

20th International Conference on
Distributed Computing in Smart Systems
and the Internet of Things

DCOSS-IoT 2024

PROGRAM



April 29 – May 1, 2024

Abu Dhabi, United Arab Emirates



Message from Program Chairs and the Steering Committee Chair

The Twentieth Annual International Conference on Distributed Computing in Smart Systems and the Internet of Things (DCOSS-IoT) is held in Abu Dhabi, United Arab Emirates on April 29 – May 1, 2024. 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 has been focusing on the above information processing issues for distributed sensor systems, covering models, algorithms, architectures, deployment tools, and novel applications. In 2023, DCOSS has broadened its scope beyond sensor networks to smart systems in general as well as the Internet of Things (IoT), and became “Distributed Computing in Smart Systems and the Internet of Things” (DCOSS-IoT). This choice has substantially raised interest in the conference, as witnessed by the remarkable increase in submission for the edition 2024.

The main event of DCOSS-IoT 2024 includes a high-quality technical program consisting of keynotes, research papers, and a poster session. We received 100 full paper submissions. Each submitted paper was reviewed by at least three experts in the field; most papers received four reviews or five. After in-depth online discussions, we accepted 27 full papers and 10 short papers. In addition, 9 poster papers were accepted from an open call. Specifically, the program covers important aspects of distributed computing in smart systems and IoT, such as machine learning and artificial intelligence, novel applications and deployments, scalability and resource allocation, communications and security, drones and autonomous systems, and RF sensing. Three keynote talks are delivered by Prof. Ian F. Akyildiz, International Telecommunication Union, Prof. Carla Fabiana Chiasserini, Politecnico di Torino, Italy, and Dr. Najwa Aaraj, Technology Innovation Institute, UAE. The program is enriched by a set of 9 interesting workshops, which represent a very important part of the event, as they contribute increasing the scientific quality of the venue by focusing on specific aspects and perspectives of distributed systems and Internet of Things. 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. First, we wish to particularly thank the Local Chairs (Jennifer Simonjan, Andrew Chopra, Michael Baddeley) for taking care of all the details to make all the participants feel at home during the conference in Abu Dhabi. Also, we thank the Publicity Chairs (Debashisha Mishra, Jana Koteich, Aris Leivadreas, Bingying Wang) for their awesome job in attracting a record number of submissions from all over 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 (Dimitrios Zormpas, Igor Zhilin, Kevin Jiokeng), Workshop Chairs (Prasanna Raut, Eirini Eleni Tsiropoulou), Proceedings Chair (Marios Angelopoulos), Registrations Chair (Gabriel Filios), and Web Chair (Stefanos Panagiotou) for their dedication and hard work toward the success of DCOSS-IoT 2024. We wish to also thank the Technology Innovation Institute (TII) for sponsoring and supporting DCOSS-IoT 2024.

Finally, we are grateful to the authors for submitting their fine work to DCOSS-IoT 2024 and all the participants for their attendance.

Program Co-Chairs

Enrico Natalizio, Tommaso Melodia, Nathalie Mitton

Steering Committee Chair

Sotiris Nikolettseas

Message from the Workshop Chairs

<https://dcoss.org/workshops/>

Workshops have consistently played a vital role in the technical agenda of the annual International Conference on Distributed Computing in Sensor Systems (DCOSS-IoT). The 2024 edition follows this tradition with nine compelling workshops covering a diverse set of topics within the area of distributed computing. These workshops include topics such as industrial Internet of Things applications, UAV and robot networks, real-life modeling in 5G/6G networks, urban computing, artificial intelligence in distributed computing, and wireless communications and networking in extreme environments. Each workshop's agenda will feature a blend of regular papers, invited talks, and keynote presentations, fostering active engagement and discussion among participants. Accepted papers will be published in the DCOSS-IoT 2024 Proceedings and IEEE Xplore. We anticipate that attendees of DCOSS will find immense value in this year's stimulating and comprehensive workshop program.

The Workshops Chairs:

Prasanna Raut, Technology Innovation Institute – TII, UAE, prasanna.raut@tii.ae

Eirini Eleni Tsiropoulou, University of New Mexico, USA, eirini@unm.edu

List of Workshops and key organizers:

Wi-DroIT 2024 (6th International Workshop on Wireless Sensors and Drones in Internet of Things)

<https://widroit2024.github.io/>

Evgenii Vinogradov: Technology Innovation Institute, United Arab Emirates

Federico Corò: University of Padova, Italy

Nirnay Ghosh: Indian Institute of Engineering Science and Technology Shibpur, India

IoT15 2024 (6th International Workshop on IoT Applications and Industry 5.0)

[http://iotti5-2024.cs.ihu.gr/](http://iоти5-2024.cs.ihu.gr/)

Thomas Lagkas, International Hellenic University, Greece

Panagiotis Sarigiannidis, University of Western Macedonia, Greece

John Soldatos, Netcompany-Intrasoft, Luxemburg

SmaCE 2024 (6th IEEE International Workshop on Workshop on Smart Circular Economy)

<https://sites.google.com/view/smace2024>

Giorgos Demetriou, École des Ponts Business School, France

Vasileios Gerogiannis, University of Thessaly, Greece

Vasilis Katos, Bournemouth University, UK

David Langley, University of Groningen & TNO, the Netherlands

Sotiris Nikolettseas, University of Patras, Greece

ISIoT 2024 (6th International Workshop on Intelligent Systems for the Internet of Things)

<https://sites.google.com/view/isiot2024>

Michael Georgiades, Neapolis University Pafos.

Savvas Chatzichristofis, Neapolis University Pafos.

Vasos Vassiliou, University of Cyprus and CYENS Research Center.

UrbCom 2024 (6th International Workshop on Urban Computing)

<https://sites.google.com/view/urbcom2024>

Leandro A. Villas, University of Campinas / Brazil

Thiago H. Silva, Federal University of Technology / Brazil

Daniel L. Guidoni, Federal University of Ouro Preto / Brazil

Allan M. de Souza, University of Campinas/ Brazil

SecRIoT 2024 (5th International Workshop on Security and Reliability of IoT)

<https://sites.google.com/view/secriot2024>

Vasileios Vlachos (University of Thessaly, Greece)

Leandros Maglaras (Napier University, Scotland)

Athanasios Kakarountas (University of Thessaly, Greece)

Mohamed Amine Ferrag (Technology Innovation Institute, UAE)

DISCOLI 2024 (3rd International Workshop on Distributed Collective Intelligence)

<https://discoli-workshop.github.io/2024/>

Gianluca Aguzzi (Alma Mater Studiorum - Università di Bologna, Italy)

Lukas Esterle (Aarhus University, Denmark)

Pietro Manzoni (Universitat Politècnica de València, Spain)

Claudio Savaglio (Università della Calabria, Italy)

LS-NoT 2024 (International Workshop on Long and Short Range Wireless Technologies Applied to IoT for Networks of Tomorrow)

<https://ls-not-ws.github.io/LS-NoT2024/>

Jana Koteich : Inria, France

Nina Santi : Inria, France

Damien Wohwe Sambo : Inria, France

IoNT 2024 (International Workshop on Communication Aspects for Internet of Nano Things)

<https://lokendrachouhan22.github.io/DOCSIoNT-/>

Prabhat K Sharma, VNIT, Nagpur, India

Dadi Bi, King's College London

Lokendra Chouhan, IIIT Sricity, India

Program at a glance

	Monday April 29, 2024	Tuesday April 30, 2024	Wednesday May 1, 2024	
8:30-9:00	Registration	Registration	Registration	
9:00-9:30	Welcome & Introduction	Keynote 2	Keynote 3	
9:30-10:00	Keynote 1 Ian F. Akyildiz	Carla Fabiana Chiasserini	Najwa Aaraj	
10:00-10:30	Coffee break	Coffee break	Coffee break	
10:30-11:00	Coffee break	Session 4: Security, Dependability and Privacy Session Chair: Michael Baddeley	Short Paper Session Session Chair: Lorenzo Bellone	
11:00-11:30	Session 1: AI/ML for IoT Session Chair: Dimitrios Zormpas			Poster Session
11:30-12:00				
12:00-12:30				
12:30-13:00	Lunch	Lunch	Lunch	
13:00-14:00	Lunch	Lunch	Lunch	
14:00-14:30	Session 2: Best Paper Candidates Session Chair: Tommaso Melodia	Session 5: Communications and Optimization Session Chair: Evgenii Vinogradov	Free time	
14:30-15:00				
15:00-15:30	Coffee break	Coffee break	Bus leaving from W Hotel (15:00) Desert Safari Experience incl. dinner (16:00-22:00)	
15:30-16:00	Session 3: IoT Applications Session Chair: Naghmeh Moradpoor	Session 6: Edge & Cloud Session Chair: Debashisha Mishra		
16:00-16:30				
16:30-17:00				
17:00-17:30	Free time	Free time		
17:30-18:00	Coffee break	Free time		
18:00-18:30	Oral Poster Presentations Chair: Igor Zhilin	Bus leaving from W Hotel (18:00) Visit of Sheikh Zayed Grand Mosque (18:45-20:00)		
18:30-19:00	Welcome Reception at Wet Deck of W Hotel (19:30-20:30)	Banquet at Conrad Etihad Towers (21:00-23:00)		
Post conference				

Keynote Talks

“MulSemedia Sensor Networks: A New Frontier in Research”

Monday, April 29, 2024

Prof. Ian F. Akyildiz, International Telecommunication Union



“The Price of Intelligence in Internet-of-Everything Systems”

Tuesday, April 30, 2024

Prof. Carla Fabiana Chiasserini, Politecnico di Torino, Italy



“Cryptographic Frameworks for IoT devices in light of AI and Post Quantum technologies”

Wednesday, May 1, 2024

Dr. Najwa Aaraj, Technology Innovation Institute, UAE



08.30-09.00	Registration opens
09.00-09.30	Welcome and Introduction
09.30-10.30	Keynote Talk: “MulSemedia Sensor Networks: A New Frontier in Research” <i>Prof. Ian F. Akyildiz, International Telecommunication Union</i>
10.30-11.00	Coffee Break
11.00-13.05	<p>Session I: AI/ML for Distributed Systems and IoT <i>(Chair: Dimitrios Zorbas, Nazarbayev University, Kazakhstan)</i></p> <ul style="list-style-type: none"> • Adversarial Training on Limited-Resource Devices Through Asymmetric Disturbances <i>Mohammed Tariq Rajhi (Florida International University, USA)</i> • Traffic Data Augmentation Using GANs for ITS <i>Abdul Hamid Dabboussi and Manar Jammal (York University, Canada)</i> • Self-Supervised Contrastive Learning for Camera-To-Radar Knowledge Distillation <i>Wenpeng Wang and Brad Campbell (University of Virginia, USA); Sirajum Munir (Robert Bosch LLC, USA)</i> • Beyond Detection: Leveraging Large Language Models for Cyber Attack Prediction in IoT Networks <i>Alaeddine Diaf (LRS, Badji Mokhtar Annaba University, Algeria); Abdelaziz Amara Korba (L3I, University of La Rochelle, France); Karabadi Nour el islem (Labged, Badji Mokhtar-Annaba University, Algeria); Yacine Ghamri-Doudane (University of la Rochelle, France)</i> • FedMIL: Federated Multiple Instance Learning for Video Analysis With Optimized DPP Scheduling <i>Ashish Bastola, Hao Wang, Xiwen Chen and Abolfazl Razi (Clemson University, USA)</i>
13.05-14.00	Lunch
14.00-15.30	<p>Session II: Best Paper Candidates <i>(Chair: Tommaso Melodia, Northeastern University, USA)</i></p> <ul style="list-style-type: none"> • Local Differential Privacy for Smart Meter Data Sharing With Energy Disaggregation <i>Shanmugarasa Yashothara (University of New South Wales, Australia); Chamikara Mahawagaarachchige (CSIRO Data61, Australia); Hye-young Paik (University of New South Wales, Australia); Salil S Kanhere (UNSW Sydney, Australia); Liming Zhu (Data61, CSIRO, Australia)</i> • EdgeBoost: Confidence Boosting for Resource Constrained Inference via Selective Offloading <i>Naina Said (University of Kiel, Germany); Olaf Landsiedel (Kiel University, Germany & Chalmers University of Technology, Sweden)</i>

	<ul style="list-style-type: none"> • Multi-Behavior Multi-Agent Reinforcement Learning for Informed Search via Offline Training <i>Songjun Huang; Chuanneng Sun; Ruo-Qian Wang; Dario Pompili (Rutgers University, USA)</i>
15.30-15.45	Coffee Break
15.45-18.15	<p style="text-align: center;">Session III: IoT Applications (Chair: Naghmeh Moradpoor, Edinburgh Napier University, Scotland)</p> <ul style="list-style-type: none"> • Resource-Efficient Text-Based Person Re-Identification on Embedded Devices <i>Rockson Agyeman and Bernhard Rinner (Alpen Adria Universitat Klagenfurt, Austria)</i> • Obscured Wildfire Flame Detection by Spatio-Temporal Analysis of Smoke Patterns Using Frame-Wise Transformers <i>Uma Meleti, Abolfazl Razi and Fatemeh Afghah (Clemson University, USA)</i> • Revealing Semantic Mappings Across HAR Datasets <i>Ada Alevizaki (University of Oxford, United Kingdom (Great Britain)); Nhat Pham (Cardiff University, United Kingdom (Great Britain)); Niki Trigoni (University of Oxford, United Kingdom (Great Britain))</i> • Autonomous Bio-Inspired 3D Deployment of Aerial Base Stations for Optimal Wireless Coverage in 5G Networks <i>Ahmed Alioua (Mohamed Seddik Benyahia University, Algeria); Mohamed Nadjib Zennir and Roumaissa Lallouche (University of Jijel - Mohamed Seddik Benyahia, Algeria); Amine Bouderbala (University of Jijel, Algeria); Mohamed-Lamine Messai (University of Lyon, France)</i> • A Modular Plugin for Concept Drift in Federated Learning <i>Cláudio Gustavo Santos Capanema (Universidade Federal de Minas Gerais, Brazil); Joahannes B. D. da Costa (UNICAMP, Brazil); Fabrício Aguiar Silva (Federal University of Viçosa, Brazil); Leandro Aparecido Villas (UNICAMP, Brazil); Antonio Loureiro (Federal University of Minas Gerais, Brazil)</i> • WaveTune: Harnessing Radar Sensors to Compose Music Beats With Body Gestures <i>Suchdeep Singh Juneja, Girish Vaidya and Marco Zuniga (Delft University of Technology, The Netherlands)</i>
18.15-18.30	Coffee Break
18.30-19.00	<p style="text-align: center;">Oral Poster Presentations (Chair: Igor Zhilin, Technology Innovation Institute, UAE)</p> <ul style="list-style-type: none"> • Navigating the Unknown: Anomaly Detection in Sensor Nodes Based on Event Traces <i>Saurabh Band (University of Bremen, Germany); Anna Förster (ComNets, University of Bremen, Germany)</i>

- Wireless Multi-Sensor Hardware Platform to Enhance Smart Lighting Solutions**
João Gomes, Carlos Resende, Diogo Correia and Waldir Moreira (Fraunhofer Portugal AICOS, Portugal); Jorge Filipe, Carlos Silva and António Sousa (Tridonic Portugal, Portugal)
- Advancing Non-Terrestrial Networks for Critical Scenarios With the RAIN4C Framework**
Angelo Trotta (University of Bologna, Italy); Alexandre Heideker (Federal University of ABC, Brazil); Ivan Zyrianoff (University of Bologna, Italy); Giovanni Interdonato (University of Cassino and Southern Lazio, Italy & CNIT, Italy); Sara Pizzi (University Mediterranea of Reggio Calabria, Italy)
- Enhancing Structural Health Monitoring With On-Device AI**
Junhak Lee, Chunghwan Hwang and Jaehyun Park (Inha University, Korea (South)); Tae Rim Park (Ino-On Inc., Korea (South))
- Network Testbed for Experimenting With Decentralized Federated Learning**
Anirban Mandal (Renaissance Computing Institute (RENCI), USA); Komal Thareja (RENCI - UNC Chapel Hill, USA); Paul Ruth (UNC-CH, USA)
- Federated Learning Assisted Model for Android Malware Detection Using Gannet Optimization Algorithm**
Shikha Arya (Indian Institute of Technology Roorkee Uttarakhand India, India); Sateesh Kumar Peddoju (Indian Institute of Technology Roorkee, India)
- Visual Transformer Models on UAV-Captured Images for Person Detection**
Ionel Gabriel Zahia (National University of Science and Technology Politehnica Bucharest, Romania); Dan Popescu and Loretta Ichim (University Politehnica of Bucharest, Romania)
- IoT and Humanoid Robotics for Next Generation Motor Rehabilitation Systems**
Stefano Borgo (Laboratory for Applied Ontology (LOA), ISTC-CNR, Trento, Italy); Marco Di Felice and Alfonso Esposito (University of Bologna, Italy); Valeria Seidita (DIID - Università degli Studi di Palermo, Italy); Giulia Spaletta (University of Bologna, Italy); Roberto Toni (CNR - ISSMC, Faenza, Italy)
- A Graph Dataset for Security Enforcement in IoT Networks: GRASEC-IoT**
Djameleddine Hamouche and Reda Kadri (Ecole Nationale Supérieure d'Informatique, Algeria); Mohamed-Lamine Messai (University of Lyon, France); Hamida Seba (Université Lyon 1 & EZUS Lyon, France)

19.30-
20.30

Welcome Reception
(Wet Deck of W Hotel)

08.30-
09.00

Registration

09.00-
10.00**Keynote Talk: “The Price of Intelligence in Internet-of-Everything Systems”***Prof. Carla Fabiana Chiasserini, Politecnico di Torino, Italy*10.00-
10.30

Coffee Break

10.30-
13.00**Session IV: Security, Dependability, Privacy***(Chair: Michael Baddeley, Technology Innovation Institute, UAE)*

- **Adversarial Training to Prevent Wake Word Jamming in Personal Voice Assistants**
Prathyusha Sagi, Arun Sankar and Utz Roedig (University College Cork, Ireland)
- **Adaptive Dynamic Adversarial Training With Real-Time Feedback in 6G**
Ahmed Hakami (USA)
- **ISFD: Efficient and Fault-Tolerant In-System-Failure-Detection for LP FPGA-Based Smart-Sensors in Space Expeditions**
Kazi Mohammad Abidur Rahman (Hamburg University of Technology, Germany); Timo Dirkes (DSI Aerospace GmbH, Germany); Bjoern Delfs and Vanessa Wyrwoll (Carl Von Ossietzky University of Oldenburg, Germany); Ulf Kulau (Hamburg University of Technology, Germany & DSI Aerospace Technology, Germany)
- **Privacy-Preserving Multi-Party Keyword-Based Classification of Unstructured Text Data**
Ian Pepin, Furkan Alaca and Farhana Zulkernin (Queen's University, Canada)
- **Ensemble-Based Cyber Intrusion Detection for Robust Smart City Protection**
Alaa Z Alhowaide (Memorial University of Newfoundland, Canada); Izzat Alsmadi (Texas A&M San Antonio, USA); Belal Alsinglawi (Western Sydney University, Australia & Zayed University, United Arab Emirates)
- **Real-Time Threat Detection Strategies for Resource-Constrained Devices**
Mounia Hamidouche, Biniam Demissie, Bilel Cherif and Bassem Ouni (Technology Innovation Institute, United Arab Emirates)

13.00-
14.00

Lunch

14.00-
15.15**Session V: Communications and Optimization***(Chair: Evgenii Vinogradov, Technology Innovation Institute, UAE)*

- **Passive Screen-To-Camera Communications**
Seyed Keyarash Ghiasi (Delft University of Technology, The Netherlands); Marco Kaldenbach (Technical University of Delft, The Netherlands); Marco Zuniga (Delft University of Technology, The Netherlands)

	<ul style="list-style-type: none"> • Autotuning of Resonant Magnetic Induction Communications <i>Hirsa Kia and Krishna Kant (Temple University, USA)</i> • An O(1)-Rounds Deterministic Distributed Approximation Algorithm for the Traveling Salesman Problem in Congested Clique <i>Parikshit Saikia (National Institute of Technology Silchar, India)</i>
15.15-15.30	Coffee Break
15.30-17.10	<p style="text-align: center;">Session VI: Edge & Cloud <i>(Chair: Debashisha Mishra, Technology Innovation Institute, UAE)</i></p> <ul style="list-style-type: none"> • FedLSF: Federated Local Graph Learning via Specformers <i>Ram Samarth Bb (Indian Institute of Information Technology Kottayam, India); Annappa B (National Institute of Technology Karnataka); Sachin D N (National Institute of Technology Karnataka, Surathkal, India)</i> • ARSFineTune: On-The-Fly Tuning of Vision Models for Unmanned Ground Vehicles <i>Masud Ahmed and Zahid Hasan (University of Maryland Baltimore County, USA); Abu Zaher Md Faridee (University of Maryland, Baltimore County & Amazon, USA); Kasthuri Jayarajah (New Jersey Institute of Technology, USA); Mohammad Saeid Anwar and Sanjay Purushotham (University of Maryland Baltimore County, USA); Suya You (Army Research Laboratory, USA); Nirmalya Roy (University of Maryland Baltimore County, USA)</i> • A Fog and Blockchain-Based Distributed Virtual Private Networks (VPN) <i>Rahma Trabelsi (University of Sfax, Tunisia); Ghofrane Fersi (National School of Engineers of Sfax, Tunisia); Mohamed Jmaiel (ENIS, Tunisia)</i> • Balancing Energy Efficiency and Portability: Assessing Domain-Specific Languages in Edge Platforms <i>Youssef Faqir-Rhazoui, Luis Costero and Carlos Garcia (Complutense University of Madrid, Spain)</i>
18.00-23.00	Visit of the Sheikh Zayed Grand Mosque & Conference Dinner (Bus from W Hotel 18:00, Visit of Grand Mosque 18:45, Banquet at Conrad Etihad Towers 21:00)

08.30-
09.00

Registration

09.00-
10.00

Keynote Talk: “Cryptographic Frameworks for IoT devices in light of AI and Post Quantum technologies”
Dr. Najwa Aaraj, Technology Innovation Institute, UAE

10.00-
10.30

Coffee Break

10.30-
13.00

Poster Session

Short Paper Session

(Chair: Lorenzo Bellone, Technology Innovation Institute, UAE)

- Quality of Experience Aware Task Offloading in Digital Twinning Vehicular Edge Computing**
Mostakim Jihad, Mashraba Tasnim Rodshi, Abdullah Al Fahad and Palash Roy (Green University of Bangladesh, Bangladesh); Md. Abdur Razzaque (University of Dhaka, Bangladesh); Mohammad Mehedi Hassan (King Saud University, Saudi Arabia)
- Game Theoretical Analysis of Strategy Changes and Influence Factors in Crowdsourcing IoT Systems**
Runbo Su (University of Lorraine & Loria, France); Arbia Riahi (Cylab - CISS - Royal Military Academy, Belgium); Pascal Moyal (University of Lorraine, France)
- An Energy-Efficient Ensemble Approach for Mitigating Data Incompleteness in IoT Applications**
Yousef Alshehri (University OF Georgia, USA); Lakshmish Ramaswamy (University of Georgia, USA)
- ContextBots: Real-Time Context-Aware Inference on Aerial Robots**
Khizar Anjum, Vidyasagar Sadhu and Dario Pompili (Rutgers University, USA)
- A Lightweight Hybrid Analog-Digital Spiking Neural Network for IoT**
Yung-Ting Hsieh, Zhile Li and Dario Pompili (Rutgers University, USA)
- VKM: A Virtual Keyboard and Mouse Solution Towards a Lightweight Computing System**
Divyansh Bisht (IIT Kanpur, India); Amitangshu Pal (Indian Institute of Technology Kanpur, India); Shashwati Banerjea (MNNIT Allahabad, India)
- Exploring Unsupervised One-Class Classifiers for Lightweight Intrusion Detection in IoT Systems**
Shahzad Golestani and Dwight Makaroff (University of Saskatchewan, Canada)
- SAfER: Simplified Auto-Encoder for (Anomalous) Event Recognition**
Yuvn Perera and Gustavo Batista (University of New South Wales, Australia); Wen Hu (the University of New South Wales (UNSW) & CSIRO, Australia); Salil S Kanhere (UNSW Sydney, Australia); Sanjay Jha (University of NSW, Australia)
- Energy-Efficient Clock-Synchronization in IoT Using Reinforcement Learning**
Damir Assylbek, Aizhuldyz Nadirkhanova and Dimitrios Zorbas (Nazarbayev University, Kazakhstan)

10.30-
13.00

	<ul style="list-style-type: none"> • A Workflow Management System Approach to Federated Learning: Application to Industry 4.0 <i>Hamza Safri (University of Grenoble, France & Berger-Levrault Company, France); George Papadimitriou (University of Southern California & Information Sciences Institute, USA); Frederic Desprez (INRIA, France); Ewa Deelman (ISI, USC, USA)</i>
13.00-14.00	Lunch
15.00-22.00	Desert Excursion <i>(Bus leaving from W Hotel 15:00, Desert Safari Experience incl. dinner 16:00-22:00)</i>

Workshops Schedule

Monday, April 29, 2024

- **IoT15 (6th International Workshop on IoT Applications and Industry 5.0)**
Chairs: Thomas Lagkas, Panagiotis Sarigiannidis, John Soldatos
- **Emerging Topics in IoT – Joint Event**
 - **SmaCE (6th IEEE International Workshop on Smart Circular Economy)**
Chairs: Marios Angelopoulos, Giorgos Demetriou, Vasileios Gerogiannis, Vasilis Katos, David Langley, Sotiris Nikolettseas
 - **IoNT (1st International Workshop on Communication Aspects for Internet of Nano Things)**
Chairs: Prabhat K Sharma, Dadi Bi, Lokendra Chouhan
 - **LS-NoT (2nd International Workshop on Long and Short Range Wireless Technologies Applied to IoT for Networks of Tomorrow)**
Chairs: Jana Koteich, Nina Santi, Damien Wohwe Sambo

Tuesday, April 30, 2024

- **Wi-DroIT (6th International Workshop on Wireless Sensors and Drones in Internet of Things)**
Chairs: Evgenii Vinogradov, Federico Corò, Nirnay Ghosh
- **ISIoT (6th International Workshop on Intelligent Systems for the Internet of Things)**
Chairs: Vasos Vassiliou, Savvas Chatzichristofis, Michael Georgiades
- **UrbCom (6th International Workshop on Urban Computing)**
Chairs: Leandro A. Villas, Thiago H. Silva, Daniel L. Guidoni

Wednesday, May 1, 2024

- **SecRIoT (5th International Workshop on Security and Reliability of IoT Systems)**
Chairs: Vasileios Vlachos, Leandros Maglaras, Athanasios Kakarountas
- **DISCOLI (3rd International workshop on DIStributed COLlective Intelligence)**
Chairs: Gianluca Aguzzi, Lukas Esterle, Pietro Manzoni, Claudio Savaglio

IoT15 (6th International Workshop on IoT Applications and Industry 5.0)

Monday, 29 April

08.30-09.00	Registration Opens
09.00-09.30	Welcome and Introduction (Steering Committee, Local Chairs)
09.30-10.30	Main Event Keynote Talk: "MulSemedia Sensor Networks: A New Frontier in Research" <i>Prof. Ian F. Akyildiz, International Telecommunication Union</i>
10.30-11.00	Coffee Break
11.00-13.05	<ul style="list-style-type: none"> • Flexible Manufacturing System for Enhanced Industry 4.0 and Industry 5.0 Applications <i>Mihai-Daniel Pavel and Grigore Stamatescu</i> • DNA-Inspired Image Encryption: Leveraging Chaos for Enhanced Security <i>Moatsum Alawida, Ahmad Nasser Aljaghbeir, Khaled Raed Albaz and Rahaf Adam Alnuaimi</i> • Exploring Load Forecasting: Bridging Statistical Methods to Deep Learning Techniques in Real-World Environment <i>Ioannis Makris, Nikolaos Moschos, Panagiotis Radoglou-Grammatikis, Nikolaos Andriopoulos, Nikolaos Tzanis, Kyriaki-Nefeli Malamaki, Maria Fotopoulou, Konstantinos Kaousias, George Lampsidis-Tompros and Panagiotis Sarigiannidis</i> • VulnGPT: Enhancing Source Code Vulnerability Detection Using AutoGPT and Adaptive Supervision Strategies <i>Gergely Eberhardt and Ákos Milánkovich</i> • Safety Based Optimal Storage Capacity Sizing for Power System with Renewable Energy Sources <i>Saher Javaid, Yuto Lim, Yasuo Tan and Iacovos I. Ioannou</i> • Advancements in Federated Learning for Health Applications: A Concise Survey <i>Vasileios Stamatis, Panagiotis Radoglou-Grammatikis, Antonios Sarigiannidis, Nikolaos Pitropakis, Thomas Lagkas, Vasileios Argyriou, Evangelos Markakis and Panagiotis Sarigiannidis</i>
13.05-14.00	Lunch
14.00-15.20	<ul style="list-style-type: none"> • Optimizing Federated Learning through Lightweight and Scalable Blockchain <i>Georgios Andronikidis, George Niotis, Charis Eleftheriadis, Konstantinos Kyranou, Sotiris Nikoletseas and Panagiotis Sarigiannidis</i> • Development of a Mobile Ad-Hoc Network Testbed: Modular Implementation of Ad-Hoc On-Demand Distance Vector Routing <i>Mohammed Gharib, Gage Gailbreath, Andre Koka, Alireza Ebrahimi and Fatemeh Afghah</i> • Unveiling Hidden Patterns: Harnessing the Matrix Profile Algorithm for Enhanced Peatland Monitoring and Analysis <i>Cristian Dragana, Mihai-Daniel Pavel, Grigore Stamatescu and Dan Popescu</i> • Autonomous AI-enabled Industrial Sorting Pipeline for Advanced Textile Recycling <i>Yannis Spyridis, Vasileios Argyriou, Antonios Sarigiannidis, Panagiotis Radoglou and Panagiotis Sarigiannidis</i>

Emerging Topics in IoT – Joint Event (SmaCE/IoNT/LS-NOT)

Monday, 29 April

14.00-15.25	<ul style="list-style-type: none">• Vertical Grating Coupler Based Biosensor for Cancer Diagnostics <i>Satish Kumar Thakur, Soumya Anand and Anamika Singh</i>• Robustness of ML-Based Seizure Prediction Using Noisy EEG Data from Limited Channels <i>Umair Mohammad and Fahad Saeed</i>• A Brain-Computer Interface Controlled Assistive Device for Persons with Motor Neuron Disease <i>Rakesh Matam, Rajiv Choudhury and Kaustuv Nag</i>• Integrated Algorithm for Passive and Active Motion Artifact Removal in Photoplethysmography <i>Wilson Andres Camargo Gomez, Claudia Lorena Garzón Castro and Annamaria Filomena Ambrosio</i>
15.30-16.00	Coffee Break
16.00-18.05	<ul style="list-style-type: none">• Predicting Solar-Harvested Energy for Resource-Constrained IoT Devices Using Machine Learning <i>Rakhat Khamitov, Daniil Orel and Dimitrios Zorbas</i>• Human-in-the-circular-loop (HITCL): A human-centric approach in circular economy ecosystems research <i>Anastasia Vayona, Heather Hartwell, Robert Britton and Phillipa Gillingham</i>• Semantic Modeling of Waste Dataflow for Automating Circular Economy Systems <i>Amir Taherkordi, Mahsa Motevallian and Golnoush Abbasi</i>• A Deep Q-Learning Framework for Enhanced QoE and Energy Optimization in Fog Computing <i>Sabiha Tasnim Sumona, Syed Sabbir Hasan, Abu Yousuf Tamzid, Palash Roy, Md. Abdur Razzaque and Redowan Mahmud</i>• Single Anchor-Based Infrastructure-Less Localization Performance Using UWB Radios <i>Shashank Bhushan, Ashish Ahluwalia, Ashutosh Deshwal and Amitangshu Pal</i>• Visual Analysis of the Bibliometric Data Associated with the Calibration of Car-Following Models <i>Mădălin-Dorin Pop and Mihai V. Micea</i>

Wi-DroIT (6th International Workshop on Wireless Sensors and Drones in the Internet of Things)

Tuesday, 30 April

08.30-09.00	Registration
09.00-10.00	Keynote Talk “The Price of Intelligence in Internet-of-Everything Systems” <i>Prof. Carla Fabiana Chiasserini, Politecnico di Torino, Italy</i>
10.00-10.30	Coffee Break
11.00-12.55	<ul style="list-style-type: none"> • Optimizing RF-Sensing for Drone Detection: The Synergy of Ensemble Learning and Sensor Fusion <i>Laiba Tanveer, Muhammad Zeshan Alam, Maham Misbah, Farooq Alam Orakazi, Ahmed Alkhayyat and Zeeshan Kaleem</i> • Should I Stay or Should I Go: A Learning Approach for Drone-based Sensing Applications <i>Giorgos Polychronis, Manos Koutsoubelias and Spyros Lalis</i> • A Bi-Layer Joint Training Reinforcement Learning Framework for Post-Disaster Rescue <i>Songjun Huang, Chuanneng Sun, Jie Gong and Dario Pompili</i> • A Multi-task Transformer Architecture for Drone State Identification and Trajectory Prediction <i>Nikolas Souli, Andreas Palamas, Tania Panayiotou, Panayiotis Kolios and Georgios Ellinas</i> • Optimizing UAV Base Station Positioning Through Quantum-Inspired Solution Workflow <i>M Saravanan and Viswanath Pathmanaban</i> • Differentiated QoS DDPG-based Slicing and Drone Positioning for Next Generation Networks <i>Ghoshana Bista, Abbas Bradai and Emmanuel Moulay</i> <p style="margin-top: 10px;"><u>12:35-13.00: Keynote Talk “A Comprehensive Pest Monitoring System for Brown Marmorated Stink Bug”</u> <i>Dr. Francesco Betti Sorbelli, Università di Perugia, Italy</i></p>
13.00-14.00	Lunch
14.00-15.15	<p style="margin-bottom: 10px;"><u>14:00-14.55: Keynote Talk “Automating Digital Twins in IoT-Drone Ecosystems”</u> <i>Prof. Marco Di Felice, Università di Bologna, Italy</i></p> <ul style="list-style-type: none"> • Risk Assessment in BVLoS Operations for UAVs: Challenges and Solutions <i>Francesco Betti Sorbelli, Punyasha Chatterjee, Papiya Das and Maria Cristina Pinotti</i>
15.15-15.30	Coffee Break

15.30-
17.15

- **Experimental analysis of Wi-Fi-based remote control of UAVs with concurrent mission traffic**
Thierry Arrabal, Théotime Balaguer, Isabelle Guérin-Lassous and Olivier Simonin
- **Empirical evaluation of multi UAV coverage path planning for aerial surveying**
Jamie Wubben, João P. Matos-Carvalho, Dário Pedro and Slavisa Tomic
- **An Over the Air Software Update System for IoT Microcontrollers based on WebAssembly**
Ivan Zyrianoff, Luca Sciallo, Lorenzo Gigli, Angelo Trotta, Carlos Alberto Kamienski and Marco Di Felice
- **A Deep Learning-based Pest Insect Monitoring System for Ultra-low Power Pocket-sized Drones**
Luca Crupi, Luca Butera, Alberto Ferrante and Daniele Palossi
- **An Adaptive Drone-based Multigenerational Sensor System for Monitoring Large Ecosystems**
Ravi Mukkamala, Stephan Olariu, Meshari Aljohani, Mohan Sunkara and Hind Aldabagh

ISIoT (6th International Workshop on Intelligent Systems for the Internet of Things)

13.55-15.15	<ul style="list-style-type: none"> • PULRAS: A Novel PUF-Based Lightweight Robust Authentication Scheme <i>Zohaib Yaqub, Yagmur Yigit, Leandros Maglaras, Zhiyuan Tan and Paul Wooderson</i> • AI-enhanced Healthcare IoT System: Advanced ML Detection and Classification Algorithms for Real-Time Cardiovascular Monitoring <i>Lakis Christodoulou, Andreas Chari and Michael Georgiades Georgiades</i> • Exploring the Integration of Educational Robotics and the Internet of Things in Learning Environments <i>Elena Kakoulli and Salomi Evripidou</i> • Exploring the Impact of Synthetic Data on Human Gesture Recognition Tasks Using GANs <i>George Kontogiannis, Pantelis Tzamalidis and Sotiris Nikolettseas</i> • IAQ Monitoring System Optimizing Data-Driven Sensor Placement <i>Gabriel Filios, Sotiris Nikolettseas and Ioannis Stivaros</i>
15.15-15.30	Coffee Break
15.30-16.45	<ul style="list-style-type: none"> • Detecting multiple jammers using Fuzzy-Logic Intrusion Detection System (FLIDS) <i>Michael Savva, Iacovos Ioannou and Vasos Vassiliou</i> • Location-enabled IoT (LE-IoT): Indoor Localization for IoT Environments using Machine Learning <i>Tanveer Ahmad, Xue Jun Li, Muhammad Ashfaq, Michalis Savva, Iacovos Ioannou and Vasos Vassiliou</i> • Evaluation of Occupancy Detection with Distributed Environmental Sensors for IoT Applications <i>Matteo Bovo, Rockson Agyeman, Muhammad Arif and Bernhard Rinner</i> • Novel Voice-based Authentication for Mission-critical Operations <i>Issraa Ben Mnaouer, Ayman Azmie Samsudeen, Moustafa Sherif, John Adithya, Salah Eddine Choutri and Gandeva Bayu Satrya</i> • Human Activity Recognition Using Spectrograms of Binary Motion Sensor Data <i>Ivan Zyrianoff, Nima Seyedtalebi and Simone Silvestri</i>

UrbCom (6th International Workshop on Urban Computing)

08.30-09.00	Registration
09.00-10.00	Keynote Talk “The Price of Intelligence in Internet-of-Everything Systems” <i>Prof. Carla Fabiana Chiasserini, Politecnico di Torino, Italy</i>
10.00-10.30	Coffee Break
10.30-12.15	<ul style="list-style-type: none"> • Enhancing Trace Representation Using Public Transportation Data <i>Stefany Gaspar, Felipe Domingos Da Cunha and Antonio Alfredo Ferreira Loureiro</i> • Enhanced Cooperative Perception for Autonomous Vehicles Using Imperfect Communication <i>Ahmad Sarlak, Hazim Alzorgan, Sayed Pedram Haeri Boroujeni, Rahul Amin and Abolfazl Razi</i> • IoTium: The IoT Computing Continuum <i>Carlos Kamienski, Ivan Zyrianoff, Luiz F. Bittencourt and Marco Di Felice</i> • Vehicular Named-Data Networking: Background, State of the Art, and Challenges. A Review <i>João Do Monte, Torsten Braun and Marilia Curado</i> • SAGIN-CAIN: A 3D routing protocol for post-disaster SAGIN 6G network <i>Ricardo Marinho, Antonio Loureiro and Luiz Vieira</i>
13.00-14.00	Lunch
14.00-15.20	<ul style="list-style-type: none"> • Prediction of Multimedia Quality over 5G Networks in Urban Environments <i>Ivo Pimenta, Carlos Aquino, Yanne Oliveira, Vanessa Carvalho and Rafael Gomes</i> • Predicting Highway Accident Severity in Brazil: Environmental Factors and Vehicle Features <i>Julio Scholz, Yan Pinheiro and Thiago Silva</i> • Strategies for Locating Electric Vehicle Charging Stations in Smart Cities <i>Bárbara R. Mateus, Paola Brustolini, Neivaldo Filho, Fernanda Souza, Geraldo Filho, Rodolfo Meneguette and Daniel Guidoni</i> • Tremor Detection in Parkinson's Disease from Wearable Data: A Comparative Study of Centralized Learning versus Federated Learning <i>Jhon Velarde, Judy Amaya, Daniel Guidoni, Heitor Ramos, Leandro Villas and Nelson da Fonseca</i>

SecRIoT (5th International Workshop on Security and Reliability of IoT Systems)

Wednesday, 1 May

08.30-09.00	Registration
09.00-10.00	<p>Keynote Talk “Cryptographic Frameworks for IoT devices in light of AI and Post Quantum technologies” <i>Dr. Najwa Aaraj, Technology Innovation Institute, UAE</i></p>
10.00-10.30	Coffee Break
10.30-13.00	<ul style="list-style-type: none"> <p>Enhancing Cloud Computing Security Through Blockchain-Based Communication for Electronic Health Records <i>Md Shahed Islam Noyon, Naghmeh Moradpoor, Leandros Maglaras and Jawad Ahmad</i></p> <p>Exploration of the Role of Cryptoprocessors in Advancing IoT Security <i>Elena Kakoulli and Lefteris Zacharioudakis</i></p> <p>Temporal Analysis of LoRaWAN Data Packets: Unveiling Patterns for Improving Secure-Oriented IoT Designs <i>Edward Guillen, Bernard Uguen, Christophe Moy and Jerome Le Masson</i></p> <p>A Dual-Model Anomaly Detection Algorithm for non-linear stream data in Smart City Environments <i>Anthony Bustamante, Sarah Asad, Brent Lagesse and Daniela Nicklas</i></p> <p>Enhancing IoT Security: A Novel Feature Engineering Approach for ML-Based Intrusion Detection Systems <i>Afsaneh Mahanipour and Hana Khamfroush</i></p> <p>Assessment and Analysis of IoT Protocol Effectiveness in Data Exfiltration Scenario <i>Olanrewaju Mueez Adesanya, Naghmeh Moradpoor, Leandros Maglaras, Ik Soo Lim and Mohamed Amine Ferrag</i></p>
13.00-14.00	Lunch

DISCOLI (3rd International workshop on DIStributed COLlective Intelligence)

08.30-09.00	Registration
09.00-10.00	Keynote Talk “Cryptographic Frameworks for IoT devices in light of AI and Post Quantum technologies” <i>Dr. Najwa Aaraj, Technology Innovation Institute, UAE</i>
10.00-10.30	Coffee Break
10.30-13.00	<ul style="list-style-type: none"> • Analysis and Prediction of Outdoor Human Mobility Using Collaborative Learning <i>Ioana-Valentina Marin, Eduard-Claudiu Ciurezu, Radu-Ioan Ciobanu and Ciprian Dobre</i> • A Distributed AI-based Disease Classification Approach <i>Carmela Comito, Agostino Forestiero and Bettina Fazzinga</i> • Irregular Honeycomb Network: Revolutionizing k-Coverage in Spatial Wireless Sensor Networks <i>Dakshanya Maddala and Habib M. Ammari</i> • Distributed Collective Intelligence in Cyber-Physical Swarms <i>Gianluca Aguzzi and Claudio Savaglio Engineering</i> • A Spark-based Task Allocation Solution for Machine Learning in the Edge-Cloud Continuum <i>Loris Belcastro, Fabrizio Marozzo, Aleandro Presta and Domenico Talia</i> • Simulators for system dataset generation in the Edge-to-Cloud continuum <i>Nawaz Ali, Gianluca Aloï, Pasquale Pace, Michele Gianfelice, Francesco Pupo, Raffaele Gravina and Giancarlo Fortino</i> • Design of Platform-Independent IoT Applications in the Edge-Cloud Continuum <i>Fabrizio Marozzo and Andrea Vinci</i> • ENTRUST: usEr ceNtric plaTform foR continoUS healThcare <i>Claudio Savaglio, Luca Greco, Francesco Pupo and Giuseppe D'Aniello</i> • Final round table and closing remarks
13.00-14.00	Lunch

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