PROGRAM GUIDE

2023 INTERNATIONAL CONFERENCE ON ADVANCED TECHNOLOGIES FOR COMMUNICATIONS (ATC 2023)

Da Nang, Vietnam

19th - 21st October, 2023

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MESSAGE FROM THE ATC 2023 GENERAL CHAIRS

Warmly welcome to the 2023 International Conference on Advanced Technologies for Communications (ATC 2023)!

The International Conference on Advanced Technologies for Communications (ATC) is an annual conference series since 2008, co-organized by the Radio & Electronics Association of Vietnam (REV) and the IEEE Communications Society (IEEE ComSoc). As its tradition, the goal of the series is two points: (i) to foster an international forum for Vietnamese and worldwide scientists and engineers in the fields of electronics, communications, and related areas; and (ii) to gather their high-quality research contributions. In 2023, ATC will take place in the dynamic city of Da Nang, renowned for its breathtaking natural beauty and vibrant culture in Viet Nam. This event will be hosted by Vietnam - Korea University of Information and Communications Technology (VKU) from October 19th to 21st, 2023.

ATC 2023 aims to cover an extensive array of topics, ranging from communication theories to circuits and systems for information and communication applications. It serves as an open and collaborative platform for scientists and experts to discuss and share their novel ideas, research findings, and development experiences in various areas, including communications, networks, signal processing, electronics, machine learning, among others. This year, the conference features special sessions on Advances in B5G/6G wireless communications, highlighting the forefront of technological advancements.

We trust that the presented papers will captivate and inform participants and readers alike, laying a sturdy foundation to inspire future breakthroughs and collaborations. Our heartfelt gratitude goes out to all sponsors, keynote/invited speakers, authors, and participants for their invaluable contributions, which play a vital role in ensuring the success of this conference. We trust that you will find your participation both enriching and your time in Da Nang thoroughly enjoyable.

General Chairs,

Huynh Cong Phap	VKU, VN
Le Minh Hoa	Northumbria Univ., UK
Choong Seon Hong	Kyunghee University, KR
Tran Xuan Tu	Vietnam National University, Hanoi, VN

MESSAGE FROM THE VKU RECTOR

Distinguished guests, friends and colleagues,

It is my pleasure and honor, on behalf of Vietnam - Korea University of Information and Communications Technology (VKU) to welcome you all to the International Conference on Advanced Technologies in Communications 2023 (ATC'23).

ATC is an annual conference series since 2008, co-organized by the Radio & Electronics Association of Vietnam (REV) and the IEEE Communication Society (ComSoc) and a university. It is an opportunities for researchers, academia and industries in Vietnam and on over the world to introduce their novel research results, share knowledge and transfer technology. This year, VKU has been selected to be a co-organizer of ATC'23 held in Da Nang City which is known as the best city for living in Vietnam. So, we do hope that participants will enjoy not only the ATC conference but also Da Nang City. VKU is very pleased and honor to work with REV, IEEE ComSoc and various ICT experts from prestigious universities and institutes across nation for organizing the ATC 2023 - one of the best quality conference and financially sponsored by IEEE ComSoc in the ICT field in Vietnam. We believe that this is also good chance for VKU to open its network and collaboration with domestic and international partners including academy and industry. We would like to express our sincere thanks to REV and the University of Da Nang (UD) for determining VKU as a co-organizer of this event.

VKU is one of the three universities dedicated to ITC field in Vietnam with 6000 students, 240 faculty members and staff in which 40% of them hold PhD degree. Each year, there are 1500 students enrolled to our university in various majors related to ICT fields: information technology, AI, Cyber security, computer engineering, IoT and embedded system, etc. Though VKU is a young university, it is very dynamic and has been rapidly developing and obtained many outstanding achievements in training and research. We are the member of the ACIR network, Vietnam Association for Information Processing (VAIP) and others.

With best effort of VKU's staff and organizing committee, the ATC'23 has attracted many authors to submit their papers to the conference in diverse domains: Communications, Signal Processing, Electronics and Integrated Circuits, Networks, and so on. Also, within the scope of the ATC'23, we will have a chance to discuss with experts, policy makers, and enterprises coming from Vietnam and Korea on the topic of Semiconductor Design which is a hot topic recently. We hope that you may find it useful and enjoyable.

Once again, on behalf of VKU, thank you very for your contribution to ATC'23. I wish you good health, happiness, and success in the coming years and always.

Huynh Cong Phap, Rector of VKU

MESSAGE FROM THE REV PRESIDENT

Dear colleagues!

I am very pleased to be here, on behalf of the Vietnam Radio-Electronics Association, to welcome you all to participate in the International Conference on Advanced Technologies for Communications ATC 2023, co-organized by the Radio Electronic Association of Viet Nam (REV), The Institute of Electrical and Electronics Engineers (IEEE) and Vietnam-Korea University of Information and Communication Technology (VKU).

From 2008 up to now, ATC has been the most important annual scientific event of the Radio-Electronics Association of Viet Nam. ATC always aims at two goals: the first is to collect and publish scientific research works in the fields of electronics, communications and information technology, the second is to create a forum to exchange experiences, create opportunities for cooperation in scientific research and teaching between Vietnamese and international scientists. Papers accepted for presentation at ATC are published in the proceedings of IEEE and are highly appreciated by the domestic and international scientific community.

This is the second time ATC has been held in Da Nang. For the first time, ATC 2011 was hosted by Da Nang University of Technology from August 2-4, 2011. This time it was hosted by Vietnam-Korea University of Information and Communication Technology. Both times I had the great honor of attending and delivering welcome speeches on behalf of the Radio-Electronics Association of Viet Nam. The two times Da Nang held ATC were 12 years apart, a period that was not very long but enough to witness the enormous changes of this beautiful and potential coastal city. Perhaps one of the big changes in Da Nang is science and technology human resources, especially information and communications technology. Universities in the field of information technology and communications in Da Nang have continuously grown. The clearest proof is that Vietnam-Korea University of Information and Communication Technology, from a college has become a University under the University of Danang, with the ability and conditions to host international scientific conferences as ATC caliber.

The 2013 ATC Conference had the participation of 603 scientists from 18 countries. There were 151 articles submitted, 96 articles that were accepted as reports and published in the Conference proceedings. That is the result of very active and very methodical activities of the Conference Organizing Committee, of the Vietnam-Korea University of Information and Communication Technology, the University of Danang. That result also demonstrates the attraction of the ATC Conference to Vietnamese and international scientists.

Congratulations to the community of electronics, communications and information technology scientists in Da Nang. Congratulations and thanks to Danang University and Vietnam-Korea University of Information Technology for organizing the successful conference. Thank you to the Organizing Committee and Program Committee of the Conference.

Wishing you good health when attending the Conference.

Doan Quang Hoan, Vice President, Secretary General, REV

LOCAL INFORMATION

❖ BRIEF INFORMATION

Da Nang city lies in the Midlands of Viet Nam, from which Ha Noi capitol in the north and Ho Chi Minh city in the south are almost equally spaced. Da Nang is also the central point connecting three UNESCO World Heritage sites: Hue Citadel, Hoi An ancient town and My Son Sanctuary.

Da Nang borders Thua Thien Hue province in the north, Quang Nam province in the west and south, and the East Sea in the east. The city is located in the middle of the country, on north – south tru nk roads on road, rail, sea and air and lies at one end of the East–West Economic Corridor, an economic corridor connecting Vietnam with Laos, Thailand, and Burma (Myanmar).

❖ CLIMATE

Da Nang has a tropical monsoon climate, typically high and rather invariable temperature. There are two seasons annually: rainy season lasting from August to December and dry season from January to July.

❖ DIVERSITY OF NATURAL LANDSCAPE

Da Nang is a coastal city with a 60-km long shoreline. With smooth and sandy beaches running across the coast, Da Nang beach is voted by Forbes (U.S.) to be 1 of 6 most beautiful beaches in the world.

Emerge yourself in the sapphire water, play with the waves or just sunbathe on the fine beach and you will get to relax and unwind after a hard working day. What's more, a selection of beach games are available on your demand: canoing, parasailing, jet-skiing, banana boats, scuba-diving, …

Da Nang city is also home to Ba Na Hills – a well-marketed brand of Da Nang tourism. From Ba Na Hills – the western part of the city , visitors can turn to explore Son Tra Peninsula in the North East – a jungle in the middle of the city with a rich vegetation, fauna and flora; along the unspoiled rough and rocky coast. Heading towards South East, you will be caught by the renowned Marble Mountains where scenic beauty, culture and religion are preserved.

❖ A FUN AND WELCOMING ENVIRONMENT

Not only blessed by countless beautiful sceneries, Da Nang is said to be 'worth-living' due to its refreshing and peaceful environment. Used to lead the country in terms of economic advancement, Da Nang at the same time keeps its safety and security level under control, resolves states of homelessness and vagabonds, does away with drugs and reduces traffic jams to minimal degree.

Therefore, visitors can rest assured and tour the city in the most comfortable and mind-easing position. Coming to Da Nang, tourists will satisfy their appetite with countless local specialties such as Quang noodles, steamed rice pancake rolls with sliced boiled pork, fresh seafood,… in over 150 high-quality and standard restaurants.

LANDMARKS

Ba Na Hills has a diverse ecosystem, including primitive jungles which house 256 animal species and 543 plants species, eco-tourism has developed there for a long time. Tourists would have to conquer a 15-kilometer zigzag road with the longest cable car system in the world.

The Mable Mountains, one of the Danang's symbolic attractions, is an array of five marble and limestone hills in Ngu Hanh Son District. Those 5 peaks are named after 5 natural elements in Oriental philosophy: Hoa Son (Fire), Kim Son (Metal), Moc Son (Wood), Tho Son (Earth), and Thuy Son (Water).

Museum of Cham Sculpture features Gothic-style architecture adorned with several Hindu elements. The highlight here is an enormous collection of Cham sculptures, sandstone carvings, and terracotta artifacts found in different regions of the country.

Dragon Bridge is known for featuring an impressive show of fire, colorful light and water. Crossing the Han River, this six-lane bridge is a popular spot amongst travelling photographers, the symbol of Danang, where you can stop by to grasp an overview of the city layout

Son Tra Peninsula boasts beautiful roads surrounding prove to be a popular spot for motorcycling. The renowned Linh Ung Pagoda is also set on Son Tra Mountain, featuring a total of 21 miniature Buddha sculptures within the beautiful 67 metre-tall Goddess of Mercy statue.

My Khe Beach ranked one of the most beautiful beaches globally by Forbes, My Khe Beach (next to Non Nuoc Beach) boasts numerous beautiful scenes, from the spectacular sunrise views to its fantastic nightlife. It also offers numerous leisure activities such as sunbathing, jet-skiing, and surfing while enjoying local seafood dishes.

CONFERENCE VENUE INFORMATION #1

ROYAL LOTUS HOTEL DANANG

Located just few steps away from the famous My Khe Beach, which is actually chosen as one of the six most attractive beaches on the planet by Forbes, Royal Lotus Hotel Danang a 4-star hotel, the flagship of H&K Hospitality, provides a personal haven for relaxation, with comfortable, well-appointed guestrooms, distinctive drinking and dining s paces, unique event venues and impeccable service.

* 20 minutes from Da Nang International Airport

Address: 120A Nguyen Van Thoai Street, Ngu Hanh Son District, Danang, Vietnam

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CONFERENCE VENUE INFORMATION #2

VIETNAM-KOREA UNIVERSITY OF INFORMATION AND COMMUNICATION TECHNOLOGY

Vietnam - Korea University of Information and Communication Technology (VKU) - the University of Danang is a member university of the University of Danang (UD), established under Decision No. 15/QD-TTg dated January 3, 2020 of the Prime Minister, has its own legal status, seal and account; exercise autonomy according to the provisions of law; under the direct management of UD, the State management of education of the Ministry of Education and Training; subject to the State management in related fields of other ministries and branches and the territorial management of the Peoples Committee of Da Nang city and Quang Nam province.

VKU is located on a land of 23.5 hectares in the campus of the Danang University Urban Area, Ngu Hanh Son District, Danang city which is a beautiful city by the romantic Han River. With a modern and synchronous construction architecture, invested with more than 1,000 billion VND from the Vietnamese Government And 16.2 million dollars from the non-refundable ODA of the Korean Government.

Vietnam - Korea University of Information and Communication Technology is a university for training, research, technology transfer, innovation, entrepreneurship, which serves the large community and is reputable in the fields of science and information technology, communication and related fields according to the application-oriented university model; a smart, modern school with advanced governance methods to provide high-quality human resources, well meeting labor needs in the period of international integration and industrial revolution 4.0.

Vietnam - Korea University of Information and Communication Technology

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COFFEE BREAKS, LUNCH, AND GALA DINNER

There will be 5 Coffee breaks, 2 Lunches, and 1 Gala dinner in 2 day (19th - 20th October 2023), shown as follows:

❖ On 19th Oct. 2023, 2 coffee breaks will be served from 10:00 to 10:20 and from 15:10 to 15:30, at the conference venue.

❖ On 20th Oct. 2023, 2 coffee breaks will be served 10:00 to 10:20 and from 15:10 to 15:30, at the conference venue.

❖ On 21st Oct. 2023, 1 coffee break will be served 10:30 to 10:50 at the conference venue.

❖ The lunches will be served from 12:00 to 13:30 on 19th Oct. and 12:00 to 13:30 on 20th Oct. 2023, at the Lotus Meeting Room G floor, Royal Lotus Hotel Danang

❖ The Gala Dinner will be held from 18:00 to 20:30 on Thursday, 19th Oct. 2023, at the Lotus Wine & Dine Restaurant 3rd floor, Royal Lotus Hotel Danang

PROGRAM AT A GLANCE

Time	2023 INTERNATIONAL CONFERENCE ON ADVANCED TECHNOLOGIES FOR COMMUNICATIONS PROGRAM		
Time	**DAY 1: THURSDAY, 19th Oct. 2023**		
7:30-8:00	**REGISTRATION** (Venue: Lobby in front of Main Hall (Lotus 1&2)) - 120A Nguyen Van Thoai Str., Ngu Hanh Son Dist., Danang, Vietnam		
	OPENING CEREMONY (Venue: Main Hall (Lotus 1&2))		
08:00-08:40	Introduction to delegates Opening remarks and welcome speech Technical reports Photo session		
08:40-9:20	**Keynote speech 1: The Role of Optical Wireless Communication in the Next Generation Wireless Networks** Speaker: Prof. Zabih Ghassemlooy (Northumbria Univ., UK) Room: Lotus 1&2		
9:20-10:00	**Keynote speech 2: …..** Speaker: Cullen Xu (VP of 5G&LTE Product Line Huawei Technologies Co., Ltd) Room: Lotus 1&2		
10:00-10:20	**Tea break**		
10:20-12:00 PARALLEL SESSIONS	**Session 1** **Topic: Signal Processing (1) - 5 papers** Chairman: Dr. Trong-Hop Do Room: Lotus 2	**Session 2** **Topic: Communications (1) - 5 papers** Chairman: Prof. Nguyen Tan Hung Room: Lotus 3	**Session 3** **Topic: Integrated Circuit - 5 papers** Chairmans: Dr, Pham Xuan Thanh and Dr. Dat Vuong Room: Lotus 4
12:00-13:30	**LUNCH**		

13:30-15:10 PARALLEL SESSIONS	**Session 4** **Topic: Signal Processing (2) – 5 papers** Chairman: Dr. Tran Thi Thao Nguyen Room: Lotus 1	**Session 5** **Topic: Communications (2) – 5 papers** Chairman: Prof. Dac-Binh Ha Room: Lotus 2	**Session 6** **Topic: Electronics (1) – 5 papers** Chairman: Dr. Nguyen Vu Anh Quang Room: Lotus 3	**Session 7** **Topic: Networking (1) – 5 papers** Chairmans: Minh H. N. Nguyen and D.Q. Hien Room: Lotus 4
15:10-15:30	**Tea break**			
15:30 – 15:50	**Invited talk: Joint source-channel coding systems based on double-protograph low-density parity-check codes** Prof. Francis C.M. LAU (The Hong Kong Polytechnic University, IEEE Fellow) Room: Lotus 4			

	2023 INTERNATIONAL CONFERENCE ON ADVANCED TECHNOLOGIES FOR COMMUNICATIONS PROGRAM		
15:50-17:00 PARALLEL SESSIONS	**Session 8**	**Session 9**	**Session 10**
	Topic: Antenna and Propagation (1) – 4 Papers Chairman: Prof. Minh Thuy Le Room: Lotus 2	Topic: Microwave (1) – 4 papers Chairman: Prof. Thi-Hong-Le Dam Room: Lotus 3	Topic: Communications (3) – 4 papers Chairman: Prof. Tu Dac Ho Room: Lotus 4
18:00-20:30	GALA DINNER		
	DAY 2: FRIDAY, 20th Oct. 2023		
8:00-8:20	REGISTRATION (Venue: Lobby in front of Main Hall (Lotus 1&2))		
8:20-9:00	Keynote speech 3: Neural-Symbolic Coherent Reasoning for Evidence-based Medicine Speaker: Prof. Sungyoung Lee (Kyung-hee Univ., Korea) Room: Lotus 1&2		
9:00-10:00 PARALLEL SESSIONS	**Session 11**		**Session 12**
	Topic: Antenna and Propagation (2) – 3 papers Chairman: Dr. Dat Vuong Room: Lotus 3		Topic: Microwave (2) – 3 papers Chairman: Prof. Minh Thuy Le Room: Lotus 4
10:00-10:20	Tea break		
10:20-12:00 PARALLEL SESSIONS	**Session 13**	**Session 14**	**Session 15**
	Topic: Networking (2) - 5 Papers Chairman: Prof. Hoang D.Le Room: Lotus 2	Topic: Signal Processing (3) - 5 Papers Chairman: Dr. Trong-Hop Do Room: Lotus 3	Topic: Electronics (2) - 6 papers Chairman: Dr. Vo Tuan Minh Room: Lotus 4
12:00-13:30	LUNCH		
13:30-15:10 PARALLEL SESSIONS	**Session 16** / **Session 17**	**Session 18**	**Session 19**
	Topic: Networking (3) – 4 papers Chairman: Dr. Minh H. N. Nguyen Room: Lotus 1 / Topic: Signal Processing (4) – 5 papers Chairman: Prof. Do Van Long Room: Lotus 2	Topic: Communications (4) – 5 papers Chairman: Prof. Dac-Binh Ha Room: Lotus 3	Special Session: B5G/6G Wireless Communications (1) – 5 papers Chairman: Prof. Nguyen Tien Hoa Room: Lotus 4
15:10-15:30	Tea break		

2023 INTERNATIONAL CONFERENCE ON ADVANCED TECHNOLOGIES FOR COMMUNICATIONS PROGRAM	

	Session 20.1	Session 20.2
15:30-16:30 PARALLEL SESSIONS	**Special Session: B5G/6G Wireless Communications (2) – 3 papers** Chairman: Prof. Vu Hoang Tran Room: Lotus 3	**Special Session: B5G/6G Wireless Communications (3) – 3 papers** Chairman: Prof. Mai T. P. Le Room: Lotus 4
18:00-20:30	**CLOSING CEREMONY** (Venue: Room Lotus 1&2)	
	DAY 3: SATURDAY, 21ST OCT. 2023 **WORKSHOP ON IC DESIGN TECHNOLOGY** Chairman: Prof. Hoang Van Phuc (LQDTU) Room: Ball Hall – VKU (470 Tran Dai Nghia Str., Ngu Hanh Son Dist., Danang, Vietnam)	
8:30-9:00	**REGISTRATION** (Venue: Lobby in front of Ball Hall (K Zone, VKU))	
9:00-9:40	**Invited talk 1: Semiconductor Design Technology Trends** Roh Yeachul, Vice President, The Electronics and Telecommunications Research Institute (ETRI), Korea Kim Jun Sung, Director, SoC Human Resource Development Section, Sudogkwon Research Center, ETRI, Korea	
9:40-10:00	**Invited talk 2: Semiconductor Industry Trends** Park Jang Hyun, ETRI, Korea	
10h00-10h20	**Invited talk 3: Low Power, Secure IC Design for Internet of Things** Prof. Hoang Van Phuc, LQDTU, VN	
10:20-10:35	**Tea break**	
10:35-11:35	**Roundtable Discussion: The role of Vietnamese HE institutes in training and developing of human resource on the field of IC design and manufacturing in Vietnam** IC experts Local authorities' representatives HE institutes' representatives (IT Institute of VNU HN, Kyung-hee Univ., etc.) Companies and Enterprises	

KEYNOTE SPEAKER #1

Title: **The Role of Optical Wireless Communication in the Next Generation Wireless Networks**

Prof. Zabih Ghassemlooy (Northumbria Univ., UK)

Room: Main Hall (Lotus 1 & 2), Thursday, October 19th, 8:40 - 9:20

Chair: Prof Hoa Le-Minh

❖ **Biography**

Prof. Zabih Ghassemlooy (Senior Member, IEEE) received the C.Eng. and B.Sc. (Hons.) degrees in EEE from Manchester Metropolitan University, in 1981, and the M.Sc. and Ph.D. degrees from Manchester University, in 1984 and 1987, respectively.,In 2014, he joined the Faculty of Engineering and Environment, Northumbria University, Newcastle upon Tyne, U.K., as an Associate Dean of Research, where he is currently the Head of the Optical Communications Research Group. He has been a Distinguished Professor and a Research Fellow with the Chinese Academy of Sciences, Beijing, China, since 2015 and 2016, respectively. His research interests include optical wireless communications (OWC), free-space optics, visible light communications, hybrid RF-OWC, and software-defined networks with funding from EU, U.K., Research Council, and industries. Fellow of Society of Actuaries (SOA) and the Institution of Engineering and Technology (IET) and a member of Association for Computing Machinery (ACM). He is the Chief Editor of the British Journal of Applied Science and Technology and the International Journal of Optics and Applications, an associate editor of several international journals, and a co-guest editor of several special issues of OWC.

❖ **Abstract**

The next generation wireless network (i.e., 6G and beyond) is expected to utilise multiple technologies to deliver multi-functional services to the ned users. Thess could include, sensing and data communications, localization and data communications, sensing and localisation, etc.

In this scenario it would be essential to utilise both the radio frequency and light (visible and infrared) spectrum t ensure quality of services as well as meeting the global energy efficiency and resource utilisation agenda. In this talk the focus will be on the optical wireless communications that is intended for short range indoor and outdoor applications within the context of wireless Internet of Things.

The talk will give an overview on the topic as well as outlining current research works carried out within the Optical Communications Research Group at Northumbria University.

KEYNOTE SPEAKER #2

Title: **Trend of 5GgaGreen Evolution and Achieved Industry Consensus**

Dr. Cullen Xu (VP of 5G&LTE Product Line Huawei Technologies Co., Ltd)

Room: Main Hall (Lotus 1 & 2), Thursday, October 19th, 9:20 - 10:00

Chairs: Prof. Francis C.M. Lau (The Hong Kong Polytechnic University, IEEE Fellow)

❖ Biography

Mr. Xu is VP of 5G&LTE product line. Mr. Xu is responsible for TDD&LTE overseas product solution, including industry trends, market strategies, product planning, launch, and business success.

Mr. Xu joined Huawei Technologies Co.,Ltd. in 2005, and has more than 17 years of experience in wireless R&D, including R&D project management, product planning and management. Mr. Xu has a good understanding of 5G market, industry trends, technological innovation, and network evolution.

❖ Abstract

- 5G Develops Faster than Expected and 5G All Servieces is Flourishing.
- TDD Mid-Band Massive MIMO is the Key for 5G High-Bandwidth Fundamental Network.
- HUAWEI Keep Innovation Towards 5GigaGreen with Leading Solutions.

KEYNOTE SPEAKER #3

Title: **Neural-Symbolic Coherent Reasoning for Evidence-based Medicine**

Prof. Sungyoung Lee (Kyung-hee Univ., Korea)
Room: Main Hall (Lotus 1 & 2), - Friday, October 20th, 8:30 - 9:10
Chair: Prof Hoa Le-Minh

❖ **Biography**

Prof. Sungyoung Lee (Member, IEEE) received the B.S. degree from Korea University, Seoul, South Korea, and the M.S. and Ph.D. degrees in computer science from the Illinois Institute of Technology, Chicago, IL, USA, in 1987 and 1991, respectively. He was an Assistant Professor with the Department of Computer Science, Governors State University, University Park, IL, USA, from 1992 to 1993. He has been a Professor with the Department of Computer Engineering, Kyung Hee University, South Korea, since 1993, where he has been the Director of the Neo Medical Ubiquitous-Life Care Information Technology Research Center, since 2006. He is currently the Founding Director of the Ubiquitous Computing Laboratory. His current research interests include ubiquitous computing and applications, wireless ad hoc and sensor networks, context-aware middle-ware, sensor operating systems, real-time systems and embedded systems, and activity and emotion recognition. He is a member of ACM.

❖ **Abstract**

Deep learning and machine learning technologies are being used to solve specific problems by deriving models that approximate real phenomena based on a limited amount of data. However, these technologies have a simple structure than humans that utilize inductive, deductive, and semantic reasoning methods. In particular, the current deep artificial neural network technology simulates the activity of neurons and synapses, which is suitable for simple classification and generation problems, but not suitable for structural and logical reasoning. In order to solve more complex problems, the artificial intelligence algorithms simulate human reasoning and cognitive mechanisms to enable multilayered inferencing. It is necessary to systematically develop an artificial intelligence module that performs human-like logical reasoning by synthesize the results of neural inferencing and symbolic reasoning.

The medical industry mainly uses explainable rule-based symbolic inferencing for reliable decision making, but the expert knowledge acquisition in terms of IF-THEN rules lacks continuous scalability due to high data transformation cost. The recent neural inferencing techniques have solved the knowledge transfer/expandability even in data-deficient domains (e.g., self-supervised learning, transfer-learning), but their full application in the healthcare industry is still limited due to reliability of learned knowledge. Therefore, the neural-symbolic reasoning is required that resolves the complex problems and supports AI algorithms in terms of transparency and high-level interpretability for reliable decision-making. It extends the cognitive mechanism and mimic human-like reasoning for conventional neural learning techniques, which includes the ability to learn and reason from the environmental constraints by producing an appropriate fact for a given decision.

The promising application area of explainable AI and neural-symbolic reasoning includes the analysis of complex networks, social robotics, and health informatics. Overall, neural-symbolic integration seems suitable in application areas where large amounts of heterogeneous data are available and knowledge descriptions are needed. Such approach has earned potential achievements in visual question answering, including robot navigation, health, genomics, hardware/software specification, multimodal data fusion for information retrieval, big data analysis and language understanding.

INVITED TALK #1

Title: **Joint source-channel coding systems based on double-protograph low-density parity-check codes**

Prof. Francis Lau C.M. (The Hong Kong Polytechnic University, IEEE Fellow)
Room: Main Hall (Lotus 4), Thursday, October 19th, 15:30 - 15:50

❖ **Biography**

Prof. Francis Lau received the BEng(Hons) degree in electrical and electronic engineering and the PhD degree from King's College London, University of London, UK. He is a Professor and the leader of the Future Wireless Networks and IoT Research Focus Area at the Department of Electronic and Information Engineering, The Hong Kong Polytechnic University, Hong Kong SAR, China. He is also a Fellow of IEEE and a Fellow of IET. He is a co-author of two research monographs and a co-inventor of six US patents. He has published more than 330 papers. His main research interests include channel coding, cooperative networks, wireless sensor networks, chaos-based digital communications, applications of complex-network theories, and wireless communications. Over the past years, he has secured research grants and consultancy projects from various organizations including the Hong Kong Research Grant Council; Hong Kong Jockey Club; Highways Department, Hong Kong SAR; National Natural Science Foundation of China; and Huawei Technologies Co. Ltd. He is a co-recipient of one Natural Science Award from the Guangdong Provincial Government, China; eight best/outstanding conference paper awards; one technology transfer award; two young scientist awards from International Union of Radio Science; and one FPGA design competition award.

He was the General Co-chair of International Symposium on Turbo Codes & Iterative Information Processing (2018) and the Chair of Technical Committee on Nonlinear Circuits and Systems, IEEE Circuits and Systems Society (2012-13). He served as an associate editor for IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS II (2004-2005 and 2015-2019), IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I (2006-2007), and IEEE CIRCUITS AND SYSTEMS MAGAZINE (2012-2015). He has been a guest associate editor of INTERNATIONAL JOURNAL AND BIFURCATION AND CHAOS since 2010. He also served as a member of the IEEE CAS Society Fellow Evaluation Committee in 2022.

❖ **Abstract**

Designing source code and channel code separately is optimal when the code length is very long. For application scenarios requiring short to moderate code lengths, designing source code and channel code jointly can provide a higher coding gain. The main idea of jointly designing source-channel code (JSCC) is to exploit the residual redundancy of the source in the tandem joint source-channel encoding/decoding algorithms so as to achieve coding gains. Low-density parity-check (LDPC) codes have been widely used in many communication systems because of their capacity-approaching error correction capability. Recently, protography-based LDPC codes have been applied to designing JSCC systems. In this talk, we will present the architecture of such JSCC systems, including the encoding and decoding mechanisms. We will also introduce the mathematical techniques for analyzing the thresholds of such systems. Finally, we will show some hardware implementation results and some future research directions.

CONFERENCE SCHEDULE DETAILS

SESSION 1: SIGNAL PROCESSING (1) ROOM: LOTUS 2
Chair: Prof. Do Trong Hop (University of Information Technology, Ho Chi Minh City & VNU-HCM, Vietnam)
Thursday 19th Oct 2023, 10:20 – 12:00

Time	Title	Authors
10:20	*Bussgang Based-Belief Propagation Detection for Large-Scale MIMO Systems with One-Bit ADCs*	Duc Hoang (Posts and Telecommunications Institute of Technologies, Vietnam); Thang Le Nhat (Post and Telecommunications Institute Technologies, Vietnam); Hung Dang (Posts and Telecommunications Institute of Technology, Vietnam); Hieu T. Nguyen (University in Southeast Norway, Norway)
10:40	*Joint Time and Frequency Synchronization for OFDM Systems over Underwater Acoustic Channels*	Quoc Khuong Nguyen (HUST, Vietnam); Du Ngoc Han, Minh Luu and Huy Van Nguyen (Hanoi University of Science and Technology, Vietnam); Nguyen Van Duc (HUST, Vietnam)
11:00	*Smartphone Based BP Level Monitoring System Using DNN Model*	Mahmuda Mahmuda (Independent University Bangladesh); Barkatullah Barkatullah (Independent University Bangladesh, Bangladesh); Md. Rezwanul Haque (Khulna University of Engineering & Technology, Bangladesh); Abdullah Al Noman (Lamar University, USA); Emranul Haque (Independent University, Bangladesh (IUB), Bangladesh); Feroz Ahmed (Independent University, Bangladesh)
11:20	*Signal Quality Indices Based on Gain of Amplitude Difference for Wearable ECG Signals*	Ta Viet Tai (VNUHCM-University of Science, Vietnam); Tan Ma Pham Nhut (University of Science VNU-HCM, Vietnam); Nguyen Minh Tri (VNUHCM-University of Science, Vietnam); Nguyen Viet Ha and Tran Thi Thao Nguyen (University of Science, VNU-HCM, Vietnam)
11:40	*Leukemia Classification Using Principal Component Analysis and Ensemble Learning on Gene Expression Data*	Hoang Quang Huy, Linh Nguyen Phuong, Do Tien Dat, Vu Anh Tran and Viet Dung Nguyen (Hanoi University of Science and Technology, Vietnam); Nguyen Anh (Hanoi University of Technology, Vietnam); Trung Thanh Nguyen (108 Military Central Hospital & Hanoi University of Science and Technology, Vietnam)

SESSION 2: COMMUNICATIONS (1) ROOM: LOTUS 3
Chair: Prof. Nguyen Tan Hung (The University of Da Nang, Vietnam)
Thursday 19th Oct 2023, 10:20 – 12:00

Time	Title	Authors
10:20	*An Adaptive Channel Selection Scheme for Anti-Jamming Radio Communications*	Binh Nguyen (Viettel Research & Development Institute, Vietnam); Nguyen Xuan Quyen (Hanoi University of Science and Technology, Vietnam); Hieu Dang Le (Viettel High Technology Industries Corporation, Vietnam); Nguyen Trung Hung (Viettel Institute of Research & Development, Vietnam); Van Long Do, Phan Khanh Ha Nguyen and Tung Dang (Viettel High Technology Industries Corporation, Vietnam)
10:40	*One Indel or One-Deletion and One-Insertion Error-Correcting Code*	Thi-Huong Khuat and Sunghwan Kim (University of Ulsan, Korea (South))
11:00	*Receiver Maximum Eigenmode Beamforming-Based Null-Space Expansion for Multiuser Massive MIMO*	Yuki Sasaki and Kazuki Maruta (Tokyo University of Science, Japan)
11:20	*Multiuser Scheduling to Improve Iterative Interference Replica Subtraction with Partial Zeroization for Massive MIMO Systems*	Takuto Suzuki (Tokyo University of Science, Japan); Salah Berra (COPELABS, Universidade Lusófona, 1749-024 Lisbon, Portugal); Kazuki Maruta (Tokyo University of Science, Japan); Osamu Muta (Kyushu University, Japan)
11:40	*RF Energy Harvesting and Security Offloading Protocol for MEC-Enabled NOMA Networks with Passive Eavesdropper*	Truong Van Truong, Dac-Binh Ha and Thong Vo (Duy Tan University, Vietnam)

SESSION 3: INTEGRATED CIRCUIT ROOM: LOTUS 4
Chairs: Dr. Pham Xuan Thanh (Hanoi University of Industry, Vietnam) and Dr. Dat Vuong (VKU, VN)
Thursday 19th Oct 2023, 10:20 – 12:00

Time	Title	Authors
10:20	*Design Method for a Passive RFID Tag on a Plastic Substrate at 900 MHz*	Thi-Hong-Le Dam (IMEP-LaHC - University Grenoble Alpes - Grenoble INP, France); Pierrick Plantevin (Jet Metal Technologies, France); Nicolas Corrao and Tan Phu Vuong (IMEP-LaHC - University Grenoble Alpes - Grenoble INP, France)
10:40	*Design of a Configurable Low-Noise 1-Channel Analog Front-End for EEG Signal Recording on 180nm CMOS Process*	Duc-Hung Le (University of Science, VNU-HCM, Vietnam); Au Hai Huynh (Sungkyunkwan, Korea (South)); Cong-Kha Pham (University of Electro-Communications (UEC), Japan); Hung The Pham (University of Science, VNU-HCM, Vietnam)
11:00	*A 1.8-GΩ Input Impedance 45-dB Ripple Reduction Factor Chopper Amplifier for Biomedical Recording*	Xuan Phuong Tran, Xuan Thanh Pham and Thuc Kieu-Xuan (Hanoi University of Industry, Vietnam); Duy Phong Pham (Faculty of Electronics and Telecommunications, Electric Power University, Vietnam); Cuong Nguyen (EPU University, Vietnam); Kha Manh Hoang (Hanoi University of Industry, Vietnam)
11:20	*FPGA-Based Human Detection System Using HOG-SVM Algorithm*	The-Anh Nguyen (VNU Information Technology Institute, Vietnam); Tran Thi Thuy Quynh (VNU University of Engineering and Technology, Vietnam); Duy-Hieu Bui (Vietnam National University, Hanoi, Vietnam); Xuan-Tu Tran (VIetnam National University, Hanoi, Vietnam)
11:40	*Novel PUF-Based Authentication Protocol for IoT Devices with Secure Boot and Fuzzy Matching*	Hoang-Long Pham (VNU Information Technology Institute, Vietnam); Tran Thi Thuy Quynh (VNU University of Engineering and Technology, Vietnam); Duy-Hieu Bui (Vietnam National University, Hanoi, Vietnam); Xuan-Tu Tran (VIetnam National University, Hanoi, Vietnam)

SESSION 4: SIGNAL PROCESSING (2) ROOM: LOTUS 1
Chair: Prof. Tran Thi Thao Nguyen (University of Science, VNU-HCM, Vietnam)
Thursday 19th Oct 2023, 13:30 – 15:10

Time	Title	Authors
13:30	*Developing an OCR Model for Extracting Information from Invoices with Korean Language*	Minh DinhBao (University of Engineering and Technology, Vietnam); Xiem Hoang (VNU-UET, Vietnam); Phu TranQuang (University of Engineering and Technology, Vietnam); Huu-Tien Vu (Post and Telecommunications Institute of Technology, Vietnam)
13:50	*Translate Han-Nom to Vietnamese Using Neural Machine Translation Methods*	Chau Tan (University of Information Technology VNU-HCM, Vietnam); Tri Minh Nguyen (University of Information Technology, Vietnam); Vu Duc Ngo (University of Information Technology, Ho Chi Minh VNU, Vietnam); Anh Duc Tran Nguyen (University of Information Technology, Vietnam); Trong-Hop Do (University of Information Technology, Ho Chi Minh City & Vietnam National University, Ho Chi Minh City, Vietnam); Binh Thanh Nguyen (University of Information Technology, Vietnam)
14:10	*Implementation of OCR System on Extracting Information from Vietnamese Book Cover Images*	Tham Nguyen Thi (Soongsil University, Korea (South)); Trong-Hop Do (University of Information Technology, Ho Chi Minh City & Vietnam National University, Ho Chi Minh City, Vietnam); Myungsik Yoo (Soongsil University, Korea (South))
14:30	*A Scalable Hate Speech Detection System for Vietnamese Social Media Using Real-Time Big Data Processing and Distributed Deep Learning*	Trong-Hop Do (University of Information Technology, Ho Chi Minh City & Vietnam National University, Ho Chi Minh City, Vietnam)
14:50	*Face Mask Detection Using Video Streaming Analytics and Deep Learning for Healthcare Management System*	Qui Nguyen (UIT, Vietnam); Trong-Hop Do (University of Information Technology, Ho Chi Minh City & Vietnam National University, Ho Chi Minh City, Vietnam)

SESSION 5: COMMUNICATIONS (2) ROOM: LOTUS 2
Chair: Prof. Dac-Binh Ha (DTU)
Thursday 19th Oct 2023, 13:30 – 15:10

Time	Title	Authors
13:30	*Interference Suppression Performance of CMA Using Time-Domain Inter-Symbol Spreading in Time-Varying Channel Environment*	Haruya Ikeda and Kazuki Maruta (Tokyo University of Science, Japan); Daisuke Hisano (Osaka University, Japan); Yu Nakayama (Tokyo University of Agriculture and Technology, Japan)
13:50	*A Doppler Compensation Method for MIMO-OFDM Systems on Fading Channels*	Nguyen Thi Hoai Linh (Ha Noi University of Science and Technology, Vietnam); Quoc Khuong Nguyen and Nguyen Van Duc (HUST, Vietnam)
14:10	*Imaging Parameter Optimization for Nonlinear Crosstalk Cancellation in Optical Camera Communication*	Tokio Ikuta and Kazuki Maruta (Tokyo University of Science, Japan); Daisuke Hisano (Osaka University, Japan); Yu Nakayama (Tokyo University of Agriculture and Technology, Japan)
14:30	*Spectrally Efficient Frequency Division Multiplexing with QRM-MLD for Rician Fading Channel*	Kosuke Tamura (Chiba University, Japan); Shun Kojima (The University of Tokyo, Japan); Kazuki Komatsu (Toyohashi University of Technology, Japan); Chang-Jun Ahn (Chiba University, Japan)
14:50	*Adaptive Modulation and Coding for Uplink Massive MIMO with Semi-Blind Interference Suppression Under Multicell Environment*	Hiroki Ueno, Kosuke Tamura, Hiroki Nakano and Riku Takemoto (Chiba University, Japan); Kazuki Maruta (Tokyo University of Science, Japan); Chang-Jun Ahn (Chiba University, Japan)

SESSION 6: ELECTRONICS (1) ROOM: LOTUS 3
Chair: Dr. Nguyen Vu Anh Quang (VKU, VN)
Thursday 19th Oct 2023, 13:30 – 15:10

Time	Title	Authors
13:30	*Seizure Classification Based on EEG Signal Analysis and CNN-Transformers Model*	Duc-Phu Do and Duc-Hung Le (University of Science, VNU-HCM, Vietnam)
13:50	*Bearing Fault Classification Using Spectral Portrait of Motor Current Signals and Machine Learning*	Hai Dang Huu (Academy of Military Science and Technology, Vietnam); Thang Bui Quy (Le Quy Don Technical University, Vietnam); Ngoc-My Bui (AMST, Vietnam); Viet Phan Van (Academy of Military Science and Technology, Vietnam); Thuy Dao Thi (Naval Technical Institute, Vietnam); Van-Phuc Hoang (Le Quy Don Technical University, Vietnam)
14:10	*Convolutional Neural Network on Microcontroller for People Counting Using UWB Radar*	Tuan Kiet Tran Mach, Hong Ha Thi Vu and Van Su Luong (Phenikaa University, Vietnam); Manh-Hung Ha (Vietnam National University, Vietnam); Minhhuy Le (Phenikaa University, Vietnam)
14:30	*A Dynamic Analysis and Realization of Diodontiform Fish Robot*	Van Anh Pham (Pham Van Dong University, Vietnam); Quan Tuong Vo (Ho Chi Minh City, University of Technology, Ho Chi Minh City, Viet Nam, Vietnam); Thanh Tung Tran, Dao Duc, Trung Kien Bui, Vinh Phoi Nguyen and Quan Nguyen (Pham Van Dong University, Vietnam)
14:50	*Design and Implementation of Self Error Detection and Rescue Boot Mechanism in Boot Process on FPGA in 5G Radio Unit*	Van Vo, Cuong Pham and Nguyen Binh (Viettel High Technology Industries Corporation, Vietnam); Hung Nguyen (Danang University of Science & Technology, Vietnam); Phan Quyet (Viettel High Technology Industries Corporation, Vietnam); Hieu Tran (Viettel High Technology Industries Corporation, Viettel Group, Vietnam)

Time	Title	Authors
13:30	*IncWAD: An Incremental Learning Approach for Web Attack Detection Using MLOps*	Hung Le Phi, Khang Xuan Vu and Quyen Huu Nguyen (University of Information Technology - VNUHCM, Vietnam); Nghi Hoang Khoa and Phan The Duy (University of Information Technology, VNU-HCM, Vietnam); Van-Hau Pham (University of Information Technology, Vietnam)
13:50	*Performance Analysis of Multipath TCP over FSO/mmWave Vehicular Networks*	Ngoc Vu (Hanoi University of Science and Technology, Vietnam); Hoang D. Le (University of Aizu, Japan); Khanh D. Dang and Chuyen T. Nguyen (Hanoi University of Science and Technology, Vietnam); Anh T. Pham (The University of Aizu, Japan)
14:10	*TrustFedHealth: Federated Learning with Homomorphic Encryption and Blockchain for Heart Disease Prediction in the Smart Healthcare*	Hai Dang Bui Tan, Luan Phan Huu and Thanh Ngan Vuong Dinh (VNUHCM - University of Information Technology, Vietnam); Nghia Trong To (University of Information Technology - VNUHCM, Vietnam); Phan The Duy (University of Information Technology, VNU-HCM, Vietnam); Van-Hau Pham (University of Information Technology, Vietnam)
14:30	*An Improvement of Multicast Probing Route Design for Locating Deteriorated Links*	Nguyen Minh Tri (VNUHCM-University of Science, Vietnam); Masahiro Shibata and Masato Tsuru (Kyushu Institute of Technology, Japan)
14:50	*Centralized Network Model Improvement System Integrated into UAV Swarm*	Loc Duy Nguyen and Bach Van Tran (Hanoi University of Science and Technology, Vietnam); Phong Dao (Posts and Telecommunications Institute of Technology, Vietnam); Dinh Tuan Tran and J H Lee (Ritsumeikan University, Japan); Anh Quang Nguyen (Hanoi University of Science and Technology, Vietnam)

SESSION 8: ANTENNA AND PROPAGATION (1) ROOM: LOTUS 2
Chair: Prof. Minh Thuy Le (HUST, VN)
Thursday 19th Oct 2023, 15:30 – 17:00

Time	Title	Authors
15:50	*Design of Dual-Band Dual-Polarized Filtering Patch Antenna Using T-Shaped Feeds*	Hai Dang Le, Truong Le-Huu, Son Xuat Ta, Nguyen Khac Kiem and Chien Ngoc Dao (Hanoi University of Science and Technology, Vietnam)
16:10	*Differential-Fed Dual-Polarized Dual-Band Stacked Patch Antenna Using Multi-Resonances*	Tran Hien Bui (Hanoi University of Science and Technology, Vietnam); The-Anh Le-Xuan (Hanoi University of Science and Technolog, Vietnam); Son Xuat Ta, Nguyen Khac Kiem and Chien Ngoc Dao (Hanoi University of Science and Technology, Vietnam); Nghia Nguyen-Trong (University of Adelaide, Australia)
16:30	*Beamwidth and Bandwidth Enhancements of Differential-Fed Dual-Polarized Patch Antenna Loaded with Parasitics Monopole*	Thanh Tung Phung, Son Xuat Ta, Hien Thi Ngoc Doan and Nguyen Khac Kiem (Hanoi University of Science and Technology, Vietnam); Nghia Nguyen-Trong (University of Adelaide, Australia)
16:50	*Compact Circularly Polarized Metasurface Antennas for RFID Readers*	Duc-Nguyen Tran Viet (Le Quy Don Technical University, Vietnam); Thao Nhi Thi Hoang (Phenikaa University, Vietnam); Nguyen Quoc Dinh (Le Quy Don Technical University, Vietnam); Hung Huy Tran (Phenikaa University, Vietnam)

SESSION 9: MICROWAVE (1) ROOM: LOTUS 3
Chair: Prof. Thi-Hong-Le Dam (Grenoble Alpes University & Grenoble INP, France)
Thursday 19th Oct 2023, 15:30 – 17:00

Time	Title	Authors
15:50	*A Comparative Study on Additive Manufacturing Technologies for Waveguide Filters*	Bastien Peres and Pierre Lemaitre-Auger (Grenoble INP, France); Fabien Schwartz (AML Microtechnique Lorraine, France); Tan-Phu Vuong (Grenoble INP, France)
16:10	*A Compact, Low-Loss and High Passband Ratio Substrate Integrated Waveguide Triplexer Using Complementary Split Ring Resonators*	Dai Xuan Loi (Military Institute of Science and Technology & Hightech Telecommunication Center, Vietnam); Luong Duy Manh and Ta Chi Hieu (Le Quy Don Technical University, Vietnam); Ha Le Vu (Institute of Electronics Hanoi, Vietnam)
16:30	*Ultra-Wideband Impulse Radar Classification of Materials Using a Convolutional Neural Network*	Minhhuy Le, Khai Nguyen Van, Tuan Kiet Tran Mach, Van Su Luong and Hong Ha Thi Vu (Phenikaa University, Vietnam)
16:50	*Microwave Substrate Integrated Waveguide Power Amplifier Using Complementary Split Ring Resonators*	Huong Thi Thu Tran and Luong Duy Manh (Le Quy Don Technical University, Vietnam)

SESSION 10: COMMUNICATIONS (3) ROOM: LOTUS 4
Chair: Prof. Ho Dac Tu (The Arctic University of Norway - UiT & Electrical Engineering, Norway)
Thursday 19th Oct 2023, 15:30 – 17:00

Time	Title	Authors
15:50	*Low-Computation DOA Estimation Using Virtual Antenna in 2D MIMO Systems*	Riku Takemoto, Kosuke Tamura, Hiroki Ueno, Hiroki Nakano, He He and Chang-Jun Ahn (Chiba University, Japan)
16:10	*Each Layer Adaptation for Throughput Enhancement of LACO-OFDM*	Hiroki Nakano, Kosuke Tamura, Hiroki Ueno, Riku Takemoto and Chang-Jun Ahn (Chiba University, Japan)
16:30	*An Accurate and Wide-Range AFC for Modified Walsh-Hadamard Code Division Multiplexing*	Toshiharu Kojima and Koki Iwabuchi (The University of Electro-Communications, Japan)
16:50	*SM-SVD-Based Video Transmission in MIMO Visible Light Communication*	Manh Le-Tran and Dinh Trieu Duong (Vietnam National University in Hanoi, Vietnam)

SESSION 11: ANTENNA AND PROPAGATION (2) ROOM: LOTUS 3
Chair: Dr. Dat Vuong (VKU, VN)
Friday 20th Oct 2023, 9:00 – 10:00

Time	Title	Authors
09:00	*Analysis of Improved Structures Impact on Features of Antipodal Vivaldi Antenna*	Manh-Tien Bui, Minh-Huy Nguyen and Thanh-Tung Le-Nguyen (Ho Chi Minh City University of Technology, Vietnam); Vinh Pham-Xuan (Dassault Systèmes Deutschland GmbH, Germany); Ha Hoang (Ho Chi Minh City University of Technology, Vietnam)
09:20	*Wideband Metasurface-Based MIMO Antenna for Sub-6 GHz 5G Applications*	Thao Nhi Thi Hoang (Phenikaa University, Vietnam); Duc-Nguyen Tran Viet (Le Quy Don Technical University, Vietnam); Hung Huy Tran (Phenikaa University, Vietnam)
09:40	*A Numerical Study of Various Wavefront Shaping Schemes in Disordered Medium*	Thi Phuong Thao Nguyen (Hanoi University of Science and Technology, Vietnam); Minh Thuy Le (School of Electrical & Electronic Engineering, Hanoi University of Science and Technology, Vietnam)

SESSION 12: MICROWAVE (2) ROOM: LOTUS 4
Chair: Prof. Minh Thuy Le (Hanoi University of Science and Technology, Vietnam)
Friday 20th Oct 2023, 9:00 – 10:00

Time	Title	Authors
09:00	*Microwave Substrate Integrated Waveguide Power Amplifier Using Complementary Split Ring Resonators*	Huong Thi Thu Tran and Luong Duy Manh (Le Quy Don Technical University, Vietnam)
09:20	*Integrated Workflow for Radiated Emission Simulation in Radio Frequency Board*	Thi Anh Vu, Do Toan and Duc Nhat Nguyen (Viettel High Technology Industries Corporation, Vietnam); Nhuong Quang Tran (Viettel High Technology Industries Corporation (VHT), Vietnam); Hoang Truyen (Viettel High Technology Industries Corporation, Vietnam); Minh Thuy Le (School of Electrical & Electronic Engineering, Hanoi University of Science and Technology, Vietnam)
09:40	*On the Design of A Reflective RIS for C-Band UAVs Beam-Steering Applications*	Manh Hai Tao (Hanoi University of Science and Technology (HUST), Hanoi & Viettel High Technology Industries Coporation, Viettel Group, Hanoi, Vietnam); Binh Nguyen (Viettel Research & Development Institute, Vietnam); Phong Nguyen Duy (Viettel HighTechnology Industries Corporation, Vietnam); Tien Manh Nguyen (Viettel High Technology Industries Corporation, Vietnam); Ta Kim Hue and Nguyen Xuan Quyen (Hanoi University of Science and Technology, Vietnam)

SESSION 13: NETWORKS (2) ROOM: LOTUS 2
Chair: Prof. Hoang D. Le (University of Aizu)
Friday 20th Oct 2023, 10:20 – 12:00

Time	Title	Authors
10:20	*Secrecy Performance Analysis of Space-To-Ground Optical Satellite Communications*	Thang Nguyen (Posts and Telecommunications Institute of Technology, Vietnam); Thanh Pham (Shizuoka University, Japan); Anh T. Pham (The University of Aizu, Japan); Ngoc Dang (Posts and Telecommunications Institute of Technology, Vietnam)
10:40	*Development of Parking System for Smart Cities Using LoRaWAN, Blockchain, and Deep Learning*	Thuat Nguyen-Khanh, Tri Le-Dinh and Hung Le-Huy (University of Information Technology - VNUHCM, Vietnam)
11:00	*Multi-Still: A Lightweight Multi-Modal Cross Attention Knowledge Distillation Method for the Real-Time Emotion Recognition Service in Edge-To-Cloud Continuum*	Hyeon Ki Jo (ICNS Lab & Kyung Hee University, Korea (South)); Yuri Seo, Choong Seon Hong and Eui-Nam Huh (Kyung Hee University, Korea (South))
11:20	*Effectiveness of Model and Data Scale Contrastive Learning in Non-IID Federated Learning*	Girum Fitihamlak Ejigu, Ye Lin Tun, Apurba Adhikary, Sun Moo Kang and Choong Seon Hong (Kyung Hee University, Korea (South))
11:40	*Federated Learning with Diffusion Models for Privacy-Sensitive Vision Tasks*	Ye Lin Tun, Chu Myaet Thwal, Yoon Ji Su, Sun Moo Kang, Chaoning Zhang and Choong Seon Hong (Kyung Hee University, Korea (South))

SESSION 14: SIGNAL PROCESSING (3) ROOM: LOTUS 3
Chair: Dr. Trong-Hop Do (University of Information Technology, Ho Chi Minh City, VN)
Friday 20th Oct 2023, 10:20 – 12:00

Time	Title	Authors
10:20	*Face Recognition System for Unconstrained Condition*	Viet-Anh Dao, Hoang-Anh The Nguyen, Dang-Ha Nguyen, Viet-Bac Nguyen and Thom Thi Tran (Vietnam-Korea Institute of Science and Technology, Vietnam)
10:40	*Real-Time Detection and Parameter Estimation of UAV/Drone Signals Using Adaptive Thresholds*	Binh Nguyen (Viettel Research & Development Institute, Vietnam); Manh Linh Nguyen (Viettel High-Technology Industries Corporation, Vietnam); Minh Tung Duong, Duc Phu Phung and Van Long Do (Viettel High Technology Industries Corporation, Vietnam)
11:00	*A Hybrid Features-Based Target Detection Scheme for Maritime Radar*	Thang Bui Quy, Minh Thien Hoang, Hung Tran Viet and Kim-Phuong Phung (Le Quy Don Technical University, Vietnam)
11:20	*Swin Transformer Model for Weapon Detection*	Nguyen Thi Khanh Tram (Phenikaa University & Phenikaa University, Hanoi, Vietnam); Son Trung Doan (Phenikaa University, Vietnam); Anh Thai Vo (Can Tho University, Vietnam)
11:40	*UFCNet: U-Shaped Fully Connected Network for Improving Direction of Arrival Estimation Accuracy in Electronic Intelligence Systems*	Duy-Thai Nguyen (Military Institute of Science and Technology, Vietnam); Van-Phuc Hoang (Le Quy Don Technical University, Vietnam); Sang Van Doan (Vietnam Naval Academy, Vietnam)

SESSION 15: ELECTRONICS (2) ROOM: LOTUS 4
Chair: Dr. Vo Tuan Minh (University of Science and Technology & The University of Danang, Vietnam)
Friday 20th Oct 2023, 10:20 – 12:00

Time	Title	Authors
10:20	*Internet of Things Terminal with Embedded Machine Learning Capabilities for Terrestrial and Space Communication Experiments*	Van Lic Tran (The University of Da Nang - UDN, Vietnam); Fabien Ferrero (Université Cote d'Azur, CNRS, LEAT & CREMANT, France); Le Huy Trinh (University of Information and Technology & Vietnam National University, Vietnam); Thao Manh Nguyen (Université Côte d'Azur & LEAT, France); Laurent Yvon Rodriguez (University Cote d'Azur / LEAT / CNRS UMR 7248, France); Pierre Emmanuel Novac (Université Côte d'Azur, LEAT, CNRS, France); Benoit Miramond (University Cote d'Azur / LEAT / CNRS UMR 7248, France); Alain Pegatoquet (LEAT, France)
10:40	*A Low Loss X-Band Bandpass Substrate Integrated Waveguide Filter Using Complementary Split-Ring Resonators*	Linh Thuy Nguyen and Luong Duy Manh (Le Quy Don Technical University, Vietnam); Sang Huu Nguyen (Author, Vietnam)
11:00	*Wi-Fi Based Monitoring of Goat Feeding Behaviour Using Gyro - and Accelerometer Data*	Gerino P Mappatao (De La Salle University, Philippines)
11:20	*Research and Design a Low Power Electronic Shelf Label Based on E-Paper Display and LoRa Technology*	Xuan-Minh Le (University of Information Technology, Vietnam); Quoc-Son Tran (VNUHCM - University of Information Technology, Vietnam); Thuy-Tien Vu and Tuong-Vy Vo (University of Information Technology, Vietnam); Le Huy Trinh (University of Information and Technology & Vietnam National University, Vietnam); Fabien Ferrero (Université Cote d'Azur, CNRS, LEAT & CREMANT, France)
11:40	*A Photonic Crystal Fiber Based Gold-Coated Open Channel SPR Sensor for Low RI Detection*	Emranul Haque (Independent University, Bangladesh (IUB), Bangladesh); Abdullah Al Noman (Lamar University, USA); Debaleena D Gupta (Independent University Bangladesh, Bangladesh); Asif Mohammad Mithu (Lamar University, USA); Susmoy Kundu (Independent University Bangladesh, Bangladesh); Md. Anwar Hossain (Bangladesh University of Business and Technology, Bangladesh); Nguyen Hoang Hai (Hanoi University of Science and Technology, Vietnam); Feroz Ahmed (Independent University, Bangladesh)
12:00 – 12:20	*Built-In Camera-Based Visible Light Communication System with 95%-Efficiency LED Driver*	Huy Nguyen Quang, Hoa Nguyen Quynh, Duy The Vu and Nam Nguyen Hoang (Hanoi University of Science and Technology, Vietnam); Loan Pham-Nguyen (Hanoi University of Science and Technology & School of Electronics and Telecommunications, Vietnam)

SESSION 16: NETWORK (3) ROOM: LOTUS 1
Chair: Dr. Minh H. N. Nguyen (VKU, VN)
Friday 20th Oct 2023, 13:30 – 15:10

Time	Title	Authors
13:30	*Intelligent Omni Surface-Assisted Cell-Free Massive MIMO System for 6G Wireless Network*	Apurba Adhikary, Avi Deb Raha, Yu Qiao, Girum Fitihamlak Ejigu, Sun Moo Kang, Eui-Nam Huh and Choong Seon Hong (Kyung Hee University, Korea (South))
13:50	*When Lyapunov Drift Meets DRL: Energy Efficient Resource Allocation for IoT Data Collecting*	Dong Uk Kim (Kyung Hee & Networking Intelligence, Korea (South)); Ki Tae Kim, Sun Moo Kang, Seong-Bae Park and Choong Seon Hong (Kyung Hee University, Korea (South))
14:10	*Privacy-Preserving Continuous Learning for MobileSAM via Federated Learning*	Yoon Ji Su, Yu Min Park, Choong Seon Hong and Chaoning Zhang (Kyung Hee University, Korea (South))
14:30	*Boolean-Function-Based IP Lookup on FPGAs*	Dai-Do Tran and Hoang-Gia Vu (Le Quy Don Technical University, Vietnam)

SESSION 17: SIGNAL PROCESSING (4) ROOM: LOTUS 2
Chair: Prof. Do Van Long (Viettel High Technology Industries Corporation, Vietnam)
Friday 20th Oct 2023, 13:30 – 15:10

Time	Title	Authors
13:30	*Electrocardiography Anomaly Detection*	Hoang Quang Huy, Bach Xuan Tran, Nguyen Le Hieu, Vu Anh Tran and Viet Dung Nguyen (Hanoi University of Science and Technology, Vietnam)
13:50	*A Comparative Study of Machine Learning Algorithms for Breast Cancer Classification*	Hoang Quang Huy, Minh Le Duong, Luong Bui Phung Le, Vu Anh Tran and Viet Dung Nguyen (Hanoi University of Science and Technology, Vietnam); Nguyen Anh (Hanoi University of Technology, Vietnam)
14:10	*A Low-Complexity R-Peak Detection Based on Exponential Weight Mean-Variance for Wearable ECG Devices*	Duong Hoang Tien and Tan Ma Pham Nhut (University of Science VNU-HCM, Vietnam); Tran Hoang Nam (University of Science & University of Science VNU-HCM, Vietnam); Ta Viet Tai (VNUHCM-University of Science, Vietnam); Tran Thi Thao Nguyen (University of Science, VNU-HCM, Vietnam)
14:30	*Efficient ECG Classification with Light Weight Shuffle GhostNet Architecture*	Diem Thi Tran (University of Information Technology, VNU-HCM, Vietnam); Quoc Ngoc Tran (Academic, Vietnam)
14:50	*Electromyography Features Information Based on Functional Range of Motion (FROM) for Health Screening Program (HSP)*	Norhashimah Mohd Saad, Tengku Nor Shuhada Tengku Zawawi and Abdul Rahim Abdullah (Universiti Teknikal Malaysia Melaka, Malaysia); Rubita Sudirman (Universiti Teknologi Malaysia, Malaysia)

SESSION 18: COMMUNICATIONS (4) ROOM: LOTUS 3
Chair: Prof. Dac-Binh Ha (DTU, VN)
Friday 20th Oct 2023, 13:30 – 15:10

Time	Title	Authors
13:30	*Proposing Hand Gesture Recognition System Using MediaPipe Holistic and LSTM*	Phat Huu Nguyen (Hanoi University of Science and Technology, Vietnam); Phuc Dinh Le Hong (Foreign Languages Specialized School, Vietnam); Dinh Dang Dang and Bao Vu Quoc (Hanoi University of Science and Technology, Vietnam); Chau Nguyen Le Bao (Hanoi-Amsterdam Highschool for the Gifted, Vietnam); Quang Tran Minh (Hochiminh City University of Technology, Vietnam)
13:50	*Is Visible Light Communications Suitable for Using in Lane-Changing Maneuvers?*	Aicha Meghraoui and Mohamed Larbi Tayebi (Telecommunications and Digital Signal Processing Laboratory (LTTNS) Djillali Liabes University Sidi-, Algeria); Mokhtar Besseghier (Mustapha Stambouli University of Mascara, Algeria & Telecommunications and Digital Signal Processing Laboratory, University of Sidi-Bel-Abbes, Algeria); Selma Yahia (University of Lille & Inria Lille- Nord Europe Lille, France); Hossien Eldeeb (Ozyegin University, Turkey); Vo Van (Duy Tan University, Vietnam); Tu Dac Ho (The Arctic University of Norway - UiT & Electrical Engineering, Norway)
14:10	*A Channel Estimation Method for Modified Walsh-Hadamard Code Division Multiplexing in Helicopter Satellite Communications and Its Application to Initial Acquisition*	Yuto Yoshinaka and Toshiharu Kojima (The University of Electro-Communications, Japan)
14:30	*Energy Harvesting Overlay Networks: Performance Evaluation*	Van Khuong Ho (Ho Chi Minh City University of Technology, Vietnam)
14:50	*Implementation of the Basic Transmit and Receive Functions of Automatic Identification Systems for Marine Vessels*	Gerino P Mappatao (De La Salle University, Philippines)

SESSION 19: SPECIAL SESSION (1) ROOM: LOTUS 4
Chair: Prof. Nguyen Tien Hoa (Hanoi University of Science and Technology, Vietnam)
Friday 20th Oct 2023, 13:30 – 15:10

Time	Title	Authors
13:30	*Energy Efficiency Optimization for Massive MIMO Network: A Neural Network-Based Approach*	Mai T. P. Le (Danang University of Science and Technology, Vietnam); Trung-Hieu Nguyen and Anh-Tu Nguyen (VNPT Corporation, Vietnam); Dong V. Vo (Central Power Corporation, Vietnam); Hieu V. Nguyen (Danang University of Science and Technology, Vietnam)
13:50	*Improving the Reliability of Short Packet Communications in VLC Systems*	Son Ha- Xuan (University of Engineering and Technology, Vietnam); Trang Pham Thi Quynh (Ha Noi University of Industry, Vietnam); Manh Le-Tran (Vietnam National University in Hanoi, Vietnam); Trinh Anh Vu (Vietnam National University, Vietnam)
14:10	*STAR-RIS Aided Mobile Edge Computing Networks with Uplink NOMA Scheme*	Truong Van Truong, Dac-Binh Ha and Truong Vu (Duy Tan University, Vietnam); Au Hai Nguyen (Nguyen, Vietnam)
14:30	*A Scalable Recommendation System with Hybrid Similarity Matrix Using Accelerated Particle Swarm Optimization*	Tan Nghia Duong, Tien Dat Mai, Manh Hoang Tran, Truong Giang Do and Tuan Nghia Cao (Hanoi University of Science and Technology, Vietnam)
14:50	*Detect Level of Methanol in Alcohol Using Near-Infrared (NIR) Spectrometer Imaging*	Quoc T. Huynh (International University - VNU HCMC, Vietnam); Uyen Nguyen (International Univerisity, Vietnam); Huy Nguyen (International University - VNU HCMC, Vietnam)

SESSION 20.1: SPECIAL SESSION (2) ROOM: LOTUS 3
Chair: Prof. Vu Hoang Tran (UTE, UD, Vietnam)
Friday 20th Oct 2023, 15:30 – 16:30

Time	Title	Authors
15:30	*Continuous Sign Language Recognition Using MediaPipe*	Khang Bao Tran (International University, Vietnam); Uyen Nguyen (International Univerisity, Vietnam); Quoc T. Huynh (International University - VNU HCMC, Vietnam)
15:50	*Security-Reliability Tradeoff of Multi-Hop Secure Communication Networks Using Fountain Codes and RIS-Aided Cooperative Communication*	Vo Ta Ty (Telecommunications University, Vietnam); Tran Trung Duy (Posts and Telecommunications Institute of Technology, Vietnam); Lam Thanh Tu (Ton Duc Thang University, Vietnam); Tung T. Nguyen (Industrial University of Ho Chi Minh City, Vietnam); Dung Trinh (Ho Chi Minh City University of Technology, Vietnam); Tan Hanh (Posts and Telecommunications Institute of Technology, Vietnam)
16:10	*Chaos-Based Stream Cipher for Embedded Systems*	Do Quang Tran (Hanoi University of Science and Technology, Vietnam); Anh Van Ta (IVI Group, Vietnam); Nguyen Xuan Quyen and Ta Kim Hue (Hanoi University of Science and Technology, Vietnam)

SESSION 20.2: SPECIAL SESSION (3) ROOM: LOTUS 4
Chair: Prof. Mai T. P. Le (Danang University of Science and Technology, Vietnam)
Friday 20th Oct 2023, 15:30 – 16:30

Time	Title	Authors
15:30	*An Enhancement of Indoor Localization Using PCA-Aided LSTM Approach*	Hang Duong (Hanoi University of Industry, Vietnam); Vu Trinh (University of Engineering and Technology, Vietnam); Kha Manh Hoang (Hanoi University of Industry, Vietnam)
15:50	*None-Radiative Method to Characterize Paper Substrates at mmWave*	Hong Quang Nguyen (Hanoi University of Science and Technology, Vietnam); Minh Thuy Le (School of Electrical & Electronic Engineering, Hanoi University of Science and Technology, Vietnam); Nhu Huan Nguyen (IMEP-LaHC Laboratory, France); Tan Phu Vuong (Grenoble INP-MINATEC, France)
16:10	*A Deep CNN Design for Secure Short-Packet Communications in WET IoT Networks with Multiple Eavesdroppers*	Toan-Van Nguyen (International University-VNU-HCM, Vietnam); Thien Huynh-The (Ho Chi Minh City University of Technology and Education, Vietnam); Nguyen Tien Hoa (Hanoi University of Science and Technology, Vietnam)

WORKSHOP ON IC DESIGN TECHNOLOGY
Room: Ball Hall, VKU
Chair: Prof. Hoang Van Phuc (LQDTU)
Saturday 21st Oct 2023, 9:00 – 12:00

Time	Title	Speakers
09:00	*Invited Talk 1: Semiconductor Design Technology Trends*	Roh Yeachul, Vice President, The Electronics and Telecommunications Research Institute (ETRI), Korea Kim Jun Sung, Director, SoC Human Resource Development Section, Sudogkwon Research Center, ETRI, Korea
09:40	*Invited Talk 2: Semiconductor Industry Trends*	Park Jang Hyun, PMC expert, ETRI, Korea
10:00	*Invited talk 3: Low Power, Secure IC Design for Internet of Things*	Prof. Hoang Van Phuc, LQDTU, VN
10:35	*Roundtable Discussion: The role of Vietnamese HE institutes in training and developing of human resource on the field of IC design and manufacturing in Vietnam*	IC experts Local authorities' representatives HE institutes' representatives (IT Institute of VNU HN, Kyung-hee Univ., etc.) Companies and Enterprises

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2023 INTERNATIONAL CONFERENCE ON ADVANCED TECHNOLOGIES FOR COMMUNICATIONS (ATC'23)

ATC 2023

Da Nang, Vietnam, 19-21 October, 2023