

18<sup>th</sup> IEEE International Conference on  
Distributed Computing in Sensor Systems

# DCOSS 2022

## PROGRAM



**May 30 to June 1, 2022**

**Los Angeles, USA**





## Message from the General Chair and Program Chairs

The Eighteenth Annual International Conference on Distributed Computing in Sensor Systems (DCOSS) is held in Marina Del Rey, LA, California on May 30 to June 1, 2022. In the last few years, we have witnessed significant growth in the use of distributed sensor systems in a number of application areas, ranging from smart cities to manufacturing and remote sensing. In order for smart sensor systems to truly become useful and pervasive, there is a need to address a number of research challenges, including the tight integration of sensing and machine intelligence, reliable and efficient networking, interoperability and scalability, dependable autonomy, interaction with humans, and important aspects of security, privacy and trust. DCOSS focuses on the above information processing issues for distributed sensor systems, covering models, algorithms, architectures, deployment tools, and novel applications.

DCOSS 2022 includes a high-quality technical program consisting of keynotes, research papers, and a poster session. Each submitted paper was reviewed by at least three experts in the field; most papers received four reviews. After in-depth online discussions, 20 papers were finally accepted, 13 full papers and 7 short papers. Specifically, the program covers important aspects of distributed computing in sensor systems, such as wireless network algorithms, IoT, localization, crowdsourcing, privacy, machine learning, data aggregation, and novel applications. Two keynote talks are delivered by Prof. Bhaskar Krishnamachari, University of Southern California, and Prof. Xinyu Zhang, University of California San Diego. In addition, DCOSS 2022 includes an interesting set of 9 focused Workshops. We believe the technical program will provide an exciting forum for researchers and practitioners to exchange cutting-edge ideas in distributed sensor systems.

The conference would not be successful without the hard work of many volunteers. We would like to thank the Publicity Chairs (Eirini Eleni Tsiropoulou, Lei Shu, Tamoghna Ojha, JeongGil Ko) for their efforts in attracting a good number of submissions around the world. We sincerely thank the Technical Program Committee members for their high-quality reviews. Also, we are grateful to the Chairs of the 9 specialized Workshops, the Poster Chairs (Karin Anna Hummel, Eirini Eleni Tsiropoulou), Workshop Chairs (Enrico Natalizio, Simone Silvestri), Proceedings Chair (Marios Angelopoulos), Registrations and Visa Letter Chair (Gabriel Filios), Sponsorships Chair (Zinon Zinonos), and Web Chair (Markantonatos Dimitrios Aimilianos) for their dedication and hard work toward the success of DCOSS 2022; also, Konstantinos Timpilis for compiling the program leaflet. We wish to also thank the various sponsors and supporters of DCOSS 2022.

Finally, we are grateful to the authors for submitting their fine work to DCOSS 2022 and all the participants for their attendance.

### General Chair

Sotiris Nikolettseas

### Program Co-Chairs

Carlo Alberto Boano, Dimitrios Koutsonikolas, Dong Wang

## Message from the Workshop Chairs

Workshops have historically constituted an essential part of the technical program of the annual International Conference on Distributed Computing in Sensor Systems (DCOSS). The 2022 edition makes no exception and includes a total of nine exciting workshops focusing on a wide spectrum of topics around the umbrella of distributed computing, such as industrial Internet of Things applications, real-life modeling in 5G/6G networks, urban computing, and wireless communications and networking in extreme environments. Among the nine workshops, the program also includes two workshops on recent hot topics, such as the study COVID-19 using sensor technology and distributed computing, and the test and evaluation of programmable networks.

Workshops' programs will include a mix of regular papers, invited talks, and keynote presentations to encourage the participation of attendees in active discussion. The accepted papers will appear in the DCOSS 2022 Proceedings as well as in IEEE Xplore.

We hope DCOSS attendees will enjoy and appreciate this year exciting and rich workshop program.

### The Workshops Chairs:

Enrico Natalizio,  
Technology Innovation Institute, UAE,  
[enrico.natalizio@loria.fr](mailto:enrico.natalizio@loria.fr)

Simone Silvestri,  
University of Kentucky, Lexington, USA,  
[silvestri@cs.uky.edu](mailto:silvestri@cs.uky.edu)

## Program at a glance

	Monday 30/5/2022		Tuesday 31/5/2022		Wednesday 1/6/2022	
	Workshops	Main Event	Workshops	Main Event	Workshops	
8:15 - 8:30	Registration Opens		Registration Opens			
8:30 - 9:00	Registration Opens		Registration Opens			
9:00 - 9:15	IoT14 2022 Wi-Droit 2022	Opening	Registration Opens			
9:15 - 9:30		Keynote 1 (Bhaskar Krishnamachari)	Keynote 2 (Xinyu Zhang)		REFRESH 2022 SmaCE 2022 ML-SWIN 2022 C19STD 2022 TEPN 2022	
9:30 - 10:00		Coffee break	Coffee break			
10:00 - 10:30		Session 1 Networking & testbeds	Session 4 Sensing, crowdsourcing, and localization			
10:30 - 11:00			Lunch			
11:00 - 11:30			Lunch			
11:30 - 12:00			Lunch			
12:00 - 12:30			Lunch			
12:30 - 13:00			Lunch			
13:00 - 13:30			Lunch			
13:30 - 14:00		Lunch				
14:00 - 14:30		Session 2 Human-centered sensing	Session 5 Application-oriented data processing			
14:30 - 15:00		Coffee break	Coffee break			
15:00 - 15:30		Session 3 Data aggregation and privacy	Session 6 Machine learning			
15:30 - 16:00			Closing & Awards			
16:00 - 16:30			Closing & Awards			
16:30 - 16:45			Closing & Awards			
16:45 - 17:00			Closing & Awards			
17:00 - 17:15			Closing & Awards			
17:15 - 17:30		Posters & Demos	Closing & Awards			
17:30 - 18:00			Closing & Awards			
18:00 - 18:30			Closing & Awards			
18:30 - 19:00		Welcome Reception	Conference Dinner			
19:00			Conference Dinner			

## Keynote Talks

### “Blockchain Technology and its Applications to the Internet of Things”

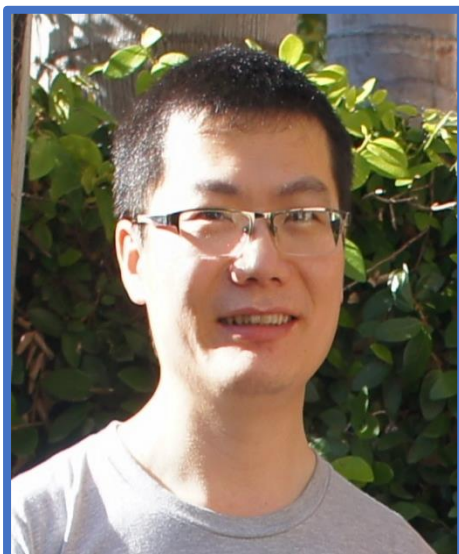
Monday, May 30, 2022



Prof. Bhaskar Krishnamachari  
USC Viterbi School of Engineering,  
Los Angeles

### “Passive Intelligent Surfaces for IoT Communication and Sensing”

Tuesday, May 31, 2022



Prof. Xinyu Zhang,  
University of San Diego, California

08.15	<b>Registration opens</b>
09.00-09.30	<b>Opening</b> (General Chair, Program Chairs)
09.30-10.30	<b>Keynote Talk “Blockchain Technology and its Applications to the Internet of Things”</b> <i>Prof. Bhaskar Krishnamachari, USC Viterbi School of Engineering, USA</i>
10.30-11.00	<b>Coffee Break</b>
11.00-12.30	<p><b>Session 1: Networking &amp; Testbeds</b> (Chair: Enrico Natalizio, Technology Innovation Institute)</p> <ul style="list-style-type: none"> <li>• <b>eAFH: Informed Exploration for Adaptive Frequency Hopping in Bluetooth Low Energy</b> <i>Valentin Poirot, Olaf Landsiedel (Kiel University, Germany and Chalmers University of Technology, Sweden)</i></li> <li>• <b>Grace: Low-Cost Time-Synchronized GPIO Tracing for IoT Testbeds</b> <i>Oliver Harms (Kiel University, Germany and Chalmers University of Technology, Sweden), Christian Richter (Kiel University, Germany), Olaf Landsiedel (Kiel University, Germany and Chalmers University of Technology, Sweden)</i></li> <li>• <b>Smart-Hop: Fast and Reliable Multi-hop Networking for LoRa (short paper)</b> <i>Absar-UI-Haque Ahmar (KU LEUVEN), Wouter Joosen (KU Leuven), Danny Hughes (imec-DistriNet, KU Leuven)</i></li> <li>• <b>A Virtual Sink-based Strategy for Reducing the Funneling Effect in IEEE 802.15.4 DSME Networks (short paper)</b> <i>Ivonne Andrea Mantilla González, Volker Turau (Hamburg University of Technology)</i></li> </ul>
12.30-14.00	<b>Lunch Break</b>
14.00-15.30	<p><b>Session 2: Human-centered sensing</b> (Chair: Ulf Kulau, TUHH)</p> <ul style="list-style-type: none"> <li>• <b>End-to-end Gesture Recognition framework for the identification of allergic rhinitis symptoms</b> <i>Pantelis Tzamalís, Andreas Bardoutsos, Dimitris Markantonatos, Christoforos Raptopoulos, Sotiris Nikolettseas (Computer Engineering and Informatics Department, University of Patras, Patras, Greece), Xenophon Aggelides (Allergy Dpt, 2nd Pediatric Clinic, University of Athens, Athens, Greece), Nikos Papadopoulos (Division of Infection, Immunity and Respiratory Medicine, University of Manchester, Manchester, UK &amp; Allergy Dpt, 2nd Pediatric Clinic, University of Athens, Athens, Greece)</i></li> <li>• <b>Semi-supervised Multi-source Domain Adaptation in Wearable Activity Recognition</b> <i>Avijoy Chakma, Abu Zaher Md Faridee (University of Maryland Baltimore County), Raghuveer Rao (Army Research Lab), Nirmalya Roy (University of Maryland Baltimore County)</i></li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Real-time Human Pose Estimation at the Edge for Gait Analysis at a Distance (short paper)</b> <i>Enrico Martini, Michele Boldo, Stefano Aldegheri, Francesco Lumpp, Mirco De Marchi, Nicola Vale, Mirko Filippetti, Nicola Smania, Matteo Bertucco, Alessandro Picelli, Nicola Bombieri (University of Verona)</i></li> <li>• <b>SELF-CARE: Selective Fusion with Context-Aware Low-Power Edge Computing for Stress Detection (short paper)</b> <i>Nafiul Rashid, Trier Mortlock, Mohammad Al Faruque (UC Irvine)</i></li> </ul>
15.30-16.00	<b>Coffee Break</b>
16.00-17.00	<p style="text-align: center;"><b>Session 3: Data aggregation and privacy</b> <i>(Chair: Nirmalya Roy, University of Maryland Baltimore County)</i></p> <ul style="list-style-type: none"> <li>• <b>Publishing Asynchronous Event Times with Pufferfish Privacy</b> <i>Jiaxin Ding (Shanghai Jiao Tong university), Abhirup Ghosh (University of Cambridge), Jie Gao (Rutgers University), Rik Sarkar (University of Edinburgh)</i></li> <li>• <b>Trade off between Accuracy and Message Complexity for Approximate Data Aggregation (short paper)</b> <i>Saptadi Nugroho, Alexander Weinmann, Christian Schindelhauer (Albert-Ludwigs-Universität Freiburg)</i></li> <li>• <b>Low-Power Distinct Sum for Wireless Sensor Networks (short paper)</b> <i>Ebram William, Mun Choon Chan (School of Computing, National University of Singapore)</i></li> </ul>
17.00-18.30	<p style="text-align: center;"><b>Posters &amp; Demos</b></p> <ul style="list-style-type: none"> <li>• <b>IoT-based Framework for Low-Cost and Light-Weight Vehicle Detection (poster)</b> <i>Chandra Shekhar and Sudipta Saha (IIT Bhubaneswar)</i></li> <li>• <b>A Software-Defined Underwater Visible Light Communication Testbed (poster)</b> <i>Clifford Boakye-Mensah, Vann Dontez, Javionn Ramsey and Hongzhi Guo (Norfolk State University, Norfolk, USA)</i></li> <li>• <b>BCG Measurement by differential Sensing in Real-Time (demo)</b> <i>Ulf Kulau (Hamburg University of Technology, Germany), Jochen Rust (DSI Aerospace Technologie GmbH, Bremen, Germany) and Urs-Vito Albrecht (Department of Digital Medicine, Medical Faculty OWL, Bielefeld University Bielefeld, Germany)</i></li> <li>• <b>Divide, Conquer and Merge for Internet-of-Things (poster)</b> <i>Jagnyashini Debadarshini and Sudipta Saha (IIT Bhubaneswar)</i></li> <li>• <b>SmartTwins: Secure and Auditable DLT-based Digital Twins for the WoT (poster)</b> <i>Iakovos Pittaras and George Polyzos (Department of Informatics, School of Information Sciences and Technology, Athens University of Economics and Business, Greece)</i></li> </ul>
18.30	<b>Welcome Reception</b>

Note: Regular papers have 30 minutes (23+7 Q&A) in the program, while short papers have 15 minutes (10+5 Q&A).



08.30	Registration opens
09.30-10.30	<p><b>Keynote Talk “Passive Intelligent Surfaces for IoT Communication and Sensing”</b>  <i>Prof. Xinyu Zhang, University of California, San Diego, USA</i></p>
10.30-11.00	Coffee Break
11.00-12.30	<p><b>Session 4: Sensing, crowdsourcing, and localization</b>  <i>(Chair: Marios Angelopoulos, Bournemouth University)</i></p> <ul style="list-style-type: none"> <li>• <b>A Differential BCG Sensor System for Long Term Health Monitoring Experiment on the ISS</b>  <i>Ulf Kulau (Hamburg University of Technology), Jochen Rust (DSI Aerospace Technologie GmbH), Daniel Szafranski (TU Braunschweig), Martin Drobczyk (German Aerospace Center (DLR)), Urs-Vito Albrecht (Medical Faculty OWL, Bielefeld University)</i></li> <li>• <b>SoFIT: Self-Orienting Camera Network for Floor Mapping and Indoor Tracking</b>  <i>Yanchen Liu, Jingping Nie, Stephen Xia, Jiajing Sun, Peter Wei, Xiaofan Jiang (Columbia University)</i></li> <li>• <b>Network Economics-based Crowdsourcing in UAV-assisted Smart Cities Environments</b>  <i>Fisayo Sangoleye, Md Sahabul Hossain, Eirini Eleni Tsiropoulou, Jim Plusquellic (University of New Mexico)</i></li> </ul>
12.30-14.00	Lunch Break
14.00-15.30	<p><b>Session 5: Application-oriented data processing</b>  <i>(Chair: Charalampos Orfanidis, Technical University of Denmark)</i></p> <ul style="list-style-type: none"> <li>• <b>Cost-aware Inference of Bovine Respiratory Disease in Calves using Precision Livestock Technology</b>  <i>Enrico Casella (University of Kentucky), M. C. Cantor (University of Guelph), Simone Silvestri (University of Kentucky), D. L. Renaud (University of Guelph), J. H. C. Costa (University of Kentucky)</i></li> <li>• <b>Drone-based Optimal and Heuristic Orienteering Algorithms Towards Bug Detection in Orchards</b>  <i>Francesco Betti Sorbelli (University of Perugia), Federico Coro', Sajal K. Das (Missouri University of Science and Technology), Lorenzo Palazzetti (Universita degli Studi di Firenze), Cristina M. Pinotti (University of Perugia)</i></li> <li>• <b>FrameHopper: Selective Processing of Video Frames in Detection-driven Real-Time Video Analytics</b>  <i>Md Adnan Arefeen, Sumaiya Tabassum Nimi, Md Yusuf Sarwar Uddin (University of Missouri-Kansas City)</i></li> </ul>
15.30-16.00	Coffee Break

16.00-17.15	<p style="text-align: center;"><b>Session 6: Machine learning</b> (Chair: Eirini Eleni Tsiropoulou, University of New Mexico)</p> <ul style="list-style-type: none"> <li>• <b>Hardware-aware Partitioning of Convolutional Neural Network Inference for Embedded AI Applications</b> <i>Fabian Kreß, Julian Hofer, Tim Hotfilter, Iris Walter, Vladimir Sidorenko, Tanja Harbaum, Jürgen Becker (Karlsruhe Institute of Technology (KIT))</i></li> <li>• <b>Efficient Localness Transformer for Smart Sensor-Based Energy Disaggregation</b> <i>Zhenrui Yue, Huimin Zeng, Ziyi Kou, Lanyu Shang (University of Illinois at Urbana Champaign); Dong Wang (University of Illinois at Urbana-Champaign)</i></li> <li>• <b>Taking ROCKET on an efficiency mission: Multivariate time series classification with LightWaves (short paper)</b> <i>Leonardos Pantiskas, Kees Verstoep, Mark Hoogendoorn, Henri E. Bal (Vrije Universiteit Amsterdam)</i></li> </ul>
17.15-17.30	<b>Closing &amp; Awards</b>
19.00	<b>Conference Dinner</b>

Note: Regular papers have 30 minutes (23+7 Q&A) in the program, while short papers have 15 minutes (10+5 Q&A).

# Workshops Schedule

## Monday, May 30, 2022

- **IoT14 (4th International Workshop on IoT Applications and Industry 4.0)**  
*Chairs: Thomas Lagkas, Panagiotis Sarigiannidis, John Soldatos*
- **WiDroit (4th International Workshop on Wireless Sensors and Drones in Internet of Things)**  
*Chairs: Francesco Betti Sorbelli, Walid Saad, Lu Wang*

## Tuesday, May 31, 2022

- **UrbCom (4th International Workshop on Urban Computing)** (will be held on-line)  
*Chairs: Leandro A. Villas, Thiago H. Silva, Daniel L. Guidoni*
- **WCNEE (6th IEEE International Workshop on Wireless Communications and Networking in Extreme Environments)**  
*Chairs: Sasitharan Balasubramaniam, Emrecan Demirors, Zhangyu Guan, George Sklivanitis*

## Wednesday, June 1, 2022

- **REFRESH (3rd International Workshop on Real-life modeling in 5G/6G networks)**  
*Chairs: Eirini Eleni Tsiropoulou, Symeon Papavassiliou*
- **SmaCE (4th IEEE International Workshop on Smart Circular Economy)**  
*Chairs: Marios Angelopoulos, Giorgos Demetriou, Sotiris Ioannidis, Vasilis Katos, Sotiris Nikolettseas, David Langley*
- **ML-SWIN (2nd DCOSS Workshop on Machine Learning for Smart Wireless Networks)**  
*Chairs: Filippo Malandra, Nick Mastronarde, Shaofeng Zou*
- **C19STD (Novel Methods to Study COVID-19 Using Sensor Technology and Distributed Computing 2022)**  
*Chairs: Dominique Duncan*
- **TEPN (International Workshop on Test and Evaluation of Programmable Networks)**  
*Chairs: Fatemeh Afghah, Kaungching Wang, Stephen Schwab, Srivatsan Ravi*

Note. The REFRESH, SmaCE, ML-SWIN and C19STD Workshops will be held as a global event titled: "Emerging Topics in Sensor Systems"

## IoTI4 (4th International Workshop on IoT Applications and Industry 4.0)

Monday, 30 May

09.00-10.30	<b>DCOSS Keynote Speech</b>
10.30-11.00	<b>Coffee Break</b>
11:00-12:30	<p><b>Session 1: IoTI4 (IoT Applications)</b></p> <ul style="list-style-type: none"> <li>• <b>Towards Industry 5.0 and Digital Circular Economy: Current Research and Application Trends</b> <i>Konstantinos Voulgaridis, Thomas Lagkas and Panagiotis Sarigiannidis</i></li> <li>• <b>IoT Benefits for Livestock Farmers</b> <i>Tim Bell, Todd Steinbrueck, Roger Chamberlain and Brian Rieck</i></li> <li>• <b>Data-driven soft sensing towards quality monitoring of industrial pasteurization processes</b> <i>Gabriel Filios, Andreas Kyriakopoulos, Stavros Livanios, Fotis Manolopoulos, Sotiris Nikolettseas, Stefanos H. Panagiotou and Paul Spirakis</i></li> <li>• <b>Detecting the Arrival of an Update at Mostly Sleeping Cyber-Physical IoT Nodes</b> <i>Roberth Tollefsen and Otto J. Anshus</i></li> <li>• <b>Attacking and Defending DNP3 ICS/SCADA Systems</b> <i>Vasiliki Kelli, Panagiotis Radoglou-Grammatikis, Achilleas Sesis, Thomas Lagkas, Eleftherios Fountoukidis, Emmanouil Kafetzakis, Ioannis Giannoulakis and Panagiotis Sarigiannidis</i></li> </ul>
12.30-14.00	<b>Lunch Break</b>
14.00-15.30	<p><b>Session 2: IoTI4 (IoT Networking)</b></p> <ul style="list-style-type: none"> <li>• <b>Active Connectivity Fundamentals for TSCH Networks of Mobile Robots</b> <i>Charalampos Orfanidis, Paul Pop and Xenofon Fafoutis</i></li> <li>• <b>Design and Deployment Experiences of a Versatile Industrial WSN and Testbed</b> <i>Jan Schlichter and Lars Wolf</i></li> <li>• <b>Utilizing Carriers for the Energy Node Placement Algorithm in WSNs and IoT Networks</b> <i>Natalie Temene, Charalampos Sergiou, Chryssis Georgiou and Vasos Vassiliou</i></li> </ul>
15.30-16.00	<b>Coffee Break</b>
16.00-16.45	<p><b>Session 3: IoTI4 (AI/ML in IoT)</b></p> <ul style="list-style-type: none"> <li>• <b>AI Driven IoT Web-based Application for Automatic Segmentation and Reconstruction of Abdominal Organs from Medical Images</b> <i>Barbara Villarini and Hykoush Asaturyan</i></li> <li>• <b>Modelling Virtual Sensors for Indoor Environments with Machine Learning</b> <i>Dawid Polanski and Constantinos Marios Angelopoulos</i></li> </ul>

# WiDroit (4th International Workshop on Wireless Sensors and Drones in Internet of Things)

Monday, 30 May

09.00-10.30	DCOSS Keynote Speech
10.30-11.00	Coffee Break
11.00-12.30	<p style="text-align: center;"><b>Session 1</b></p> <ul style="list-style-type: none"> <li>• <b>An Open-Source Simulator for Multiple UAV Path Planning</b> <i>Kyle Thompson, Dominik Walter, Roman Maksymiuk, Roey Mevorach, Gaurav Joshi and Franz J. Kurfess UavSim</i></li> <li>• <b>Spradling Modeling Sub-Team Formations for Heterogeneous Multi-Robot Systems Using Colored Petri-Net Semantics</b> <i>Mark Allison and Matthew</i></li> <li>• <b>A Software Framework for Swarm Management in Multi-Radio Robotic Networks</b> <i>Leonardo Montecchiari, Dario Albani, Angelo Trotta, Marco Di Felice and Enrico Natalizio Uhura</i></li> </ul>
12.30-14.00	Lunch Break
14.00-15.30	<p style="text-align: center;"><b>Session 2</b></p> <ul style="list-style-type: none"> <li>• <b>3D Object Detection for Aerial Platforms via Edge Computing: An Experimental Evaluation</b> <i>Alexander Lianides, Isaac Chan, Mohammed Ismail, Ian Harshbarger, Marco Levorato, Davide Callegaro and Sharon Contreras</i></li> <li>• <b>Heterogeneous Ground-Air Autonomous Vehicle Networking in Austere Environments: Practical Implementation of a Mesh Network in the DARPA Subterranean Challenge</b> <i>Steve McGuire and Harel Biggie</i></li> <li>• <b>OptiMaP: swarm-powered Optimized 3D Mapping Pipeline for emergency response operations</b> <i>Leandro R. Costa, Daniel Aloise, Luca G. Gianoli and Andrea Lodi</i></li> </ul>
15.30-16.00	Coffee Break
16.00-16.30	<p style="text-align: center;"><b>Session 3</b></p> <ul style="list-style-type: none"> <li>• <b>GADAN: Generative Adversarial Domain Adaptation Network For Debris Detection Using Drone</b> <i>Masud Ahmed, Naima Khan, Pretom Roy Ovi, Nirmalya Roy, Sanjay Purushotham, Aryya Gangopadhyay and Suyu You</i></li> </ul>

## UrbCom (4th International Workshop on Urban Computing)

(On-line workshop)

### Session 1: Smart Cities and Intelligent Transportation System

- **Mechanism for Optimizing Resource Allocation in VANETs Based on the PSO Bio-inspired Algorithm**  
*Douglas Dias Lieira, Matheus Sanches Quessada, Andre Luis Cristiani, Rodolfo Ipolito Meneguette and Robson De Grande*
- **Keeping Information Alive: Hovering Information and Floating Content Paradigms for Vehicular Networks.**  
*Lachlan Johnston and Richard Pazzi*
- **Towards Bat Bio-inspired Decision-making for Task Allocation in Vehicular Fogs.**  
*Matheus Quessada, Douglas Lieira, Robson De Grande and Rodolfo Meneguette*

### Break

### Session 2: Urban Data Modeling and Mining

- **Cross-Cultural Study of a Location-Based Social Network Incentive Mechanism**  
*William Souza, Vinícius Mota and Thiago Silva*
- **Analysis of Pandemic Atmosphere Pollution Data Using Virtual Sensors in São Paulo City**  
*Gabriel Campos, Felipe Cunha and Leandro Villas*
- **Do Location-Based Social Networks Recommender Systems Works on TripAdvisor data? A Point-Of-Interest Recommendation Analysis**  
*Lucas Felix, Washigton Cunha, Antônio Alves, Carlos Magno Geraldo Barbosa, Vinícius Vieira, Carolina Xavier and Pedro Vaz-de-Melo*

## WCNEE (6th IEEE International Workshop on Wireless Communications and Networking in Extreme Environments)

Tuesday, 31 May

09.30-10.30	<b>DCOSS Keynote Speech</b>
10.30-11.00	<b>Coffee Break</b>
11.30-12.30	<p><b>Keynote Session</b> (Chair: Sasistharan Balasubramaniam)</p> <p><i>Professor Urbashi Mitra, Gordon S. Marshall Chair in Engineering, University of Southern California, USA</i></p>
12:30-14:00	<b>Lunch Break</b>
14:00-15:40	<p style="text-align: center;"><b>Session 1</b> (Chair: Emreacan Demirors)</p> <ul style="list-style-type: none"> <li>• <b>A Middleware for Digital Twin-Enabled Flying Network Simulations Using UBSim and UB-ANC</b> <i>Sabarish Krishna Moorthy, Ankush Harindranath, Maxwell E. McManus, Zhangyu Guan, Nicholas Mastronarde (University at Buffalo, The State University of New York, USA), Elizabeth Serena Bentley, Michael Medley (U.S. Air Force Research Laboratory, USA)</i></li> <li>• <b>Intelligent Routing Framework Based on D* Lite for Resilient Aerial Networks</b> <i>Talip Tolga Sari, Gokhan Secinti (Istanbul Technical University, Turkey)</i></li> <li>• <b>SynchroSim: An Integrated Co-Simulation Middleware for Heterogeneous Multi-Robot Systems</b> <i>Emon Dey, Jumman Hossain, Nirmalya Roy, (University of Maryland Baltimore County, USA), Carl Busart (Army Research Laboratory, USA)</i></li> <li>• <b>Digital Twin Driven Blockchain Based Reliable and Efficient 6G Edge Network</b> <i>Mehmet Ozgen Ozdogan (Istanbul Technical University &amp; Aselsan Inc., Turkey), Levent Carkacioglu (Aselsan Inc., Turkey), Berk Canberk (Istanbul Technical University, Turkey)</i></li> </ul>
15.40-16.00	<b>Coffee Break</b>
16.00-17.15	<p style="text-align: center;"><b>Session 2</b> (Chair: Zhangyu Guan)</p> <ul style="list-style-type: none"> <li>• <b>5G Space Communications Lab: Reaching New Heights</b> <i>Oltjon Kodheli, Jorge Querol, Abdelrahman Astro, Sofia Coloma, Loveneesh Rana, Zhanna Bokal, Sumit Kumar, Carol Martinez Luna, Jan Thoemel, Juan Duncan, Miguel Olivares Mendez, Symeon Chatzinotas, Bjorn Ottersten (University of Luxembourg, Luxembourg)</i></li> <li>• <b>Multi-Physics Analysis of Electromagnetic Wave Propagation and Photothermal Heating in Human Tissues at Terahertz and Optical Frequencies</b> <i>Innem V.A.K. Reddy, (University at Buffalo &amp; King Abdullah University of Science and Technology, USA), Josep Jornet (Northeastern University, USA)</i></li> <li>• <b>RSS-Based Localization Using a Single Robot in Complex Environments</b> <i>Hongzhi Guo, Irvin Quartey, Cameron Green (Norfolk State University, USA)</i></li> </ul>
17.15-17.30	<b>WCNEE'22 Closing Session &amp; Awards</b>

## Emerging Topics in Sensor Systems

(Joint event of the REFRESH, SmaCE, ML-SWIN and C19STD Workshops)

09.15-10.30	<p style="text-align: center;"><b>Session 1</b></p> <ul style="list-style-type: none"> <li>• <b>GNN-based End-to-end Delay Prediction in Software Defined Networking.</b> <i>Zhun Ge, Jiacheng Hou and Amiya Nayak</i></li> <li>• <b>Network Economics-enabled Edge Computing in UAV-assisted Public Safety Systems.</b> <i>Md Sahabul Hossain, Fisayo Sangoleye, Oshan Poudyal and Eirini Eleni Tsiropoulou</i></li> <li>• <b>Trading in Collaborative Mobile Edge Computing Networks: A Contract Theory-based Auction Model.</b> <i>Maria Diamanti and Symeon Papavassiliou</i></li> <li>• <b>Elaborating on Sub-Space Modeling as an Enrollment Solution for Strong PUF.</b> <i>Amir Ali-pour, David Hely, Vincent Beroulle, and Giorgio Di Natale</i></li> </ul>
10.30-11.00	<p style="text-align: center;"><b>Coffee Break</b></p>
11.00-12.30	<p style="text-align: center;"><b>Session 2</b></p> <ul style="list-style-type: none"> <li>• <b>AI Powered COVID-19 Detection System using Non-Contact Sensing Technology and Deep Learning Techniques.</b> <i>S.V. Kogilavani, Sathishkumar V E, Malliga Subramanian</i></li> <li>• <b>Understanding the United States' 50 most populous counties' COVID-19 healthcare outcomes through multiple regression across the Delta variant and Omicron variant times of dominance.</b> <i>Alexander Bruckhaus, Yujia Zhang, Aidin Abedi, Sana Salehi and Dominique Duncan</i></li> <li>• <b>A Lightweight Depthwise Separable Convolution Neural Network for Screening Covid-19 Infection from Chest CT and X-ray Images.</b> <i>Malliga Subramanian, Sathishkumar V E, C. Ramya, S.V. Kogilavani, Deepti R</i></li> <li>• <b>COVID-19 Vaccination Dynamics in the US: A Follow-up Study. (Abstract)</b> <i>Sana Salehi, Aidin Abedi, Alexander Bruckhaus and Dominique Duncan</i></li> <li>• <b>Evaluation of Transfer Learning Models on Detection of COVID-19 Using Multi-Modal Data. (Abstract)</b> <i>Alexis Bennett, Rachael Garner, Marianna La Rocca, Ali Valehi and Dominique Duncan</i></li> </ul>
12.30-14.00	<p style="text-align: center;"><b>Lunch</b></p>



# TEPN (International Workshop on Test and Evaluation of Programmable Networks)

09:00-09:30	<b>Keynote 1 - "Idaho National Laboratory (INL) Wireless Test Beds for Over the Air (OTA) experimentation"</b> <i>Dr. Arupjyoti (Arup) Bhuyan</i>
09:30-10:20	<b>Session 1</b> <ul style="list-style-type: none"><li>• <b>Prototyping a Fine-Grained QoS Framework for 5G and NextG Networks using POWDER (9:30-9:55)</b> <i>Udhaya Kumar Dayalan, Rostand A. K. Fezeu, Timothy J. Salo and Zhi-Li Zhang</i></li><li>• <b>UHD-DPDK Performance Analysis for Advanced Software Radio Communications (9:55-10:20)</b> <i>Daniel Brennan and Vuk Marojevic</i></li></ul>
10:30-11:00	<b>Coffee break</b>
11:00-11:30	<b>Keynote 2 - "Measure twice, cut once"</b> <i>Dr. Jonathan M. Smith, University of Pennsylvania</i>
11:30-12:30	<b>Session 2</b> <ul style="list-style-type: none"><li>• <b>Enabling P4 Hands-on Training in an Academic Cloud (11:30-11:50)</b> <i>Jose Gomez, Elie F. Kfoury and Jorge Crichigno</i></li><li>• <b>Software Radio with MATLAB Toolbox for 5G NR Waveform Generation (11:50-12:10)</b> <i>Walaa Alqwider, Ajaya Dahal and Vuk Marojevic</i></li><li>• <b>WIP: Experiment Planning for Heterogeneous Programmable Networks (12:10-12:30)</b> <i>Nik Sultana</i></li></ul>
12:30-14:00	<b>Lunch</b>





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