confidence and accelerate the deployment of 5G-based interoperable CAM ecosystems and services throughout Europe. One of the main challenges addressed by 5G-ROUTES is to support CAM applications that seamlessly function when crossing borders, regardless of the mode of transport and regardless of whether passenger or cargo is involved. 5GROUTES also focuses on uninterrupted infotainment passenger services on the go and multimodal services in the context of complete connectivity-enabled ecosystems over 3 different modes of transport (vehicles, rails and maritime).



5G-ROUTES *high-level architecture*

Specific Objectives

The following eight (8) key interdisciplinary objectives have been defined for 5G-ROUTES.

O1: Innovative use cases defined with key industry experts: To develop innovative and commercially exploitable CAM use cases for automotive, railway and maritime sectors within the cross-border context.

O2: Requirements analysis elaboration: To analyse the technical and business requirements for the use cases to enable extensive large-scale CAM field trials in the 'Via Baltica-North' 5G corridor.
O3: Enabling Technologies: To advance and optimise the enabling technologies using AI for the reliable, seamless and uninterrupted delivery of interoperable CAM services across borders
O4: Infrastructure development, integration & setup: To leverage and upgrade key assets; to integrate the technological enablers in an end-to-end CAM ecosystem, setup the 5G corridor and to facilitate lab and large-scale field trial validation.
O5: Field Trials Validation: To demonstrate the potential and the user value in advanced CAM deployments at cross-border areas, by characterising and optimising 5G technologies at both lab tests and large-scale trials, so as to validate applicable standards and key target KPIs thus boosting the confidence for wide adoption of interoperable CAM services in Europe.
O6: Exploitation & Innovation Management: To develop and validate the business models of advanced CAM use cases that can be offered on top of existing services in a multi cross-border 5G operator environment.
O7: Contribution to Standardisation: To identify and validate applicable standards as well as provide rationalised contribution to key standardisation bodies so as to sustain standardisation in the telecom and automotive sectors within the CAM context.
O8: Scale-up: To ensure long-term success through wide dissemination of the project's results; to exploit synergies with other 5G-PPP projects and 5G CAM initiatives; to actively contribute to the 5G Action Plan strategic initiative.

Innovative use cases in CAM pilots
These will be incrementally validated, starting from lab trials, followed by localized large-scale trials at strategic cross-border locations (Valga city, Tallinn & ferry extension through the Gulf of Finland) and finally in larger-scale trials along the selected corridor.

Overview of use cases to be validated in large-scale field trials

UC #	UC title and V2X type (where applicable)	eMBB	URLLC	mMTC	UC description
Use Case Category 1: Automated Cooperative Driving					
1.1	Dynamic vehicles platooning (V2V)		✓	✓	Enable vehicles to dynamically form a group travelling together
1.2	Cooperative lane change (V2V)		✓	✓	perform joint maneuver decisions and coordinate driving trajectories
1.3	See through view for safe automated overtake (V2V, V2N)	✓	✓	✓	provide enhanced visibility of road awareness for safe automated overtake
Use Case Category 2: Awareness Driving					
2.1	Real-time traffic info and cooperative intersection collision control (V2V, V2N, V2I)	✓	✓	✓	provide enhanced real-time traffic visual monitoring and control of intersection traffic for cooperative automated driving
2.2	Traffic jam chauffeur (V2V)		✓	✓	provide automated driving functionality in traffic jams for increased user comfort
Use Case Category 3: Sensing Driving					
3.1	Sensor info sharing (V2V, V2I)		✓	✓	allow connected vehicles to form part of a group to exchange sensor data

3.2	Connected maintenance (V2N)	✓		✓	enable long-term maintenance and repair services through predictive analytics
3.3	VRU collision avoidance (V2D, V2P)		✓	✓	enabling reliable interaction between active vehicle and surrounding passive VRUs
Use Case Category 4: Uninterrupted infotainment passenger services on the go					
4.1	360º immersive multi-user gaming on the go	✓	✓		provide uninterrupted 360o multi-user gaming experience across borders and across different means of transport
4.2	3D real-time virtual collaboration on the go	✓	✓		provide seamless uninterrupted 3D virtual collaboration experience across borders and across different means of transport
Use Case Category 5: Multimodal services					
5.1	Goods tracking visibility in multimodal cross-border logistics			✓	provide seamless tracking of massive amount of goods across borders and different means of transport
5.2	5G-based Proactive and Multimodal Management of Passengers and Freight	✓	✓	✓	proactive and multimodal management of passengers and freight when crossing borders, across terrestrial and satellite 5G operators
5.3	FRMCS telemetry operation	✓	✓	✓	improve service availability and performance for telemetry operation of railways through FRMCS

5G-Routes consortium

No	Participant organisation name	Type	Country
1	ERICSSON EESTI AS (Coordinator)	IND	EE
2	AIRBUS DEFENCE AND SPACE GMBH	IND	DE
3	AIRBUS DEFENCE AND SPACE SAS	IND	FR
4	AS PASAZIERU VILCIENS	PO	LV
5	ATOS SPAIN SA	IND	ES
6	BRAINSTORM MULTIMEDIA S.L.	SME	ES
7	CENTRE TECNOLOGIC DE TELECOMUNICACIONS DE CATALUNYA	RTO	ES
8	EBOS TECHNOLOGIES LTD	SME	CY
9	EESTI RAUDTEE AS	PO	EE
10	ENIDE SOLUTIONS. S.L	SME	ES
11	ETHNIKO KENTRO EREVNAS TECHNOLOGIKIS	RTO	EL
12	INLECOM INNOVATION ASTIKI MI KERDOSKOPIKI	SME	EL
13	INSTITUT VEDECOM	RTO	FR
14	IQUADRAT INFORMATICA SL	SME	ES
15	LATVIJAS MOBILAIS TELEFONS SIA	IND	LV
16	SWARCO MIZAR SRL	IND	IT
17	TALLINNA TEHNIKAULIKOOL	ACA	EE
18	TEKNOLOGIAN TUTKIMUSKESKUS VTT OY	RTO	FI
19	TELIA EESTI AS	IND	EE
20	UNITI SWEDEN AB (publ)	SME	SE
21	VEDIAFI OY	SME	FI
22	WINGS ICT SOLUTIONS INFORMATION & COMMUNICATION TECHNOLOGIES IKE	SME	EL

European Cooperation in Science & Technology (COST)
COST Action CA19111: European Network on Future Generation Optical Wireless Communication Technologies

by F. Y. Li (University of Agder, Norway)

Project duration: 8 Sept. 2020 – 7 Sep. 2024.
Participations: 36 European countries, led by Ecole Centrale Marseille, France
Project homepage: https://www.cost.eu/actions/CA19111/#tabs|Name:overview

Project introduction:

The design of future wireless communication networks that cope with the ever-growing mobile data traffic as well as support varied and sophisticated services and applications in vertical sectors with a low environmental impact is recognized as a major technical challenge that European engineers face today. The COST Action NEWFOCUS will propose truly radical solutions with the potential to impact the design of future wireless networks. Particularly, NEWFOCUS aims to establish optical wireless communications (OWC) as an efficient technology that can satisfy the demanding requirements of backhaul and access network levels in beyond 5G networks. This also includes the use of hybrid links that associate OWC with radiofrequency or wired/fiber-based technologies.

Towards this vision, NEWFOCUS will carry out a comprehensive research programme under two major pillars. The first pillar is on the development of OWC-based solutions capable of delivering ubiquitous, ultra-high-speed, low-power consumption, highly secure, and low-cost wireless access in diverse application scenarios. The developed solutions will in particular support Internet-of-Things (IoT) for smart environments with applications in vertical sectors. The second pillar concerns the development of flexible and efficient backhaul/fronthaul OWC links with low latency and compatible with access traffic growth.

In addition to scientific and technological advances, NEWFOCUS will serve as a global networking platform through capacity building of all relevant stakeholders including universities, research institutions, major industry players, small medium enterprises, governmental bodies and non-governmental organisations. Within this rich consortium, NEWFOCUS will train experts to accompany related European industries for the standardisation and commercialisation of the OWC technology.

SEMANTIC: end-to-end Slicing and data-drivEn autoMAtion of Next generation cellular neTworks with mobIle edge Clouds

by N. Passas (University of Athens, Greece)

Project Website: https://semantic2020.eu/

Designed to meet the massive growth in data and connectivity today, 5G (the fifth generation of mobile networks) is a significant evolution of today's 4G networks. However, the full potential and exploitation of this new mobile network architecture requires appropriate algorithmic innovations and data-driven network automation. The EU-funded SEMANTIC project will create an advanced research and training structure for multi-GHz spectrum communications, MEC-empowered service

provisioning and end-to-end network slicing. The project intends to train early stage researchers (ESRs) with guidance from industrial professionals for the exploitation of the enormous potentiality 5G technology offers.

The 5G mobile network architecture, which is currently consolidated (in terms of network components, technologies and interfaces), reveals a great network performance potential, appealing to different vertical market players. However, this potential cannot be fully harnessed without the appropriate algorithmic innovations and data-driven network automation that will permit full exploitation, global management and end-to-end integration of all the heterogeneous network components and resources. However, despite the rapidly increasing efforts devoted to the consolidation of the core 5G technologies(e.g. 5GPPP phase 2/3 projects), substantial work is still required to meet the IMT-2020 objectives set for the 5G network performance and fully harness the multitude of technological capabilities offered by 5G with minimum human intervention (e.g. through intelligent network automation and control).

SEMANTIC aims to answer the aforementioned performance and technological gaps by forming an innovative research and training network for multi-GHz spectrum communications, flexible service provisioning and end-to-end network slicing, all integrated and jointly orchestrated by forward-looking data-driven network control and automation exploiting the enormous amounts of mobile big data spurred into the mobile data network. In this context, SEMANTIC will form an integrated, multi-disciplinary training network of Early Stage Researchers (ESRs), guided by experienced supervisors, aiming at the creation of highly-trained academic researchers and industrial professionals with a future-proof background on physical layer design for multi-GHz communications, end-to-end integration, slice-enabled connectivity and data-driven network orchestration in the 5G continuum. The research programme will conduct top-notch research towards the development and experimental evaluation of a gamut of techniques, methodological frameworks and tools that will fully leverage the exciting new capabilities offered by 5G (including multi-GHz communications) and will set the foundations for the integration of the disruptive new technologies into the baseline operation of 5G and beyond networks.

Partners

CENTRE TECNOLOGIC DE TELECOMUNICACIONS DE CATALUNYA, SPAIN (http://www.cttc.es/)
EURECOM, FRANCE (http://www.eurecom.fr/en)
ETHNIKO KAI KAPODISTRIAKO PANEPISTIMIO ATHINON, GREECE (www.uoa.gr)
CHALMERS TEKNISKA HOEGSKOLA AB, SWEDEN (http://www.chalmers.se/)
POLITECNICO DI TORINO, ITALY (https://www.polito.it/)
IQUADRAT INFORMATICA SL, SPAIN (https://www.iquadrat.com/en/)
NATIONAL INSTRUMENTS DRESDEN GMBH, GERMANY (https://germany.ni.com/dresden)
FOGUS INNOVATIONS & SERVICES P.C., GREECE (https://fogus.gr/)
TELENOR SVERIGE AKTIEBOLAG, SWEDEN (https://www.telenor.se/)
NOKIA BELL LABS FRANCE, FRANCE (https://www.bell-labs.com/connect/global-locations/france/)

5. Upcoming Events

Silicon Valley Cybersecurity Conference
17-19 December 2020 – Virtual Conference

Website: https://www.svcsi.online/sv-cybersecurity-conf
Contact Person: Young Park

Scope: The annual Silicon Valley Cybersecurity Conference (SVCC) focuses on research in dependability, reliability, and security to address cyber-attacks, vulnerabilities, faults, and errors in networks and systems. This conference is a forum to present research in robustness and resilience in a wide spectrum of computing systems and networks. All aspects of the research and practice of applied security are within the scope of this conference. Relevant topics include innovative system design, protocols, and algorithms for detecting and responding malicious threats in dependable and secure systems and networks including experimentation and assessment.
Topics of interest are in the security of hardware, software, networks, clouds, cyber-physical systems, socio-technical systems, blockchain, and healthcare with multiple tracks for each. The tracks are as follows:

- Network Security
- Blockchain Security
- System and Hardware Security
- Software Security

Important Dates

- **November. 21, 2020 at Midnight (PDT):** Paper submission deadline (**Hard Deadline** due to the tight schedule. We encourage you to submit your paper in advance. We will review your paper immediately.)
- **December 5, 2020**: Author notification

Paper submission

The conference solicits research papers describing novel and previously unpublished scientific contributions to the field of cybersecurity in diverse areas. The authors need to submit your original paper to EasyChair.

Two different types of papers can be submitted:

- **Regular papers (7-8 pages IEEE double-column conference proceeding format)**
- **Short papers (4-5 pages IEEE double-column conference proceeding format**)

Regular papers should describe novel and previously unpublished scientific contributions to the field of cybersecurity. Each regular paper is limited to 7-8 pages, including tables, figures, and references. Short papers aim at presenting novel work in progress, novel applications, and novel industry perspective. Each short paper is limited to 4-5 pages, including tables, figures, and references. Short papers will also be peer-reviewed, however, they will be evaluated with a focus on the potential for establishing new ideas and for sparking the interest of participants.

All papers must be written in English. Authors can purchase extra pages up to 2 pages. Manuscripts must include a title, an abstract with 200-250 words, and a list of 4-6 keywords. All papers must be prepared in the IEEE double-column proceedings format.

SVCSI 2020 uses a **double-blind review policy**. Authors are required to remove their names, affiliation(s), and other identifying information from the header of the manuscript. This also includes meta-data in the submitted document as well as acknowledgment sections. **Papers that do not meet these anonymization requirements may be rejected without further review.**

All submitted papers will be peer-reviewed. The name(s) of the author(s) will not be visible to the reviewers of a paper. The name(s) of the author(s) will be visible in the submission system to the PC Chairs. The authors **should report any conflict of interest** with the list of PC members during submission of the manuscript, in which case the PC Chairs will exclude the corresponding PC member(s) from reviewing.

Paper publication

All accepted full papers will be published by an open article system and special issues with the current following journals. We will add more special issues soon. If the journal reviewers are satisfied with the revisions made to address the weaknesses identified during the initial review process at this conference, this category of papers will be published in the special issue.

- Special issue "Building Trustworthy and dependable Infrastructure for in Internet of Things" in Journal of MDPI Sensor (impact factor: 3.275)

All the accepted original papers as for preprint will be available through our SVCSI website as a digital book with an ISBN number. We can also invite accepted short papers if the authors can extend their manuscripts to be suitable for the special issue through a full review process. We will ask the authors to improve their accepted papers within two and a half months after finishing the conference.

Each accepted paper for this conference is required to be registered by one of its authors, and at least one author is required to attend and present the paper for 25 minutes including Q&A online at the conference for the paper to be included in the final technical program and the Digital Library. Journal publications require extra publication fees according to the journal publisher policy.

Program Chairs
Divyesh Jadav, IBM Research
Younghee Park, San Jose State University

Workshop on ns-3 2021 (WNS3)
23-24 June 2021, Virtual Conference

Website: https://www.nsnam.org/research/wns3/wns3-2021/
Contact Person: Michele Polese

Scope: The Workshop on ns-3 (WNS3) will be held as a fully virtual event, starting on June 23, 2021 and tentatively planned for two days. The objective of the workshop is to gather ns-3 users and developers, together with networking simulation practitioners and users, and developers of other network simulation tools, to discuss the ns-3 simulator and related activities. As in past years, the conference organizers will apply to ACM to publish accepted papers in the ACM ICPS series.

Topics: WNS3 invites authors to submit original high quality papers presenting different aspects of developing and using ns-3. In such papers, reproducibility and methodology will be a key reviewing criteria, as explained below. Topics of interest include, but are not limited to, the following:

- new models, devices, protocols and applications for ns-3
- using ns-3 in modern networking research
- comparison with other network simulators and emulators
- speed and scalability issues for ns-3
- multiprocessor and distributed simulation with ns-3, including use of GPUs
- validation of ns-3 models
- credibility and reproducibility issues for ns-3 simulations
- user experience issues of ns-3
- frameworks for the definition and automation of ns-3 simulations
- post-processing, visualisation and statistical analysis tools for ns-3
- models ported from other simulators to ns-3
- using real code for simulation with ns-3 and using ns-3 code in network applications
- integration of ns-3 with testbeds, emulators, and other simulators or tools
- using ns-3 API from programming languages other than C++ or Python
- porting ns-3 to unsupported platforms
- network emulation with ns-3
- using ns-3 in education and teaching

We also solicit novel papers with a focus on an industrial application of ns-3 (use of ns-3 within industry). Papers in this category must address these questions:

- What specific R&D questions did you or do you want to answer by simulation?
- Why and how did you choose ns-3 as the appropriate tool for your application?
- What surprises did you find, in correctness/behavior? in implementation? in learning curve?
- What are the remaining barriers to addressing fully your R&D questions?
- What general capabilities would have made your work easier/faster?

Submission guidelines: Papers must be written in English and must not exceed 8 pages. Every paper will be peer-reviewed. At least one author of each accepted paper must register and present the work at the workshop.
Authors should submit papers through EasyChair https://easychair.org/conferences/?conf=wns32021 in PDF format, complying with ACM "sigconf" Proceedings format. Submitted papers must not have been submitted for review or published (partially or completely) elsewhere. Papers will be accepted based on the relevance, novelty, and impact of the contribution, as well as the quality of writing and presentation. Authors presenting new ns-3 models, frameworks, integration setups, etc. are encouraged to include all traditional parts of a scientific paper: introduction, motivation, related work, assumptions, verification and validation, conclusions and references. As a general rule, papers that only document source code will be rejected. Authors presenting networking research using ns-3 are encouraged to follow best simulation practices and focus particularly on the credibility and reproducibility of simulation results. We strongly encourage authors of all papers, demonstrations, and posters to include links to relevant source code and instructions on how to use it. This will make contributions more useful for the ns-3 community. If code has been submitted through the ns-3 merge request process, or published as a module in the ns-3 app store, please list the link(s). This will be considered a plus.

Important Dates

- Paper submission deadline: Sunday, February 21, 2021, 17:00 PST
- Notification of acceptance: Monday, March 22, 2021

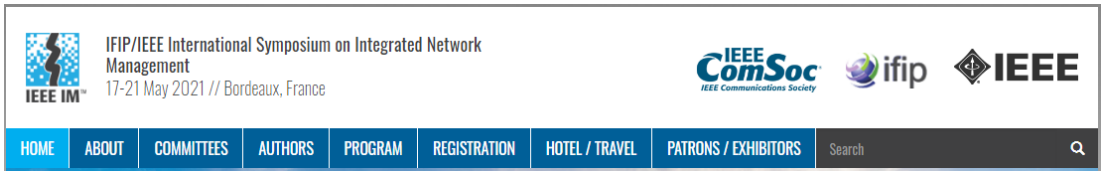
Technical Program Co-Chairs

- Stefano Avallone
- Michele Polese

General Chair

- Tom Henderson

4th International Workshop on **Intelligent Transportation and Autonomous Vehicles Technologies** in conjunction with IFIP/IEEE International Symposium on **Integrated Network Management** (IM 2021).



Website: http://intelligenttech.org/ACCAV2021/
Contact Person: Moayad Aloqaily

General Co-Chairs:
Dr. **Moayad Aloqaily**, *xAnalytics Inc.*, Canada
Prof. **Öznur Özkasap**, Koç University, Istanbul, Turkey

Scope and topics of the workshop:

Today's, intelligent systems is a core building block in smart cities transportation through which smart, reliable, safe, and efficient integrated transportation solutions are provided. Intelligent systems management integrated with today's advanced vehicular and wireless network technologies, such as autonomous and connected vehicles, will play a crucial role in improving the quality and delivery performance of diversified vehicular services. Many unprecedented challenges arise from the emerging autonomous and connected vehicle technologies. These include configuring vehicular cloud services to user requirements, vehicle security issues related to connectivity, big data analytics for intelligent transportation, and user's trust in such technology as one of the issues facing implementation and deployment of an autonomous vehicle. There is also a need for customized computation and communication technology for the integrated solutions of autonomous vehicles and smart city sub-systems. The aim of the Fourth International Workshop on Intelligent Transportation and Autonomous Vehicles Technologies is to bring together engineers, researchers, and practitioners interested in the advances and applications in the field of intelligent transportation and autonomous vehicle technologies. Participants are invited to present and discuss recent developments and challenges in autonomous vehicle systems. *This version of this workshop focuses on innovative applications, tools and frameworks in technology areas related to the intelligent management of driving and in dynamic networks*. Papers describing original novel work and advanced prototypes, systems and tools are encouraged.

Researchers are encouraged to submit original research contributions in all major areas, which include, but not limited to:

* SDN Autonomous Vehicles and Automated Driving * 5G/6G technology for Autonomous Vehicles * Services Virtual Networking for Autonomous Vehicles * Blockchain Systems for Autonomous Vehicles * Intelligent Infrastructure and Guidance Systems * Cooperative Driving for Autonomous Vehicles * Security and privacy for Autonomous Vehicles * Next Generation Traffic Management Systems * Connected Services and Mobility management * Green Vehicular Communication and Services	* Mobility and the Internet of Vehicles * Advanced driver assistance systems * Power Management of Smart Electric Vehicles * Cyber threat-free driving environment * Communications and networking for automated vehicles *Simulation and performance evaluation techniques for autonomous vehicles * Autonomous Vehicles -based Data and Energy Transport Services * Applications to enhance the driver experience * Autonomous and Connected Aerial Networks

IEEE International Workshop on Emerging Topics in 6G Communications

Website: https://sites.google.com/view/ieeeiccworkshop/home
Submission Link: https://edas.info/newPaper.php?c=27569&track=102886
Contact Person: Nizar Zorba

General Co-chairs

Nizar Zorba, Qatar University (Qatar).
Mutaz Shukair, Qualcomm (USA).
Kenta Umebayashi, Tokyo University of Agriculture and Technology (Japan).
Janne Lehtomäki, University of Oulu (Finland).
Soumaya Cherkaoui, University of Sherbrooke (Canada).

Scope: 5G networks and devices are now a reality with wide deployment and spread among population, but the demand for more data rate is still booming, and will soon need for a newer generation for wireless/cellular communication, the 6G. It will be a new standard that not only provides huge data rate (+1Tbps) and extremely low delay (0.1ms), but also will enable the "hyper-connected" paradigm that will connect users and things. Artificial Intelligence (AI) will play a major role within 6G, and thus more computation and communication resources will be consumed, where their optimization is a must.
6G communications will bring new challenges due to their sensitivity to scenario conditions, thereby requiring highly adaptive techniques that will adapt extremely fast, in order to guarantee a delay less than 100 microseconds. Spectrum and resources management will be crucial within 6G in order to account for the extremely heterogeneous scenario. The networks complexity will also be unprecedented, due to the very diverse applications such as ultra-low latency requirements for critical vehicle communication, the growing demand of high positioning accuracy for location-based services, and dense heterogeneous architectures.

Topics

We seek original completed and unpublished work not currently under review by any other journal/magazine/conference. Topics of interest include, but are not limited to:

- Artificial Intelligence (AI) application for 6G communications.
- Novel signal processing techniques for 6G communications.
- Smart Antenna schemes for 6G communications.

- 6G communications at the Terahertz band.
- Advanced Full Duplex strategies for 6G.
- Meta-surfaces implementation at 6G communication.
- New Quality of Service (QoS) metrics for 6G communications.
- Multiple Access schemes suitable to 6G.
- Dynamic spectrum access/sharing at 6G band.
- New network architectures in 6G.
- Self-organizing 6G-enabled IoT.
- Interference management at 6G.
- New security concepts within 6G.
- Spectrum regulatory for 6G bands.
- 6G Testbeds and Applications.

Paper Submission
The workshop accepts only novel, previously unpublished papers. The page length limit for all initial submissions for review is SIX (6) printed pages (10-point font) and must be written in English. All final submissions of accepted papers must be written in English with a maximum paper length of six (6) printed pages (10-point font) including figures. No more than one (1) additional printed page (10-point font) may be included in final submissions and the extra page (the 7th page) will incur an over length page charge of USD100. For more information, please see IEEE ICC 2021 official website: https://icc2021.ieee-icc.org/authors

Important Dates:
Manuscript Submission Deadline: 20 January 2021
Notification of Acceptance due date: 20 February 2021
Final version due date: 1 March 2021
Workshop date: 14 June 2021

EUCNC – 6G Summit

Website: https://www.eucnc.eu/
Contact Person: Frank Li

The 2021 Joint EuCNC & 6G Summit, initiated this year, builds on putting together two successful conferences in the area of telecommunications: EuCNC, in its 30th edition of a series, supported by the European Commission; the 6G Summit, in its 3rd edition, originated from the 6G Flagship programme in Finland, one of the very first in its area. The conference is sponsored by the IEEE Communications Society and by the European Association for Signal Processing, and focuses on all aspects of telecommunications ranging from 5G deployment and mobile IoT to 6G exploration and future communications systems and networks, including experimentation and

testbeds, and applications and services. It brings together cutting-edge research and world-renown industries and businesses, attracting in the last years more than 900 delegates from all over the world, to present and discuss the latest results, and an exhibition space of more than 1 500 m2 for demonstrating the technology developed in the area, namely within European research projects from EU R&I programmes.
We invite submissions in the following tracks (a full list of topics is available at the website):
PHY › Physical Layer and Fundamentals
RAS › Radio Access and Softwarisation
NET › Network Softwarisation
WOS › Wireless, Optical and Satellite Networks
VAP › Vertical Applications and Internet of Things
OPE › Operational & Experimental Insights
CME › Components and Microelectronics
6ET › 6G Enabling Technologies
6GV › 6G Visions

VAP Track Co-Chairs
Carlos Calafate, U. P. Valencia, ES
Frank Li, U. Agder, NO
Kamran Sayrafian, NIST, USA

Key Dates

2021 Jan. 29 › Papers submission deadline
2021 Apr. 05 › Notification of acceptance
2021 Apr. 16 › Final paper submission

IEEE International Mediterranean Conference on Communications and Networking
5-8 July 2021 - Athens, Greece

Contact Person: Christos Verikoukis

The inaugural IEEE International Mediterranean Conference on Communications and Networking (MeditCom) will take place 5-8 July 2021 in Athens, Greece, and will be held annually in the countries surrounding the Mediterranean Sea.
IEEE MeditCom will bring together visionaries in academia, research labs and industry from all over the world to the shores of the Mediterranean Sea, with programming that will address many of the outstanding challenges that exist in the areas of communications and networking. The conference will solicit research papers

on a wide range of research topics, spanning both theoretical and systems research along with vertical technologies. Known as the "cradle of Western civilization", IEEE MeditCom participants will also have an opportunity to explore this exciting and dynamic region with its rich history and beauty.
IEEE Communications Society aims at engaging local IEEE Sections, ComSoc Chapters, and possibly Sister Societies, from all Mediterranean region, including Spain, France, Monaco, Italy, Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Albania, Greece, Turkey, Syria, Lebanon, Israel, Egypt, Libya, Tunisia, Algeria, Morocco, Malta, and Cyprus.
Program topics will include:

- Network Architectures, SDN, NFV
- Cloud Communications and Data-center Networks
- Optical Networks and Systems, Radio over Fiber
- Mobile and Wireless Communications and Networking and Beyond
- 5G Mobile Systems and their Components
- Molecular and Nanoscale Communications
- Satellite and Space Communications
- Underground and Underwater Communications
- Image, Speech and Signal Processing for Communications
- Big Data and Machine Learning for Communications
- Semantic Web and Ontologies
- Internet of Things, Smart grids, and Vehicular Networks
- Green Communications and Energy Efficient Computing
- Network Applications and Services
- Analytical Models, Simulation, Testbeds & Prototypes
- Network Management and Cognitive Radio
- QoE/QoS Support and Cross-layer Optimization
- Performance Evaluation of Communication Systems
- Massive MIMO, Signal Processing, and Coding
- Advanced PHY and MAC techniques
- Security, Privacy, Trust and Blockchain
- Communications and Information Theory
- Cybersecurity

The First International Workshop on Securing Next-Generation Connected Healthcare Systems using Futuristic Technologies 8-11 March 2021 – Lübeck, Germany

Website: https://www.zu.ac.ae/main/en/netsys2021/index.aspx
Contact Person: Safa Otoum

Recent advances in computation and communication technologies have enabled the realization of connected healthcare systems which mainly rely on IoT and Edge technologies. However, the security and privacy of next-generation of smart healthcare systems are of prime concern for the successful deployment of connected healthcare. Similarly, futuristic technologies such as Machine Learning (ML) and Blockchain are revolutionizing the system security solutions. In this regard, this workshop will directly focus on the essential aspects of IoT security in a connected healthcare environment that will not only leverage cutting-edge research techniques, but also help in speeding up the realization of these systems. It also aims at leveraging blockchain technology in smart city IoT environment for communication and data security, and trust management. The aim of this workshop is to bring

together engineers, researchers, and practitioners interested in the advances and applications in the field of IoT/edge security and privacy for the purposes of advancing connected healthcare systems. Participants are invited to present and discuss recent developments and challenges related to securing the edge systems of healthcare systems using emerging technologies such as blockchain and AI. Papers describing original novel work and advanced prototypes, systems and tools are encouraged.
Researchers are encouraged to submit original research contributions in all major areas, which include, but not limited to:

- Security and Privacy in IoT healthcare
- Ultra-lightweight cryptography for security and trust in smart city and healthcare IoT environments
- QoE/QoS in healthcare IoT/edge
- Distributed and federated learning for healthcare IoT applications
- Theory and Application of Cryptology in healthcare IoT
- Identity and access management in connected healthcare IoT
- Cyber-threat free healthcare IoT environment: Detection, Protection, and Prevention
- Simulation and performance evaluation techniques for healthcare IoT networks
- 5G technologies for healthcare IoTs
- Machine Learning-based healthcare IoT applications
- Blockchain-based healthcare IoT infrastructures
- Digital Twin for healthcare IoT/Edge systems

General Chairs

Dr. Safa Otoum, Zayed University, Abu Dhabi, UAE
Dr. Omar Alfandi, Zayed University, Abu Dhabi, UAE

Submission Guidelines
Submission implies that at least one author will register and attend the conference to present the publication if the paper is accepted.
Paper format: Submitted papers (.pdf format) must use the A4 IEEE Manuscript Templates for Conference Proceedings. Please remember to add Keywords to your submission.
Length: Submitted paper size should be up to 6 pages long or demo papers up to 4 pages long, including references, figures, and tables. One additional page for long papers may be added. Overlength papers will be rejected without review.
Originality: All submissions to NetSys2021 must be original work, unpublished, and not considered elsewhere for publication. Publications that have been peer-reviewed and have appeared at other conferences or workshops will be withdrawn.
Author list: Please ensure that you submit your papers with the full list of authors in the correct order. The author list registered for each submission is not allowed to be changed in any way after the paper submission deadline. One of the authors, at least, should attend the workshop to present the work.

6. Special Issues organized by CSIM members

1) Communications and Computing for Green Industrial IoT and Smart Grids

IEEE Transactions on Green Communications and Networking
Contact Person: Melike Erol-Kantarci

Guest Editors:
Melike Erol-Kantarci, University of Ottawa, Canada, melike.erolkantarci@uottawa.ca
George C. Alexandropoulos, National and Kapodistrian University of Athens, Greece, alexandg@di.uoa.gr
Peter Han Joo Chong, Auckland University of Technology, New Zealand, peter.chong@aut.ac.nz
Andrea Tonello, University of Klagenfurt, Austria, Andrea.Tonello@aau.at
Yan Zhang, University of Oslo, Norway, yanzhang@ieee.org

Scope: The goal of this Special Issue is to advance and promote significant technological advances for Green Industrial Internet of Things (IoT). IIoT covers the broad domain of smart grid, smart manufacturing, intelligent transport and smart cities, and it refers to the combination of IoT technology with big data coming from intelligent processes in those domains. Energy-efficient transmission and processing of this data targets automation, efficiency, and productivity increase. In particular, smart grid can be considered as a typical IIoT example, since it comprises an industrial setting with a large number of IoT devices. Within Green Industrial IoT, smart grid communications uses state-of-the-art communication technologies towards ensuring the reduction of energy consumption, optimal operation of the smart grid, Advanced Metering Infrastructure (AMI), as well as coordination between the different smart grid components from generation to distribution and consumption. Contributions focusing on green smart grid communications, as well as other energy-efficient IIoT related research are welcome.

Topics of interest include but are not limited to:

- Energy efficient machine-to-machine communications and cooperative communications in IIoT.
- Advanced sensors and energy-efficient sensing techniques for IIoT.
- Green AI-enabled IIoT.
- Edge AI-driven computing solutions for green IIoT.
- AI-enabled blockchain for IIoT.
- Communications, computing, and storage issues for energy-efficient IIoT.
- Intelligent applications and services for energy-efficient IIoT including automation, location tracking for tools, as well as predictive maintenance for maximizing uptime.
- Energy-efficient Network Function Virtualization (NFV) for IIoT.
- Green wireline, optical, and wireless communications and networks.
- Green smart grid communications for HANs, NANs, FANs.
- Environmentally-aware designs of communications and networking devices and systems.
- Breakthrough technologies, protocols and network architectures for resource allocation and energy efficiency in massive IIoT.

- Energy-efficient transceiver hardware architectures for IIoT, including metasurface-made reflectors and transceivers.
- Energy harvesting solutions for IIoT.
- Communications, computing, and storage issues for battery-free IIoT.

Important Dates

Manuscript submission: March 1st, 2021
Notification of decisions (1st round): June 1st, 2021
Target publication date: September 1st, 2021

2) AI and 6G Convergence: an Energy-efficiency Perspective

IEEE Network Magazine
Contact Person: Melike Erol-Kantarci

Guest Editors:
Yan Zhang, University of Oslo, Norway. Email: yanzhang@ieee.org
Melike Erol-Kantarci, University of Ottawa, Canada. Email: melike.erolkantarci@uottawa.ca
Wen Sun, Northwestern Polytechnical University, China. Email: sunwen@nwpu.edu.cn
Yueyue Dai, Nanyang Technological University, Singapore. Email: yueyuedai@ieee.org
Jakob Hoydis, Nokia Bell Labs, France. Email: jakob.hoydis@nokia-bell-labs.com
M. Cenk Gursoy, Syracuse University, USA. Email: mcgursoy@syr.edu

Scope: Nowadays, researchers start to conceptualize 6G with the vision of connecting everything, transmission over mmWave and THz, and integrating sensing, communication, computation, and control functionalities. To support such network evolution, the deployment of small and even tiny cells is further densified overlaying with the existing macro cellular networks. The resultant technical and network complexity poses considerable pressure on energy efficiency and sustainability.

Artificial intelligence (AI) and machine learning techniques have great potentials to tackle the energy efficiency challenges in the future green 6G. AI methodologies, e.g. deep learning, federated learning and reinforcement learning, can be explored for the design and optimization of 6G architecture and network orchestration in a cost-efficient manner. By learning the complex network topology and the varying traffic pattern, AI could tame the network complexity for the design of 6G air interfaces. The diversified 6G enabling applications, such as smart cities, smart grid, autonomous vehicles, industrial automation, will make AI more far-reaching and essential in energy savings. On the other hand, AI and machine learning techniques usually demand high computation and communication. This may pose a significant challenge for the design and implementation of both machine learning algorithms and the future 6G systems in an energy-efficient way. One advantage is that 6G's Gb-level transmission rate possibly brings radical paradigm shift for AI towards ubiquitous AI, taking advantage of distributed machine learning and edge intelligence.

Thus, the convergence of AI and 6G will potentially overcome the defect of network complexity and find a path towards a sustainable ecosystem. However, limited research efforts have been made and few studies can be found regarding the convergence of 6G and AI from an energy-efficiency perspective. Challenges still remain untouched on how to tailor AI on edge nodes and systematically work for a green 6G and how the 6G networks will support AI. This special issue aims to bring together researchers from academia and industry to explore recent advances and state-of-the-art on the convergence of AI and 6G integrated design and optimization. Possible topics include but are not limited to:

AI empowered Green 6G:

- Green communication and networking for AI enabled 6G
- AI-based channel estimation and prediction in 6G
- AI empowered energy-efficient scheduling and resource management for 6G
- Energy-efficient AI enabled 6G network orchestration
- Green hardware, software and platforms for AI enabled 6G networks
- AI methods managing performance, scalability and complexity in 6G
- Hardware-aware communication in Green 6G
- New AI-based energy harvesting and management technologies
- AI-based self-optimizing transmitters and receivers for Green 6G
- AI driving green computation offloading
- Innovative AI and Green 6G-enabled usage applications
- Breakthrough theories, concepts and technologies for integrated AI and Green 6G
- New performance metrics and evaluation criteria for AI-enabled Green 6G

6G supporting green AI:

- Novel 6G architectures for green AI
- New concepts, models and frameworks for supporting green AI
- Distributed machine learning in 6G
- Communication-efficient machine learning in 6G, e.g., federated learning, deep reinforcement learning, deep learning
- Deep learning algorithm and operation supported by 6G
- New AI applications driven by 6G
- Security and privacy issues in AI-based green communication technologies
- AI methods for different hardware constraints in 6G
- Testbed, experiments and standards supporting green AI

Submission Guidelines: Manuscripts should conform to the standard format as indicated in the Information for Authors section of the Paper Submission Guidelines.

All manuscripts to be considered for publication must be submitted by the deadline through Manuscript Central. Select “April 2021: AI and 6G convergence: an energy-efficiency perspective” from the drop-down menu of Topic/Series titles.

Important Dates

Manuscript Submission Deadline: 15 April 2021
Initial Decision Notification: 30 June 2021
Revised Manuscript Due: 31 July 2021
Final Decision Notification: 31 August 2021
Final Manuscript Due: 30 September 2021
Publication Date: to be decided by EiC

3) Blockchain and Artificial Intelligence Empowered 5G and beyond Networks

Transactions on Emerging Telecommunications Technologies (ETT)
https://onlinelibrary.wiley.com/pb-assets/assets/21613915/CFP-ETT-Blockchain-AI-Empowered-5G-1595854163870.pdf
Contact Person: Nitin Gupta

Guest Editors:
Pradip Kumar Sharma, University of Aberdeen, UK, pradip.sharma@abdn.ac.uk
Uttam Ghosh, Vanderbilt University, USA, ghosh.uttam@ieee.org
Nitin Gupta, National Institute of Technology, Hamirpur, India, nitin.nith@ieee.org
Byungun Yoon, Dongguk University, Seoul, South Korea, postman3@dongguk.edu
Danda B. Rawat, Howard University, USA, danda.rawat@howard.edu
Wathiq Mansoor, University of Dubai, UAE, wmansoor@ud.ac.ae

Aim and Scope: 5th Generation and beyond (5G&B) wireless networks are expected to address unprecedented challenges to cope with a high degree of heterogeneity in terms of: services (mobile broadband, massive machine and mission critical communications, broad-/multicast services and vehicular communications); device classes (low-end sensors to high-end tablets); deployment types (macro and small cells); environments (low-density to ultra-dense urban); mobility levels (static to high-speed transport). Due to time-variant wireless channels, the diverse and stringent requirements of various emerging applications and unknown traffic systems, designing high-performance algorithms to make full use of the 5G&B technologies is quite a challenge that essentially demands novel approaches. Blockchain and AI are promising techniques for next-generation wireless networks. Blockchain can establish a secure and decentralized resource-sharing environment. AI can be explored to solve problems with uncertain, time-variant, and complex features. Both of these techniques have recently been a surge in interest. The integration of these two techniques can further enhance the performance of wireless networks.
The integration of blockchain and AI into next-generation wireless networks will enable secure network orchestration, flexible networking, and intelligent resource management. Original research contributions, tutorials and review papers are sought in areas including (but not limited to):
- Blockchain and AI based secure and intelligent architecture for 5G&B Networks.
- Blockchain and AI enabled IoT networks.
- Blockchain and AI enabled efficient spectrum sharing in 5G&B Networks
- The role of machine learning and blockchain for wireless security

● Blockchain and AI enabled data offloading and resource allocation in 5g&B networks.
● Blockchain and AI enabled content caching in 5g&B networks.
● Blockchain and AI enabled cyber security.
● Blockchain and AI enabled incentive design mechanism.
● Blockchain and AI enabled crowdsensing in 5G&B networks.
● Blockchain and AI enabled green 5G&B networks.

Submission Guidelines
The papers for rigorous and well-coordinated peer-review process will be collected through the https://mc.manuscriptcentral.com/ett. Papers within the scope of the issue will go immediately to the review process after submission. Please follow author's guidelines at https://onlinelibrary.wiley.com/page/journal/21613915/homepage/forauthors.html for preparing the manuscript.

Important Dates:
Manuscript submission deadline: March 31, 2021
Author notification: May 10, 2021
Final manuscript: July 30, 2021

4) Integrated access and backhaul for 5G

Frontiers in Communications and Networks
https://www.frontiersin.org/research-topics/14683/integrated-access-and-backhaul-for-5g#overview
Contact Person: Michele Polese

Guest editors:

- Behrooz Makki, Ericsson (Sweden)
- Francisco Rodrigo Porto Cavalcanti, Federal University of Ceara
- Faissal El Bouanani, Mohammed V University
- Marco Giordani, University of Padua
- Shuaishuai Guo, Shandong University
- Hosein Nikopour, Intel (United States)
- Michele Polese, Northeastern University

Scope: The number of devices requesting for wireless communications is growing exponentially. Network densification via the deployment of many base stations (BSs) of different types is one of the mechanisms that can be employed to satisfy the ever-increasing demand for bandwidth/capacity in wireless networks. However, deploying fiber to the small cells may be expensive and impractical when the number of small cells increases. For this reason, as well as because of the traffic jams and infrastructure displacements caused by fiber optic installation, millimeter wave (mmw)-based wireless backhaul is currently considered as the best alternative, providing (almost) the same rate as fiber optic with significantly less price and no digging. With this background, integrated access and backhaul (IAB) networks, where the operator can utilize part of the radio resources for wireless backhauling, has recently received considerable attention. The purpose of IAB is to replace

existing backhaul systems with flexible wireless backhaul using the existing 3GPP bands providing not only backhaul but also existing cellular services in the same node, to create more flexibility and reduce the implementation cost. For 5G NR, IAB is currently considered as a work item in 3GPP, and it is known as one of the main novelties of 5G.

This research topic is devoted to IAB networks. High quality technical papers reporting on original theoretical and experimental results on the performance of IAB networks are solicited. Of particular interest is the following, non exclusive, list of principal topics:

- Outdoor and indoor IAB-based communications.
- MIMO and efficient beamforming in IAB networks.
- Performance analysis of IAB networks in rural and metropolitan areas.
- Routing and topology adaptation in IAB networks.
- IAB with efficient access and backhaul resource allocation.
- Mobile IAB.
- Hybrid IAB, fiber and wireless optics for backhualing.
- IAB using Full duplex.
- Modeling and analysis of IAB networks using stochastic geometry.
- IAB versus fiber: cost and performance analysis.
- Experimental demonstrations, tests, and performance characterizations of IAB networks.
- Topology optimization of IAB networks.

The experts of the field are invited to submit their high-quality and original works for evaluation in the research topic. Both theoretical and simulation results are of interest. As IAB is a relatively new research topic, our objective is to address different research problems including topology optimization/adaptation, efficient resource allocation, as well as comparisons/combinations with the state-of-the-art backhauling methods. The focus of the research topic will be on millimetre wave-based communications, as the main point of interest in IAB networks, and to design IAB-specific transmission schemes in such high frequencies. A deep analysis of these problems may pave the way for further enhancements of IAB in industry.

All contributions to this Research Topic must be within the scope of the section and journal to which they are submitted, as defined in their mission statements. Frontiers reserves the right to guide an out-of-scope manuscript to a more suitable section or journal at any stage of peer review.

Important dates:
30 December 2020 – Manuscript submission deadline

5) Cybersecurity Management in the era of AI

Journal of Network and Systems Management
https://www.springer.com/journal/10922/updates/17974838
Contact Person: Moayad Aloqaily

Scope: Fifth Generation (5G) and beyond cellular networks have revolutionized the communication architecture, providing connectivity for people, things, data,

applications, transport, and cities in smart networked environments, at faster data rates, reduced latencies, and acceptable costs. The massive number and volume of heterogonous connected devices in such an open space, as well as the advancements in human computer interaction (HCI), artificial intelligence (AI), computing and communication technologies have led to an increasing number of personal and ubiquitous intelligent systems. Such a wide deployment of connected smart technologies introduces new challenges to system security and privacy, mainly for Cyber-physical Systems.

Cyberphysical is a term used for the integration of physical and computing domains as seen in many different areas such as medical, automotive, energy and other critical systems. Nowadays, cyberphysical systems are highly prone to cyber attacks and other forms of security threats at the communication layer due to system high connectivity characteristics. Some of today's emerging security threats are hard to detect using traditional security and privacy measures and techniques. Therefore, innovative security methods and privacy protection solutions are needed to provide more secure and robust privacy-preserving intelligent cyber-physical systems. To achieve this, **cybersecurity management systems** need to adapt to the changing cyber security threats autonomously with minimal user intervention to provide maximum protection against cyber attacks, intrusions, malware and various types of data breaches. AI has the potential to be leveraged in different aspects of cybersecurity and cyberthreat detection. It has received significant interest lately, where a plethora of AI and other intelligent learning solutions such as deep and reinforcement learning are now being integrated into cybersecurity systems to provide more secure and robust privacy-preserving solutions for personal and ubiquitous systems. Such integration will play a vital role in providing enhanced security for intelligent autonomous systems and enables organizations to make crucial changes to their security landscape.

This Special Issue invites theoretical and applied cutting edge research on standards, frameworks, models, and approaches on cybersecurity management in the era of AI and intelligent learning technologies. More specifically, we encourage original paper submissions on the most recent advances in security network and system management solutions using AI. The Special Issue also welcomes contributions from the industry perspective. Topics of interest include, but they are not limited to:

- Cybersecurity management in cyber-physical systems using AI;
- Security, privacy, and trust issues in cyber-physical systems;
- Blockchain-enabled cyber-physical systems;
- Utilizing AI technologies for cyber investigation and threat intelligence;
- The integration of AI and Blockchain for security critical infrastructures;
- Design, optimization and modeling of cybersecurity management systems;
- AI and ML for intrusion detection/prevention in sensitive environments;
- Advanced AI techniques to secure future Internet architectures/protocols;
- Trust management in cyber-physical networks and systems;
- Privacy management at edge of the network using machine learning;
- Trustworthy data collection and processing using intelligent learning techniques;

- Cybersecurity management of big data;
- AI-based cybersecurity techniques for IoT, IoE, IoH, and IoV;
- Cybersecurity of connected and autonomous vehicles;
- Cybersecurity and AI for digital twin;
- Management framework for intelligent secure networking.
- Cybersecurity management to protect organizations' sensitive data using intelligent learning techniques;
- AI-enabled digital investigation;

Guest Editors of the Special Issue:

- Moayad Aloqaily, xAnalytics Inc., Canada
- Salil Kanhere, UNSW Sydney, Australia
- Paolo Bellavista, DEIS, Università di Bologna, Italy
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Important Dates

Submission deadline: 21 December 2020