



10th EAI International Conference on
**INDUSTRIAL NETWORKS
&
INTELLIGENT SYSTEMS**

EAI INISCOM 2024

**FEBRUARY 20-21, 2024
DA NANG, VIETNAM**

Welcome to the International conference of EAI INISCOM 2024

Dear Ladies and Gentlemen,

The European Alliance for Innovation—EAI would like to use this message to welcome you to EAI INISCOM 2024.

We as EAI, would like to use this opportunity to address the whole Organizing Committee, the authors, and all the participants on behalf of EAI. We would like to thank all of you for being a part of this conference and for your involvement with EAI.

Moreover, We would like to tell you a few words about EAI, who we are, and what we do. European Alliance for Innovation is a non-profit organization and a global community for a greener, healthier and smarter world. Until today, we have over 60 000 members from more than 160 countries and 150 000 subscribers. Our mission is to create environments for improving research and to transform the best ideas into commercial value propositions through community cooperation.

Lastly, We would like to use this message to invite you to join us again at the EAI INISCOM 2025. We will keep you updated and the news about the next edition of this event will be announced on the conference website.

Thank you for your attention and enjoy EAI INISCOM 2024!

EUROPEAN ALLIANCE FOR INNOVATION—EAI

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KENOTE SPEAKERS:



Dr. Trung Q. Duong

TITLE:

**Quantum Hori-
zons: Revolutio-
nizing 6G Compu-**

BIO:

Dr. Trung Q. Duong (IEEE Fellow and AAIA Fellow) is a Canada Excellence Research Chair and Full Professor at Memorial University of Newfoundland, Canada. He is also an adjunct Chair Professor in Telecommunications at Queen's University Belfast, UK. His current research interests include quantum optimisation and machine learning in wireless communications. He has published 500+ books/bookchapters/papers with 18,000+ citations and h-index 72. He has served as an Editor for many reputable IEEE journals (IEEE Trans on Wireless Communications, IEEE Trans on Communications, IEEE Trans on Vehicular Technology, IEEE Communications Surveys & Tutorials, IEEE Communications Letters, and IEEE Wireless Communications Letters) and has been awarded best paper awards in many flagship conferences including IEEE ICC 2014, IEEE GLOBE-COM 2016, 2019, and 2022. He is the recipient of the Research Fellowship (2015-2020) and Research Chair (2020-2025) of the Royal Academy of Engineering. In 2017, he was awarded the Newton Prize from the UK government. He is a Fellow of IEEE and a Fellow of Asia-Pacific Artificial Intelligence Association (AAIA).

**DR. ANTONINO MASARACCHIA****BIO:**

Dr. Antonino Masaracchia (Member, IEEE) received the Ph.D. degree in electronics and telecommunications engineering from the University of Palermo, Italy, in 2016. From 2017 to 2018, he was a Postdoctoral Researcher at the Sant'Anna School of Advanced Studies, the BioRobotics Institute. Since September 2018, he has been a Research Fellow with the Centre for Wireless Innovation, Queens University Belfast, U.K. His research interests include fifth generation (5G) and beyond 5G networks (6G) oriented services, convex optimization and applied machine learning techniques to wireless communications, reconfigurable intelligent surfaces (RIS), UAV-enabled networks, and ultra-reliable and low-latency communications (URLLC). He has been awarded with the Seal of excellence for the project proposals UAV-DRESS and UAV-SURE, submitted under the Horizon Europe Marie Skłodowska-Curie Actions in 2020 and 2021 respectively. He is actively working in collaboration with industrial partners in the context of Open RAN (ORAN) architecture.

and Near RT modules in O-RAN. Fundamental requirements, but also enabling technologies, visions, and future challenges will be discussed.

Tuesday, 20 February 2024

Day 1	Tuesday, Feb. 20, 2024	
Time	Room A (Main hall)	Room B
07:30 am-08:30 am	Registration	
08:30 am-08:45 am	Opening Ceremony	
08:45 am-09:30 am	Keynote: Quantum Horizons: Revolutionizing 6G Computing-Intensive Communication and Networking	
09:30 am-9:50 am	Coffee break	
9:50 am-11:10 am	S1—INIS: Industrial Networks and Intelligent Systems (4 papers)	
11:10 am-1:30 pm	Lunch	
1:30 pm-02:50 pm	S2—TCSN: Telecommunications Systems and Networks (4 papers)	S3—IPDA: Information Processing and Data <u>Analysis</u> (4 papers)
02:50 pm-03:10 pm	Coffee break	
03:10 pm-04:30 pm	S4-TCSN: Telecommunications Systems and Networks	S5-SECP: Security and Privacy
04:30 pm-04:40 pm	Closing Address	

Tuesday, Feb. 20, 07:30 am-08:30 am

Registration

Tuesday, Feb. 20, 08:30 am-08:45 am

Opening Ceremony

Tuesday, Feb. 20, 08:45 am-09:30 am

Keynote: Quantum Horizons: Revolutionizing 6G Computing-Intensive Communication and Networking

**Prof. Trung Q. Duong, Canada Excellence Research Chair and Full Professor at Memorial University, Canada
Chair Professor in Telecommunications at Queen's University Belfast, UK
Fellow of IEEE**

Prof. Hyundong Shin, Department of Electric Engineering, Kyung Hee University, Korea

Room A

Chair: Dac-Binh Ha, Duy Tan University, Vietnam

Biography:

Dr. Trung Q. Duong (IEEE Fellow and AAIA Fellow) is a Chair Professor of Telecommunications at Queen's University Belfast, U.K. and a Research Chair of the Royal Academy of Engineering, U.K. His current research interests include optimisation, signal processing, and machine learning in wireless communications. He has published more than 420+ published papers with 15,700+ citations and h-index 68. He has served as an Editor for many reputable IEEE journals and been awarded best paper awards in many flagship conferences. He is the recipient of the Royal Academy of Engineering Research Fellowship (2015-2020) and the prestigious Newton Prize 2017. He is a Fellow of IEEE and a Fellow of AAIA.

Biography:

Dr. Huydong Shin (Fellow, IEEE) received the B.S. Degree in Electronics Engineering from Kyung Hee University (KHU), Yongin-si, Korea, in 1999, and M.S. And Ph.D. Degrees in Electrical Engineering from Seoul National University, Seoul Korea, in 2001 and 2004, respectively. During his postdoctoral research at the Massachusetts Institute of Technology (MIT) from 2004 to 2006, he was with the Laboratory for Information Decision Systems (LIDS). In 2006, he joined the KHU, where he is currently a Professor in the Department of Electronic Engineering. His research interests include quantum information engineering, wireless communication, and machine intelligence. Dr. Shin received the IEEE Communications Society's Guglielmo Marconi Prize Paper Award and William R. Bennett Prize Paper Award. He served as the Publicity Co-Chair for the IEEE PIMRC and the Technical Program Co-Chair for the IEEE WCNC and the IEEE GLOBECOM. He was an Editor of IEEE Transactions on Wireless Communications and IEEE Communications Letters.

Tuesday, Feb. 20, 09:30 am-09:50 am

Coffee break

At the conference venue

Tuesday, Feb. 20, 09:50 am-11:10 am

S1—INIS: Industrial Networks and Intelligent Systems

Room A

Chair: Nguyen-Son Vo, Duy Tan University, Vietnam

Tuesday, Feb. 20, 09:50 am-11:10 am

S1-INIS: Industrial Networks and Intelligent Systems

Room A

Chair: Nguyen-Son Vo, Duy Tan University, Vietnam

09:50 am

Enhancing Energy and Coverage Efficiency of Underground Wireless Sensor Network Using Relay Node in Smart Architecture

Mai, Thi (University of Science and Education—University of Danang); Tran, Toan Tuan (Thanglong University); Le, Tuan Minh (National Academy of Public Administration); Nguyen. Vinh Tran Quoc (University of Science and Education / University of Danang); Nguyen, Quynh Thi Huong (Department of Science, Technology, and Environment, Ministry of Education and Training, Ha Noi, Vietnam); Le, Son (Information Technology Institute, Vietnam National University, Hanoi, Vietnam)

10:10 am

A Home-based Diabetes Prediction System on Internet of Things, Federated Learning and Edge Computing

Huynh-Phi, Long (University of Information Technology); Nguyen-Khanh, Duy (University of Information Technology); Nguyen-Khanh, Thuat (University of Information Technology); Dang-Le-Bao, Chuong (University of Information Technology); LE-TRUNG, Quan (University of Information technology—Vietnam National University at HCM City)

10:30 am

Joint Online Adaptive Optimal Tracking Control and Frequency-Response Method for Speed of PMSM and DC-link Voltage Peak Controller Design in Bi-directional Quasi Z-Source Inverter

Cong-Thanh, Pham (Vietnam Aviation Academy, Vietnam)

10:50 am

Variational Quantum Eigensolver for Optimizing Network Scheduling using QUBO Formulation

Rizvi, Syed Muhammad Mustafa Umar (Kyung Hee University); Paracha, Usama Inam (Kyung Hee University); Shin, Hyundong (Kyung Hee University)

Tuesday, Feb. 20, 11:10 am-01:30 pm

Lunch

Venue:TBA

Tuesday, Feb. 20, 01:30 pm-02:50 pm

S2-TCSN: Telecommunications Systems and Networks

Room A

Chair: Van Nhan Vo, Duy Tan University, Vietnam

01:30 pm	<p>Optimal Task Scheduling in 6G Networks: A Variational Quantum Computing Approach</p> <p>Khalid, Uman (Kyung Hee University); uR Rehman, Junaid (University of Luxembourg); Farooq, Ahmad (Aalto University); Zaman, Fakhar (CSIRO, Australia); Shin, Hyundong (Kyung Hee University)</p>
01:50 pm	<p>Multi-Agent Quantum Reinforcement Learning for Digital Twin Placement in 6G Multi-Tier Systems</p> <p>Tariq, Shebaz (Kyung Hee University); Ulum, Muhammad Shohibul (Kyung Hee University); Shaffar, Abdurrahman Wachid (Kyung Hee University); Park, Wook (Kyung Hee University); Kim, Sunghwan (University of Ulsan); Shin, Hyundong (Kyung Hee University)</p>
02:10 pm	<p>A Novel Energy-Efficient Offloading Protocol for UAV NOMA Mobile Edge Computing Networks</p> <p>Truong, Truong (Duy Tan University); Nayyar, Dr. Anand (Duy Tan University); Nguyen Thanh, Nam (Duy Tan University)</p>
02:30 pm	<p>Multi-user Ambient Backscatter Communication-based and STAR-RIS-aided Mobile Edge Computing Network with Uplink NOMA Scheme: A Joint Design</p> <p>Ha, Dac-Binh (Duy Tan University); Truong, Truong Van (Duy Tan University); Truong, Tien-Vu (Duy Tan University, Da Nang, Vietnam); Phan, Thanh Minh (Vietnam Aviation Academy, Vietnam)</p>

S3-IPDA: Information Processing and Data Analysis

Room B

Chair: Nguyen-Son Von, Duy Tan University, Vietnam

01:30 pm	<p>Contactless Palmprint Recognition Using Discriminant Multi-Directional Feature Codes</p> <p>Van Thein, Hoang (Ho Chi Minh City University of Technology (HUTECH), Ho Chi Minh City, Vietnam)</p>
01:50 pm	<p>A Survey on Wireless Data Aggregation through Over-the-Air Computation</p> <p>Lee, Yejin (Kyung Hee University); Jung, Haejoon (Kyung Hee University)</p>
02:10 pm	<p>CLIP-Prefix for Image Captioning and an Experiment on Blind Image Guessing</p> <p>Hyunh, Minh Triet (FTP University); Ngyuen, Duy Linh (FPT University); Nguyen, Thanh Tri (FPT University); Vu, Duong Thi Thuy (FPT University); Dang-Ngoc, Hanh (University of Technology Sydney); Dang, Duc Ngoc Minh (FPT University)</p>
02:30 pm	<p>Features Inspired PM2.5 Prediction: A Belfast City Case Study</p> <p>Naz, Fareena (Queen's university Belfast); Fahim, Muhammad (Queen's University Belfast); Cheema, Adnan Ahmad (Ulster University, Belfast); Viet, Nguyen Trung (Thuyloi University, Hanoi, Vietnam); Cao, Tuan-Vu (Norwegian Institute for Air Research, Oslo, Norway); Q. Duong, Trung (Queen's University Belfast)</p>

Tuesday, Feb. 20, 02:50 pm-03:10 pm

Coffee break

At the conference venue

Tuesday, Feb. 20, 03:10 pm-04:30 pm

S4-TCSN: Telecommunications Systems and Networks

Room A

Chair: Dac-Binh Ha, Duy Tan University, Vietnam

03:10 pm	<p>Hybrid Federated and Multi-agent DRL-based Resource Allocation in Digital Twin-IoV Networks</p> <p>Singh, Keshav (National Sun Yat-sen University); Hazarika, Bishmita (National Sun Yat-sen University); Paul, Anal (National Sun Yat-sen University)</p>
03:20 pm	<p>Performance Comparison in Traffic Sign Recognition using Deep Learning</p> <p>Dang Hai, Binh (FPT University); Nguyen Huu Duc (FPT University); Vo, Thanh Nam (FPT University); Tran Phuong, Nam (FPT University); Nguyen, Cuong Tuan (Vietnamese-German University); Dang, Duc Ngoc Minh (FPT University)</p>
03:40 pm	<p>Energy and Distance Aware Clustering-based Routing for Low-power IoT-enabled Wireless Sensor Networks</p> <p>Le, Viet=Thanh (Ton Duc Thang University); Vo, Nguyen-Son (Duy Tan University); Bui, Minh-Phung (Van Lang University); Le, Lan P. (Vietnam Aviation Academy)</p>
04:10 pm	<p>Enhancing Energy Harvesting Efficiency for IRS-aided TS-SWIPT Network with Practical Phase Shifts</p> <p>Pham Viet, Tuan (University of Education, Hue University); Nguyen-Duy-Nhat, Vien (University of Science and Technology, The University of Danang); Vinh Anh Nghiem, Quan (University of Education, Hue University); Pham Ngoc, Son (Ho Chi Minh City University of Technology and Education); Insoo, Koo (University of Ulsan)</p>

S5-SECP: Security and Privacy

Room B

Chair: Viet-Hung Dang, Duy Tan University, Vietnam

03:10 pm	<p>Understanding the Security Implications in O-RAN with Abusive Adversaries</p> <p>Megarry, Mark (Queen's University Belfast); Masaracchia, Antonino (Queen's University Belfast); Fahim, Muhammad (Queen's University Belfast); Sharma, Vishal (Queen's University Belfast); Duong, Trung Q. (Queen's University Belfast)</p>
03:20 pm	<p>Joint Secrecy and Latency Performance Analysis for UAV-assisted Uplink NOMA-based IoT Network with Mobile Edge Computing</p> <p>Nguyen, Quoc-Huy Anh (Duy Tan University); Nguyen, Nhat Anh (FPT University); Ha, Dac-Binh (Duy Tan University)</p>
03:40 pm	<p>CrossCert: A Privacy-Preserving Cross-chain System for Educational Credential Verification using Zero-Knowledge Proof</p> <p>Tran, Tuan-Dung (University of Information technology, Vietnam National University Ho Chi Minh City); Khuu, Phong Minh (University of Information technology, Vietnam National University Ho Chi Minh City); Le, Trang Trn Thuy (University of Information technology); Phan The, Duy (University of Information technology); Nguyen, Cam Tan (University of Information technology); Pham, Van-Hau (Faculty of Computer Network and Communication, University of Information Technology, Vietnam National University, Ho Chi Minh City, Vietnam)</p>
04:10 pm	<p>The design of the unmanned aerial vehicle trajectory in presence of terrain and threats</p> <p>Nguyen, D.A. (Academy of Military Science and Technology)</p>

Tuesday, Feb. 20, 04:30 pm-04:40 pm

Closing address

Room A

Tuesday, Feb. 20, 06:00 pm-08:30 pm

Banquet and Best Paper Award

Venue: TBA

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Thank you for participating at EAI conference and

We hope to see you again!