



Program Guide

2022 International Conference on Advanced Technologies for Communications (ATC 2022)

Hanoi, Vietnam
20 - 22 October 2022

Contents

Executive Committee.....	3
Message from the ATC 2022 General Chairs	4
Message from the HOU President	5
Message from the REV President	6
Local Information and Landmarks.....	7
Conference Venue.....	9
Coffee Beaks, Lunch, and Gala Dinner	10
Program at a Glance.....	11
Keynote Speeches and Conference Schedule Details.....	13

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MESSAGE FROM THE ATC 2022 GENERAL CHAIRS

Warmly welcome to the 2022 International Conference on Advanced Technologies for Communications (ATC 2022)! 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 2022, the ATC is held in Hanoi – a charming and historical capital of Vietnam, and hosted by Hanoi Open University (HOU), from the 20th to 22nd of October, 2022. This is the first time the conference is organized in person mode after two years affected by the Covid-19 pandemic.

The ATC 2022 conference covers a wide range of topics, from communication theories to circuits and systems for information and communication applications. It is an open and friendly forum for scientists and experts to discuss and share their new ideas, research and development experiences and results in developing systems, products, and technologies such as personal communications services, multimedia communications systems, enterprise networks, digital broadcasting, wireless, and optical communications systems, etc. along with Industry 4.0 and Digital Transformation. In particular, this year the conference offers special sessions on Advances in B5G/6G wireless communications, Machine learning for future networks and IoT systems, Blockchain and distributed ledger technology, etc. We believe that the participants and readers find the presented papers gripping and informative, which would become a solid base to inspire future developments and collaborations.

We would like to express our sincere thanks to all sponsors, keynote/invited speakers, authors and participants for their great contributions to make this conference successful. We hope that you will find your participation rewarding and your stays in Hanoi enjoyable.

General Chairs,

Tran Xuan Tu,	Vietnam National University, Hanoi, VN
Pham Thi Tam,	Hanoi Open University, VN
Hiroyoshi Yamada,	Niigata University, JP
Hanho Lee,	Inha University, KR

MESSAGE FROM THE HOU PRESIDENT

Distinguish scientists, colleagues and students,

It is a great honour for Hanoi Open University for being the host of the International Conference on Advanced Technologies in Communications 2022 (ATC 2022) in Hanoi from October 20-22, 2022. Warmly welcome the presence of participants in this event.

Together with the cooperation of the Radio & Electronics Association of Vietnam (REV) and the IEEE Communications Society (IEEE ComSoc), this conference has attracted a large number of scientists around the world in the field of electronics, and information technology; 130 manuscripts of 408 authors in 22 countries have been submitted, 58.5% of the manuscripts have been accepted to be published in the proceedings and presented at the conference. This is a really impressive number for the scientific conference. With the contents of the presentations, the Conference was conducted with 10 tracks, namely: Communication Track, Signal Processing Track, Integrated Circuits Track, Electronics Track, Networks Track, Antennas and Propagation Track, Microwave Engineering Track, Special Session on Blockchain and Distributed Ledger Technology, Special Session on Machine Learning for Future Networks and IoT Systems, Special Session: Recent Advances in B5G/6G Wireless Communications.

With the professional and scientific preparation, meeting international standards and the active participation of the community of scientists related to the topic of the conference, we fully believe that this event has opened up opportunities for scientists, researchers, and students to share knowledge, suggested the new research directions, expand scientific research cooperation and transfer technology towards the community service values in each country and around the world. This is completely consistent with the operating principles of scientists, as well as the philosophy of Hanoi Open University: “Open opportunities, Open hearts, Open minds, Open visions, Open the future”.

On behalf of Hanoi Open University, I would like to wish a great success to ATC2022, wish all of you health, happiness and success.

Nguyen Thi Nhung, President of Hanoi Open University

MESSAGE FROM THE REV PRESIDENT

Distinguish Guests, Ladies and Gentlemen's,

On behalf of the Radio-Electronics Association of Vietnam (REV), I would like to warmly welcome the distinguished guests, scientists, researchers and colleagues to the 15th International Conference on Advanced Technology for Communication ATC-2022, co-organized by the REV, IEEE Communication Society (IEEE Comsoc) and Hanoi Open University (HOU).

ATC is an annual scientific event that attracts the attention of Vietnamese and international scientists and researchers. It is one of the most prestigious scientific conferences in Vietnam in the field of Electronics, Communication and Information technology.

Over the past 16 years, ATC has also been a place for close and intimate meetings between Vietnamese and international scientists and researchers to exchange valuable experiences in research and training in the fields of electronics, communication and information technology. ATC is also an opportunity for international colleagues to witness the socio-economic development and experience the rich beauties of the country and people of Vietnam. As you know, due to the COVID-19 pandemic, ATC 2020 and ATC 2021 has been conducted in virtual format, and colleagues can only meet each other on the virtual space. Today we are so happy to have Conference face to face in Hanoi Capital City of Vietnam.

ATC-2022 receives the attention of domestic and international scientists and researchers. The conference organizers received 130 submissions of 408 authors from 22 countries: Australia, Bangladesh, Belarus, China, Finland, France, Hongkong, India, Ireland, Japan, Kazakhstan, R.Korea, Morocco, Nigeria, Norway, Philippine, Russia, Sri Lanka, Sweden, Taiwan, United Kingdom and Vietnam, inwhich, Authors of 76 papers have signed up to participate in the Conference and will present in 10 tracks. At the Conference, we are so honored to have three keynote speakers and two invited talks.

The papers presented as well as keynotes and invited talks at the Conference reflect the diversity of scientific research activities in the fields of electronics, telecommunications and information technology, which will certainly make a positive contribution to the scientific community in the field and for the development of ICT technology in general, and for the period of digital transformation in particular.

As the REV President, I would like to express my sincere appreciation to all the authors and speakers whom without them this conference might not be possible. They are scholars and scientists from universities, research organizations and corporations from Vietnam and 21 countries.

I would also like to thank the enthusiastic and dedicated work of the Organizing Committee, especially the TPC co-chair to make the Conference a success. May I thank my IEEE colleagues for their help and concern; Particularly, I would like to thank for the coordination and organization of Hanoi Open University, It's colleagues worked very actively and effectively, making an important contribution to the success of the Conference.

May I wish the conference great successes and hope that you will have a great time in Hanoi Capital City.

Tran Duc Lai, The President - REV

LOCAL INFORMATION

⚡ BRIEF INFORMATION

Hanoi, the capital of Vietnam since the 11th century dazzles visitors its unique blend of oriental lifestyle, French colonial architecture, tree-lined boulevards and peaceful lakes. Still retaining a charming air from its colonial days, visitors are often impressed with the quietness and subtle beauty of Hanoi. Hanoi is an ancient city which had been established and developed for over 1,000 years since 1010. There are many relics of the past, well-known landscape in Hanoi such as Literature Temple Quoc Tu Giam, One Pillar Pagoda, Sword Lake, and West Lake. History Museum, Flag Pole, Ancient city...



⚡ CLIMATE

Hanoi features a warm humid subtropical climate with plentiful precipitation. The city experiences the typical climate of northern Vietnam, where summers are hot and humid, and winters are, by national standards, relatively cold and dry. Summers, lasting from May to September, are hot and humid, receiving the majority of the annual 1,680 millimetres (66.1 in) of rainfall. The winters, lasting from November to March, are relatively mild, dry (in the first half) or humid (in the second half), while spring (April) can bring light rains. It is important to note that particularly around the Halong Bay region in these months, it can get particularly cold. Autumn (October) is the best time of year in term of weather. The city is usually cloudy and foggy in the winter time with average monthly sunshine hours for February are only 1.5 h/day.

Extreme temperatures have ranged from 2.7 °C (36.9 °F) to 40.4 °C (105 °F).

⚡ FOOD AND DINING

Hanoi has rich culinary traditions. Many of Vietnam's most famous dishes, such as phở, chả cá, bánh cuốn and cốm are believed to have originated from Hanoi. Perhaps most widely known is Phở, a simple rice noodle soup often eaten as breakfast at home or street-side cafes, but also served in restaurants as a meal. Two varieties dominate the Hanoi scene: Phở Bò, containing beef, and Phở Gà, containing chicken.

LANDMARKS



Ho Chi Minh Mausoleum Modeled after the Mausoleum of Lenin in Russia, Ho Chi Minh Mausoleum is one-of-its kind in the world.



Hanoi Water Puppet Theatre Located at 57B, Dinh Tien Hoang street, nearby Hoan Kiem Lake, Thang Long Water Puppet Theater is a familiar address for both domestic tourists and foreign ones, who want to enjoy water puppet shows and discovery the beauty of this unique Vietnam traditional art.



Tran Quoc Pagoda Located on a small peninsula on the East side of West Lake, Tran Quoc Pagoda is regarded as the most ancient pagoda in Hanoi with its history line of more than 1,500 years.



Saint Joseph Cathedral Saint Joseph Cathedral, located at 40 Nha Chung street, Hanoi, is a Roman Catholic cathedral with neo- gothic style, which was built about 120 years ago.



Long Bien Bridge If Hoan Kiem Lake with special green water and the red bridge named The Huc is the symbol of an elegant and charming ancient city; Red river and Long Bien bridge may be seen as the symbol of courageous capital in wars.



Hanoi Flag Tower Hanoi Flag Tower at the age of nearly 200 years is renowned as one of the symbols of Hanoi. The construction began in 1805 and completed in 1812, the 11th year of Gia Long time, Nguyen dynasty, five years after construction time of Flag Tower in Hue.

CONFERENCE VENUE INFORMATION

FORTUNA HOTEL HANOI

Conveniently located in the strategic business and financial center of Hanoi, whether it's for business or pleasure, you are assured of a uniquely Fortuna experience.

- 15 minutes from Hanoi Old Quarter
- 40 minutes from Noi Bai International Airport

Exceeding the expectation of today's business or leisure with its full complement of amenities and five-star standard services, it is the pleasure and comfort of over 300 well-furnished rooms, 2 multi-functional Ballrooms, and 6 meeting rooms all equipped with the latest technological facilities.

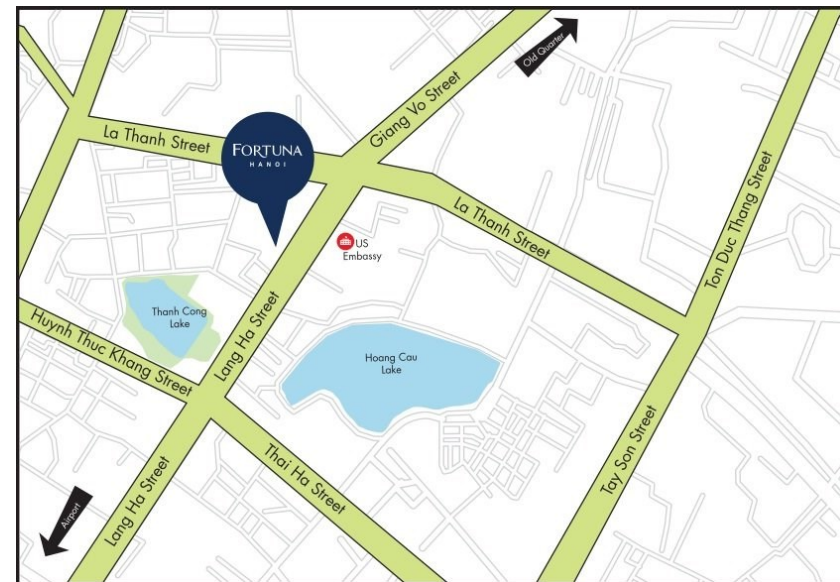
With all dedicated staff, and personalized services. We hope that you will truly enjoy your stay with us!

See Hanoi. Stay Fortuna.

Address: 6B Lang Ha Street, Ba Dinh District, Hanoi, Vietnam

Tel: (84.24) 3 831 3333 - Fax: (84.24) 3 831 3300

Email: fortunahanoi@fortuna.vn



COFFEE BREAKS, LUNCH, AND GALA DINNER

There will be 5 coffee breaks, 2 lunches, and 1 gala dinner in 2 day (20th - 21st October 2022), shown as follows:

- ❖ On 20th Oct. 2022, 2 coffee breaks will be served from 10:12 to 10:30 and from 15:20 to 15:50, at the conference venue.
- ❖ On 21st Oct. 2022, 3 coffee breaks will be served from 09:38 to 09:55, from 10:35 to 10:55 and from 15:32 to 15:50, at the conference venue.
- ❖ The lunches will be served from 12:12 to 13:30 on 20th Oct. and 12:03 to 13:30 on 21st Oct. (Room Golden 3F).
- ❖ The Gala Dinner will be held from 18:30 to 21:00 on Thursday, 20th Oct. 2022, at the Victoria Room (4F), Fortuna Hotel Hanoi.

PROGRAM AT A GLANCE

2022 International Conference On Advanced Technologies For Communications Program		
Time	Room: Laguna (3F)	Room: Marina (3F)
	19 th Oct. 2022	
15:00-17:00	Committee meeting	
	20 th Oct. 2022	
07:45-08:30	Registration. Venue: Lobby in front of Sentosa Room (3F)	
08:30-10:12	S1: Communications 1 (06 papers/102 mins)	S2: Antennas and Propagation (06 papers/102 mins)
10:12-10:30	Coffee break	
10:30-12:12	S3: Signal Processing 1 (06 papers/102 mins)	S4: Integrated Circuits (06 papers/102 mins)
12:12-13:30	Lunch (Venue: Room Golden, 3F)	
13:30-14:00	Opening Session (Venue: Room Victoria, 4F)	
14:00-14:40	Keynote 1: Design of Compact and Wide-Band Antennas Prof. Zhongxiang Shen, Nanyang Technological University, Singapore	
14:40-15:20	Keynote 2: Leading 5G evolution towards 6G Dr. Patrick TSIE, Senior Director - Technical Marketing of Qualcomm International Inc.	
15:20-15:50	Coffee break and Poster Session	
15:50-17:32	S5: Networks 1 (06 papers/102 mins)	S6: Communications 2 (06 papers/102 mins)
18:30-21:00	Gala Dinner (Venue: Room Victoria, 4F)	

PROGRAM AT A GLANCE (cont.)

2022 International Conference On Advanced Technologies For Communications Program

Time	Room: Laguna (3F)	Room: Sentosa (3F)
	21st Oct. 2022	
08:30-09:38	S7: Microwave Engineering (04 papers/68 mins)	S8: Recent Advances in B5G/6G Wireless Communications 1 (04 papers/68 mins)
09:38-09:55	Coffee break	
09:55-10:35		Keynote 3: Data Fusion Using Independent Vector Analysis: Solutions, Challenges, and Opportunities Prof. Tülay Adali, University of Maryland Baltimore County, USA
10:35-10:55	Coffee break	
10:55-12:03	S9: Networks 2 (04 papers/68 mins)	S10: Machine Learning for Future Networks and IoT Systems (04 papers/68 mins)
12:03-13:30	Lunch (Venue: Room Golden, 3F)	
13:30-13:50	Invited talk 2: Multi-certified root-of-trust: exploiting synergies Prof. Sylvain Guilley (TELECOM Paris, General Manager and CTO of Secure-IC, France)	Invited talk 1: A new type of ultimate-Shannon- limit channel codes Prof. Francis C.M. LAU (The Hong Kong Polytechnic University, IEEE Fellow)
13:50-15:32	S11: Electronics (06 papers/102 mins)	S12: Recent Advances in B5G/6G Wireless Communications 2 (06 papers/102 mins)
15:32-15:50	Coffee break	
15:50-17:32	S13: Signal Processing 2 (06 papers/102 mins)	S14: Communications 3 (06 papers/102 mins)
17:32-17:45	Closing Session	
	22nd Oct. 2022	
09:00-11:00	Committee meeting	

Keynote Speaker #1

Title: Design of Compact and Wide-Band Antennas

Prof. Zhongxiang Shen, Nanyang Technological University, Singapore

Room: Victoria, Thursday, October 20 14:00 - 14:40

Chairs: Dr. Minh Thuy Le (School of Electrical & Electronic Engineering, Hanoi University of Science and Technology, Vietnam)



‡ Biography

Prof. Zhongxiang Shen received the B. Eng. degree from the University of Electronic Science and Technology of China, Chengdu, China, in 1987, the M. S. degree from Southeast University, Nanjing, China, in 1990, and the PhD degree from the University of Waterloo, Waterloo, Ontario, Canada, in 1997, all in electrical engineering.

From 1990 to 1994, he was with Nanjing University of Aeronautics and Astronautics, China. He was with Com Dev Ltd., Cambridge, Canada, as an Advanced Member of Technical Staff in 1997. He spent six months each in 1998, first with the Gordon McKay Laboratory, Harvard University, Cambridge, MA, and then with the Radiation Laboratory, the University of Michigan, Ann Arbor, MI, as a Postdoctoral Fellow. In Jan. 1999, he joined Nanyang Technological University, Singapore, as an assistant professor, where he is currently a full professor in the School of Electrical and Electronic Engineering. Dr. Shen served as the Chair of the IEEE MTT/AP Singapore Chapter in 2009. From Jan. 2010 to Aug. 2014, he was the Chair of IEEE AP-S Chapter Activities Committee. From July 2014 to December 2018, he served as the Secretary of IEEE AP-S. He was an elected AdCom member of the IEEE AP-S from Jan. 2017 to Dec. 2019. He is currently serving as an Associate Editor of the IEEE Transactions on Antennas and Propagation. He is an IEEE AP-S Distinguished Lecturer from Jan. 2021-Dec. 2023.

Keynote Speaker #1 (cont.)

Title: Design of Compact and Wide-Band Antennas

Prof. Zhongxiang Shen, Nanyang Technological University, Singapore

Room: Victoria, Thursday, October 20 14:00 - 14:40

Chairs: Dr. Minh Thuy Le (School of Electrical & Electronic Engineering, Hanoi University of Science and Technology, Vietnam)



‡ Biography

Prof. Shen is an IEEE Fellow. His research interests include small and planar antennas for various wireless communication systems, analysis and design of frequency-selective structures and absorbers, hybrid numerical techniques for modeling RF/microwave components and antennas. He has authored more than 200 journal papers (among them 150 were published in IEEE Journals) and also presented nearly 200 papers at international conferences.

Abstract

Recent years have witnessed the growing demand for more wireless connectivity and services. This has posed a big challenge for antenna engineers, which is to design wide-band or multiband antennas with very small footprint. The paradox of achieving wide-band operation while retaining a compact antenna size appears difficult to resolve. This talk takes a careful look at this contradicting challenge and proposes several strategies to address the difficulty. First, we review the fundamental concepts for achieving antenna's wide-band operation. We then introduce techniques for effectively miniaturizing an antenna's size while maintaining its wide-band operation. After that, a number of practical examples are presented to demonstrate the design of compact and yet wide-band antennas.

Keynote Speaker #2

Title: Leading 5G evolution towards 6G

Dr. Patrick TSIE, Senior Director - Technical Marketing of Qualcomm International Inc.

Room: Victoria - Thursday, October 20 14:40 - 15:20

Chair: Doan Quang Hoan (REV, Vietnam)



⌘ Biography

Dr. Patrick TSIE serves as Senior Director - Technical Marketing of Qualcomm International Inc for more than 20 years. Patrick is responsible for promoting the advanced wireless technologies (5G, WiFi6E/7) and Qualcomm product solutions (Mobile devices, IoT, Compute etc.) to South-East Asia customers. He also provides technical engineering advice and consultancy to the regional operators as well. Patrick has vast experience working with regulators, operators, infrastructure and device manufacturers, to develop and launch the new technology solutions for supporting the regional market needs.

Patrick had assisted many operators in region on the technology migration/adoption (such as Singtel Singapore, Viettel Vietnam, Smartone HK, TrueMove Thailand on their 5G with mmW migration; Smartfren Indonesia on CDMA2000 to 4G and 5G adoption etc.). Patrick also provides advisory to many regulatory bodies on defining the 5G spectrum with policy plan, including IMDA Singapore, KOMINFO Indonesia, MCMC Malaysia etc.. Patrick is currently the member of the Telecommunications Regulatory Affairs Advisory Committee (TRAAC) in Hong Kong as well.

Prior to joining Qualcomm, Patrick worked for Hutchison Telecom (HK) Ltd, and was responsible for the mobile network planning and design.

Patrick received his Ph.D. degree in Mobile Communication from the King's College London in 1994.

⌘ Abstract

The presentation will share the latest update for 3GPP on 5G standardization status. It also provides the new 5G-Advanced features, that expands the 5G technology foundations for coverage, mobility, power, reliability, etc. in order to broaden 5G's reach to new use cases, deployments, and network topologies. Those features will fuel the 5G Advanced evolution towards 6G in the future.

Keynote Speaker #3

Title: **Data Fusion Using Independent Vector Analysis: Solutions, Challenges, and Opportunities**

Prof. Tülay Adali, University of Maryland Baltimore County, USA

Room: Sentosa- Friday, October 21 9:55 - 10:35

Chairs: Prof. Tran Duc-Tan (Phenikaa University, Vietnam)



⚡ Biography

Prof. Tülay Adali received the Ph.D. degree in Electrical Engineering from North Carolina State University, Raleigh, NC, USA, in 1992 and joined the faculty at the University of Maryland Baltimore County (UMBC), Baltimore, MD, the same year. She is currently a Distinguished University Professor in the Department of Computer Science and Electrical Engineering at UMBC and is the director of the Machine Learning for Signal Processing Lab (MLSP Lab).

Prof. Adali assisted in the organization of a number of international conferences and workshops including the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), the IEEE International Workshop on Neural Networks for Signal Processing (NNSP), and the IEEE International Workshop on Machine Learning for Signal Processing (MLSP). She was the General Chair, NNSP (2001–2003); Technical Chair, MLSP (2004–2008); Program Chair, MLSP (2008, 2009, and 2014), International Conference on Independent Component Analysis and Source Separation (2009); Publicity Chair, ICASSP (2000 and 2005); and Publications Chair, ICASSP 2008. She was the Technical Program Co-Chair for ICASSP 2017 and Special Sessions Chair for ICASSP 2018 and EUSIPCO 2020. She is the Special Sessions Chair for ICASSP 2024.

Prof. Adali is a Fellow of the IEEE and the AIMBE, a Fulbright Scholar, and an IEEE Signal Processing Society Distinguished Lecturer. She is the recipient of a 2020 Humboldt Research Award, 2013 University System of Maryland Regents' Award for Research, an NSF CAREER Award, and a number of paper awards including the 2010 IEEE Signal Processing Society Best Paper Award. Her current research interests are in the areas of statistical signal processing, machine learning, and applications in medical image analysis and fusion.

Keynote Speaker #3 (cont.)



Title: **Data Fusion Using Independent Vector Analysis: Solutions, Challenges, and Opportunities**

Prof. Tülay Adalı, University of Maryland Baltimore County, USA

Room: Sentosa- Friday, October 21 9:55 - 10:35

Chairs: Prof. Tran Duc-Tan (Phenikaa University, Vietnam)

‡ Biography

Prof. Adalı is currently the Chair-Elect for the IEEE Brain Initiative, and has served as the Vice President-Technical Directions of the IEEE Signal Processing Society (SPS) for the period 2019-2022. She chaired the IEEE SPS MLSP Technical Committee (2003–2005, 2011–2013), and served or currently serving on a number of committees/boards including the SPS Conference Board (1998–2006, 2017-Present), IEEE SPS Fellow Reference Committee (2011-2014), IEEE SPS Signal Processing Theory and Methods (2010-2015) Technical Committee, and the IEEE SPS Bio Imaging and Signal Processing Technical Committee (2004–2007, 2018-Present). She was an Associate Editor for IEEE Transactions on Signal Processing (2003–2006), IEEE Transactions on Biomedical Engineering (2007–2013), IEEE Journal of Selected Areas in Signal Processing (2010-2013), and Elsevier Signal Processing Journal (2007–2010), and served on the Editorial Board of the Proceedings of the IEEE (2013-2019). She is currently serving on the Senior Editorial Board of IEEE Journal of Selected Topics in Signal Processing and the Editorial Board of Journal of Signal Processing Systems for Signal, Image, and Video Technology.

‡ Abstract

In many fields today, such as neuroscience, remote sensing, computational social science, and physical sciences, multiple sets of data are readily available. Matrix and tensor factorizations enable joint analysis, i.e., fusion, of these multiple datasets such that they can fully interact and inform each other while also minimizing the assumptions placed on their inherent relationships. A key advantage of these methods is the direct interpretability of their results. This talk presents an overview of models based on independent component analysis (ICA), and its generalization to multiple datasets, independent vector analysis (IVA) with examples using neuroimaging data. A number of important challenges and future directions of research are addressed for solutions using not only ICA and IVA but also tensors and other matrix factorizations.

Invited Talk #1

Room: Sentosa

Chairs: Dr. Nguyen Tien Hoa (Hanoi University of Science and Technology, Vietnam)

Friday, October 21 13:30 - 13:50

Invited paper: **A new type of ultimate-Shannon-limit channel codes**

Prof. Francis C. M. LAU

The Hong Kong Polytechnic University, IEEE Fellow



Biography: Francis C. M. 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.

Invited Talk #1 (cont.)

Room: Sentosa

Chairs: Dr. Nguyen Tien Hoa (Hanoi University of Science and Technology, Vietnam)

Friday, October 21 13:30 - 13:50

Invited paper: **A new type of ultimate-Shannon-limit channel codes**

Prof. Francis C. M. LAU

The Hong Kong Polytechnic University, IEEE Fellow



Abstract: In most existing digital communication systems, the received signal strength is usually larger than the noise level. Alternatively, the bit-energy-to-noise-power-spectral-density (E_b/N_0) is assumed to be greater than 0 dB. However, in some specific applications such as deep-space communications and quantum key distribution, the received signal power is smaller than the noise power. Under such circumstances, strong error correction codes are required to provide a reliable link between the transmitter and the receiver. In this talk, a new type of error-correction code called "protograph-based low-density parity-check Hadamard codes" is introduced. The codes are shown to provide excellent error performance not only when E_b/N_0 is smaller than 0 dB, but also when E_b/N_0 approaches the ultimate Shannon limit -1.59 dB.

Invited Talk #2

Room: Laguna

Chairs: Dr. Loan Pham-Nguyen (Hanoi University of Science and Technology & School of Electronics and Telecommunications, Vietnam)

Friday, October 21 13:30 - 13:50

Invited paper: **Multi-certified root-of-trust: exploiting synergies**

Prof. Sylvain Guilley

TELECOM-Paris, General Manager and CTO of Secure-IC, France



Biography: Dr. Sylvain Guilley is General Manager and CTO at Secure-IC, a French company offering security for embedded systems. Secure-IC's flagship product is the multi-certified Securyzr integrated Secure Element (iSE). Sylvain is also professor at TELECOM-Paris and research associate at Ecole Normale Supérieure (ENS). His research interests are trusted computing, cyber-physical security, secure prototyping in FPGA and ASIC, and formal / mathematical methods. Since 2012, he organizes the PROOFS workshop (<http://www.proofsworkshop.org/2020/>), which brings together researchers whose objective is to increase the trust in the security of embedded systems. Sylvain is also lead editor of international standards, such as ISO/IEC 20897 (Physically Unclonable Functions), ISO/IEC 20085 (Calibration of non-invasive testing tools), and ISO/IEC 24485 (White Box Cryptography). He is leading the topic “High Level Principles for Design & Architecture” in the editing team of TR68 (Autonomous Vehicles—Singapore, Standards Development Organisation), and is member of the French BNA (Bureau de Normalisation de l'Automobile). Sylvain is associate editor of the Springer Journal of Cryptography Engineering (JCEN). He has co-authored 250+ research papers and filed 40+ invention patents. He is member of the IACR, senior member of the IEEE and the CryptArchi club. He is an alumnus from Ecole Polytechnique and TELECOM-Paris.

Invited Talk #2 (cont.)

Room: Laguna

Chairs: Dr. Loan Pham-Nguyen (Hanoi University of Science and Technology & School of Electronics and Telecommunications, Vietnam)

Friday, October 21 13:30 - 13:50

Invited paper: **Multi-certified root-of-trust: exploiting synergies**

Prof. Sylvain Guilley

TELECOM-Paris, General Manager and CTO of Secure-IC, France



Abstract: In recent years, worldwide chip production has increased significantly. The "back to silicon" trend is driven by the digitization of multiple usages as well as the specificities of certain markets. As chips are liable for data protection, the proportion of chips with embedded security features is increasing. Because of the shortened time-to-market, some chips must be ready to be deployed in markets or use-cases unknown at the time of design. Since each market has its own security schemes, chips need to be "pre-certifiable" under different schemes. The design activity is usually tailored to a given set of security requirements. In the new context where multiple requirements will have to be satisfied proactively, design strategies must evolve.

In this talk, we shall share experience regarding the design of chips eligible to triple pre-certification, namely: Common Criteria (CC), NIST FIPS 140 and Chinese OSCCA.

The synergies arise at three levels. First, documentation production is rationalized. Typically, in the latest version of FIPS 140 (version 3), lifecycle assurance requirements can be mutualized with the ADV, AGD, ALC and ATE assurance classes in CC. Second, it is often beneficial to combine functional requirements. Consider, for example, the mandatory self-checks of cryptographic algorithms and/or keys in FIPS 140: these are sound precautions that reduce the number of vulnerabilities in the CC context. Third, some specific IPs need to be analyzed more deeply in all the schemes anyhow. For instance, regarding True Random Number Generators (TRNGs), there are very detailed, even intrusive requirements (e.g., access to "raw" bits). Similarly, the standards require testing on millions of bits generated in a row by the TRNG. The OSCCA scheme requires that several TRNG rationales be implemented, so as to withstand total failures. Obviously, this also benefits the resistance to fault attacks under a CC prism. However, it should be noted that some pitfalls should also be avoided. For example, EVITA's secure boot is based on firmware hash, which is incompatible with FIPS 140-3 requirements to leverage the digital signature (from level 3 onward). To sum up, we intend to show that certification efforts can be rationalized to better reach the market, with cost-saving factorization while designing or producing certification-related evidence sets.

Conference Schedule Details

Room: Laguna - S1: Communications 1

Chairs: Prof. Pham Thanh Hiep (Le Quy Don Technical University, Vietnam),
Prof. Francis C.M. Lau (The Hong Kong Polytechnic University, Hong Kong)

Thursday, October 20 8:30 - 10:12

Time	Authors	Title
08:30	Hieu T. Nguyen (University in Southeast Norway, Norway); <u>Duc Hoang</u> (Posts and Telecommunications Institute of Technologies, Vietnam); Hung Dang (Posts and Telecommunications Institute of Technology, Vietnam); Thang Le Nhat (Post and Telecommunications Institute Technologies, Vietnam)	On Design of Tanner-Graph Detector For Triple Mixed-ADC Large-Scale MIMO Systems
08:47	<u>Tuan-Anh Pham</u> (PTIT, Vietnam); Duc Trong Minh Hoang (Ha Noi University of Science and Technol, Vietnam); Hieu T. Nguyen (University in Southeast Norway, Norway)	Performance of Triple Mixed-ADC Large-Scale MIMO Detector Using Deep Learning
09:04	Kha Manh Hoang (Hanoi University of Industry, Vietnam); <u>Luyen Van Tong</u> (Hanoi University of Industry, Vietnam); Cuong Van Nguyen (Hanoi University of Industry, Vietnam)	A Null Synthesis Technique-Based Beamformer for Uniform Rectangular Arrays
09:21	<u>Phuoc Nguyen T. H.</u> (University of Information Technology, VNU-HCM, Vietnam); Huynh Van Nguyen (Viettel High Technology Industries Corporation, Vietnam); Khuc Bang (Peter the Great St. Petersburg Polytechnic University, Russia)	Performance Evaluation of Channel Estimation Methods for 5G NR Uplink Control Channel in the Scenario of Low Signal-to-Noise Ratios
09:38	<u>Bui Anh Duc</u> (Le Quy Don Technical University, Vietnam); Hoang Tran Manh (Telecommunications University, Vietnam); Thu Phuong Nguyen, Xuan Nam Tran and Pham Thanh Hiep (Le Quy Don Technical University, Vietnam)	Optimizing Power for Data Transmissions in Uplink Cell-Free Multi-ABSs Communication Systems
09:55	Tran Viet Vinh, Pham Thanh Hiep and <u>Thu Phuong Nguyen</u> (Le Quy Don Technical University, Vietnam)	Combined Variable Active Antenna Spatial Modulation and NOMA to Enhance Spectral Efficiency for Multiple Users MIMO Systems

Conference Schedule Details

Room: Marina - S2: Antennas and Propagation

Chair: Dr. Tran Thi Lan (University of Transport and Communications, Vietnam)

Thursday, October 20 8:30 - 10:12

Time	Authors	Title
08:30	<u>Duc-Nguyen Viet Tran</u> (Le Quy Don Technical University, Vietnam); Hung Huy Tran (Phenikaa University, Vietnam); Hyun-Chang Park (Dongguk University, Korea (South)); Nghia Nguyen-Trong (University of Adelaide, Australia)	Simple Decoupling Structure for Dual-Sense CP MIMO Antenna
08:47	<u>Tran Hien Bui</u> , Son Xuat Ta, Nguyen Khac Kiem and Chien Ngoc Dao (Hanoi University of Science and Technology, Vietnam); Nghia Nguyen-Trong (University of Adelaide, Australia)	Dual-Band Antenna With Pattern/Polarization Diversity For 2.4/5-GHz WLAN Applications
09:04	<u>Huy Ho-Sy-Nhat</u> , Phuong-Linh Hoang, Son Xuat Ta, Nguyen Khac Kiem and Chien Ngoc Dao (Hanoi University of Science and Technology, Vietnam)	Design of Ultra-Wideband Tapered Slot Antenna Using Novel Feeding Structure
09:21	<u>Manh Tran</u> ; Hiep Nguyen; Ha Pham; Do Toan (Viettel High Technology Industries Corporation, Vietnam); Quy Van Dang (Viettel Network Technologies Center, Vietnam)	Real-time Calibration for Digital Beamforming in 5G Systems With Experiments on Testbed
09:38	Nhu-Huan Nguyen (INPG Entreprise SA 3 Parvis Louis Néel - CS 50257, France); Anthony Ghiotto (Bordeaux INP, France); <u>Minh Thuy Le</u> (School of Electrical & Electronic Engineering, Hanoi University of Science and Technology, Vietnam); Tan-Phu Vuong (Grenoble INP, France)	High Gain Microstrip Patch Antenna Array using Air-Filled Substrate Integrated Waveguide (AFSIW) Feeding Structure
09:55	<u>Tran Nguyen Thi Nhat Le</u> (Telecommunications University, Vietnam); Hoang Dang Cuong (Le Quy Don Technical University, Vietnam); Toan Tang The (University of Hai Duong, Vietnam); Ha Quoc Anh (Telecommunications University, Vietnam); Minh Thuy Le (School of Electrical & Electronic Engineering, Hanoi University of Science and Technology, Vietnam); Nguyen Quoc Dinh (Le Quy Don Technical University, Vietnam)	A Broadband Polarization-Rotation Reconfigurable Reflectarray Antenna

Conference Schedule Details

Room: Laguna - S3: Signal Processing 1

Chairs: Dr. Sang Van Doan (Vietnam Naval Academy, Vietnam),
Dr. Quang-Kien Trinh (Le Quy Don Technical University, Vietnam)

Thursday, October 20 10:30 - 12:12

Time	Authors	Title
10:30	Manh Linh Nguyen (Viettel High-Technology Industries Corporation, Vietnam); Binh Nguyen (Viettel Research & Development Institute, Vietnam); Duc Phu Phung and <u>Van Long Do</u> (Viettel High Technology Industries Corporation, Vietnam)	Three-Dimensional Direction Finding of Radio Sources in Low SNR Environments
10:47	<u>Minhhuy Le</u> and Van Su Luong (Phenikaa University, Vietnam); Dang Khoa Nguyen (International School, Vietnam National University, Vietnam); The Tuan Trinh, Phuong Thuy Vu, Thi Huong Nguyen and Hong Ha Thi Vu (Phenikaa University, Vietnam); Jinyi Lee (Chosun University, Korea (South))	Application of Histogram of Oriented Gradients and Support Vector Machine on Detection of Far-side Corrosion
11:04	<u>Hung Manh Ha</u> (Vietnam National University - International School, Vietnam); Minhhuy Le (Phenikaa University, Vietnam); Dang Khoa Nguyen (International School, Vietnam National University, Vietnam); Thai Kim (Vietnam National University, Vietnam); Luan Tran (School of Engineering, Eastern International University, Vietnam)	Action Recognition of Traffic Police by Attentive for Self-Driving Vehicles
11:21	<u>Thanh Nguyen Le Long</u> and Nam Nguyen Hoang (Hanoi University of Science and Technology, Vietnam)	Research on data transmission rate of Optical Camera Communication using LEDs for positioning system in buildings
11:38	Phuc Cong Nguyen and Tuan Van Nguyen (School of Electrical and Electronic Engineering & Hanoi University of Science and Technology, Vietnam); <u>Dung Tran</u> and Minh Anh Nguyen (School of Electrical and Electronic Engineering, 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)	Multi-task Deep-Learning Vehicle Detection and Tracking based on Aerial Views from UAV
11:55	Bui Hai Phong (MICA, HUST - Hanoi Architectural University & FIT, Vietnam); <u>Trong Nguyen Huu</u> and Thang Manh Hoang (Hanoi University of Science and Technology, Vietnam); Thi-Lan Le (School of Electronics and Telecommunications, Vietnam)	Performance evaluation of license plate detection using deep neural networks on NPU VIM3 hardware platform

Conference Schedule Details

Room: Marina - S4: Integrated Circuits

Chairs: Dr. Duy-Hieu Bui (Vietnam National University, Hanoi, Vietnam),
Dr. Nguyen Van Trung (Le Quy Don Technical University, Vietnam)

Thursday, October 20 10:30 - 12:12

Time	Authors	Title
10:30	Nguyen Ngo Doanh (Information Technology Institute, Vietnam National University, Hanoi, Vietnam); <u>Duy-Hieu Bui</u> (Vietnam National University, Hanoi, Vietnam); Xuan-Tu Tran (Vietnam National University, Hanoi, Vietnam)	Tiny Neuron Network System based on RISC-V Processor: A Decentralized Approach for IoT Applications
10:47	<u>Lam To Nguyen</u> (University of Science Viet Nam National Ho Chi Minh City, Vietnam); Bao Thuong T Cao (Vietnam); Duc-Hung Le (University of Science, VNU-HCM, Vietnam)	Implementation of Lightweight Cryptography Core PRESENT and DM-PRESENT on FPGA
11:04	<u>Duc-Manh Tran</u> (Vietnam National University, Vietnam); Duy-Hieu Bui (Vietnam National University, Hanoi, Vietnam); Xuan-Tu Tran (Vietnam National University, Hanoi, Vietnam)	A Low-Power CT Second-Order VCO-Based $\Delta\Sigma$ ADC for Audio Recording on Skywater 130-nm
11:21	<u>Xuan Thanh Pham</u> and Xuan Phuong Tran (Hanoi University of Industry, Vietnam); Khac Vu Nguyen (Pixelplus, Korea (South)); Le Van Thai (Ha Noi University of Industry, Vietnam); Duy Phong Pham (Faculty of Electronics and Telecommunications, Electric Power University, Vietnam); Kha Manh Hoang (Hanoi University of Industry, Vietnam)	A 1.9 μ W 127 nV/ $\sqrt{\text{Hz}}$ Bio Chopper Amplifier Using a Noise-Efficient Common Mode Cancellation Loop
11:38	<u>Ha Dao</u> (Le Quy Don Technical University, Vietnam); Vladislav Volcheck and Viktor R. Stempitsky (Belarusian State University of Informatics and Radioelectronics, Belarus); Tuan Trung Tran (Le Quy Don Technical University, Vietnam)	DC, AC and Breakdown Simulation of the Gallium Nitride High Electron Mobility Transistor with a Few-Layer Graphene Heat-Removal System
11:55	Viet-Manh Do (Institute of Information Technology, Vietnam); <u>Thanh Van Pham</u> (University of Fire Prevention and Fighting, Vietnam); Duc-Nghia Tran (Vietnamese Academy of Science and Technology, Vietnam); Tran Quang-Huy (Ha Noi Pedagogical University No2, Vietnam); Canh Minh Nguyen (University of Transport and Communications, Vietnam); Van Son Nguyen (Hanoi Open University, Vietnam); Tran Duc-Tan (Phenikaa University, Vietnam)	The effect of sensor position deflection on behavior classification performance

Conference Schedule Details

Room: Laguna - S5: Networks 1

Chair: Prof. Le Hoang Son (Vietnam National University, Vietnam)

Thursday, October 20 15:50 - 17:32

Time	Authors	Title
15:50	<u>Thanh Tien Nguyen</u> and Khanh-Van Nguyen (Hanoi University of Science and Technology, Vietnam)	Updated Weight Graph for dynamic path planning of multi-AGVs in healthcare environments
16:07	<u>Trong-Minh Hoang</u> and Tuan-Anh Pham (Posts and Telecommunications Institute of Technology, Vietnam); Van Viet Do (Thang Long University, Vietnam); Van-Nhan Nguyen (Posts and Telecommunications Institute of Technology, Vietnam); Nguyen Manh Hung (Thang Long University, Vietnam)	A Lightweight DNN-based IDS for Detecting IoT Cyberattacks in Edge Computing
16:24	<u>Tuan-Minh Pham</u> (Phenikaa University, Vietnam); Thi-Minh Nguyen (Dong Nai Technology University, Vietnam); XuanTuan-Trung Nguyen (Hanoi University of Science and Technology, Vietnam); Hoai-Nam Chu (University of Transport and Communications, Vietnam); Ngo Hong Son (Phenikaa University, Vietnam)	Fast Optimal Resource Allocation for Resilient Service Coordination in an NFV-Enabled Internet-of-Things System
16:41	<u>Thu Anh Pham</u> and Ngoc Dang (Posts and Telecommunications Institute of Technology, Vietnam)	Quantum Key Distribution: A Security Solution for 5G-based IoT Networks
16:58	Le Cuong Nguyen (Electric Power University, Vietnam); Cong Hung Dinh (Telecommunications University, Vietnam); <u>Pham Thanh Hiep</u> (Le Quy Don Technical University, Vietnam)	Outage Performance of UAV aided V2V-NOMA Communication Systems over Double Rayleigh Channels
17:15	<u>Duc Ngoc Minh Dang</u> (FPT University, Ho Chi Minh, Vietnam); Van-Thau Tran and Lam Hoang Nguyen (Ton Duc Thang University, Vietnam); Nhat Truong Pham (Ton Duc Thang University & Institute for Computational Science, Vietnam); Tran Anh Khoa (Modeling Evolutionary Algorithms Simulation & Artificial Intelligence, Vietnam); Hanh Ngoc Dang (HCMC University of Technology, Vietnam & University of Technology Sydney, Australia)	Space-Frequency Diversity based MAC protocol for IEEE 802.11ah networks

Conference Schedule Details

Room: Marina - S6: Communications 2

Chair: Prof. Ngoc The Dang (Posts and Telecommunications Institute of Technology, Vietnam)

Thursday, October 20 15:50 - 17:32

Time	Authors	Title
15:50	Yidong Li, Wai Man Tam and <u>Francis C.M. Lau</u> (The Hong Kong Polytechnic University, Hong Kong)	Modified Noisy Gradient Descent Bit-Flipping Decoding Algorithms for LDPC Codes
16:07	<u>Xiaozhou Lu</u> and Sunghwan Kim (University of Ulsan, Korea (South))	Log-likelihood Ratio for Low-Density Parity-Check Codes Under Binary Symmetric Erasure Channel in DNA Storage
16:24	<u>Dang-Minh Phan</u> (Viettel High Technology Industries Corporation, Viettel Group, Vietnam); Hao Xuan Luong (Viettel High Technology Industries Corporation (VHT), Viettel Group, Vietnam); Tien Nguyen (Viettel High Technology Industries Corporation, Vietnam); Hoan Van Duong (Viettel High Technology Industries Corporation (VHT), Viettel Group, Vietnam)	A Simplified Judgment to Enhance Decoding Performance of 5G NR Physical Uplink Control Channel Format 2 with Reed-Muller Code
16:41	Quang-Kien Trinh, Ngoc-Anh Vu, Hai-Nam Le, Thi-Hong-Tham Tran, Trung-Kien Hoang and <u>Chi Dinh Tran</u> (Le Quy Don Technical University, Vietnam); Pham Xuan Nghia (Le Quy Don Technical University Ha Noi, Viet Nam, Vietnam)	A VHF-Band Multichannel Direct Sampling Receiver Implementation Using Under-sampling Technique
16:58	<u>Tran Thi Thao Nguyen</u> and Nguyen Viet Ha (University of Science, VNU-HCM, Vietnam); Hiroshi Ochi (Kyushu Institute of Technology, Japan)	Design of a Reliable Low Latency Industrial Wireless LAN System
17:15	<u>Duc Hoang</u> (Posts and Telecommunications Institute of Technologies, Vietnam); Thuy V. Nguyen (Posts and Telecommunications Institute of Technology, Vietnam); Thang Le Nhat (Post and Telecommunications Institute Technologies, Vietnam); Hieu T. Nguyen (University in Southeast Norway, Norway)	Low-Complexity Large-Scale MIMO Detector With 16-Ary QAM Superposition Constellations

Conference Schedule Details

Room: Laguna - S7: Microwave Engineering

Chairs: Dr. Minh Thuy Le (School of Electrical & Electronic Engineering, HUST, Vietnam)

Dr. Luong Duy Manh (Le Quy Don Technical University, Vietnam)

Friday, October 21 8:30 - 9:38

Time	Authors	Title
08:30	Chi Dat Pham and <u>Thanh Long Nguyen</u> (Hanoi University of Science and Technology, Vietnam); Nam Ha-Van (Aalto University, Finland); Minh Thuy Le (School of Electrical & Electronic Engineering, Hanoi University of Science and Technology, Vietnam)	Parasitic Capacitance Analysis in High-Frequency Wireless Power Transfer Systems
08:47	<u>Thi Anh Vu</u> , Do Toan and Duc Nhat Nguyen (Viettel High Technology Industries Corporation, Vietnam); Nhung Quang Tran (Viettel High Technology Industries Corporation (VHT), Vietnam); Quoc Hung Nguyen (Viettel High Technology, Vietnam); Vu Xuan Trung Nguyen and Hoang Truyen (Viettel High Technology Industries Corporation, Vietnam); Minh Thuy Le (School of Electrical & Electronic Engineering, Hanoi University of Science and Technology, Vietnam)	Dual-polarized High Gain Patch Antenna for 5G MIMO Application
09:04	<u>Nguyen Uyen</u> , Nguyen Anh (Viettel Aerospace Institute, Vietnam); Luong Duy Manh (Le Quy Don Technical University, Vietnam)	A Compact and Low-cost RF Balun with Improved Bandwidth and Isolation
09:21	Khuat Dinh Chinh and Lam Phi (University of Transport and Communications, Vietnam); <u>Tran Thi Lan</u> (University of Transport and Communications, Vietnam)	A Wideband High Gain Circularly Polarized Antenna Based on Nut-Shaped Metasurface

Conference Schedule Details

Room: Sentosa - S8: Recent Advances in B5G/6G Wireless Communications 1

**Chairs: Dr. Trinh Van Chien (Hanoi University of Science and Technology, Vietnam),
Dr. Hien Ta (International University, Vietnam)**

Friday, October 21 8:30 - 9:38

Time	Authors	Title
08:30	<u>Thu Nguyen</u> , Khoa Tan VO and Thu-Thuy Ta (University of Information Technology, VNU-HCM, Vietnam); Tu-Anh Nguyen-Hoang (University of Information Technology - VNU-HCM, Vietnam); Dinh Ngoc Thanh (Soongsil University, Korea (South))	The benefits and challenges of applying Blockchain technology into Big Data: A literature review
08:47	<u>Hien Ta</u> and Lam Cao (International University, Vietnam); Khuong Ho-Van (HoChiMinh City University of Technology, Vietnam)	Achievable Zero-Outage Secrecy Capacity Against Eavesdroppers with Unlimited Antennas and Arbitrary Location
09:04	Nam Nhat Phan (Ho Chi Minh International University, Vietnam); <u>Sang Quang Nguyen</u> (Ho Chi Minh City University of Transport, Vietnam); Lap Luat Nguyen (International University, Vietnam)	Artificial Noise-aided Adaptive Secure Transmissions
09:21	<u>Tran Ngo Giang</u> (University of Ulsan, Korea (South)); Sang Quang Nguyen (Ho Chi Minh City University of Transport, Vietnam); Minh T Nguyen (Thai Nguyen University of Technology, Vietnam); Sunghwan Kim (University of Ulsan, Korea (South))	Optimal Power Allocation for Non-Orthogonal Multiple Access Visible Light Communications with Short Packet and Imperfect Channel Information

Conference Schedule Details

Room: Laguna - S9: Networks 2

Chair: Dr. Sinh Cong Lam (VNU - University of Engineering and Technology, Vietnam)

Friday, October 21 10:55 - 12:03

Time	Authors	Title
10:55	<u>Tran Hoa</u> and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))	A Many-to-One Matching based Task Offloading (MATO) Scheme for Fog computing-enabled IoT Systems
11:12	<u>Ngoc-Tuan Do</u> , Phu-Cuong Le and Van-Phuc Hoang (Le Quy Don Technical University, Vietnam); Sang Van Doan (Vietnam Naval Academy, Vietnam & ICT CRC, Kumoh National Institute of Technology, Korea (South)); Hoai Giang Nguyen (Hanoi Open University, Vietnam); Cong-Kha Pham (University of Electro-Communications (UEC), Japan)	MO-DLSCA: Deep Learning Based Non-profiled Side Channel Analysis Using Multi-output Neural Networks
11:29	<u>Hien Do Thi Thu</u> and Phan The Duy (University of Information Technology, VNU-HCM, Vietnam); Hien Do Hoang (University of Information Technology - VNU-HCM, Vietnam); Nghi Hoang Khoa (University of Information Technology, VNU-HCM, Vietnam); Van-Hau Pham (University of Information Technology, Vietnam)	A case study for evaluating learners' behaviors from online cybersecurity training platform on digital forensics subject
11:46	<u>Thao Manh Nguyen</u> (Université Côte d'Azur & LEAT, France); 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)	Low-power LoRaWAN Extender Using Multiple Relays: Design and Evaluation

Conference Schedule Details

Room: Sentosa - S10: Machine Learning for Future Networks and IoT Systems

Chairs: Dr. Thien Huynh-The (Kumoh National Institute of Technology, Korea (South))

Friday, October 21 10:55 - 12:03

Time	Authors	Title
10:55	Yehan Ukwaththage and Mohamed Yaseer (University of Sri Jayawardenepura, Sri Lanka); Chamitha De Alwis (University of Sri Jayawardenepura, Sri Lanka); <u>Madhusanka Liyanage</u> (University College Dublin, Ireland & University of Oulu, Finland)	A Novel Method for Network Quality based Navigation for Seamless Mobile Services
11:12	<u>NgocBinh Nguyen</u> and Minh Nghia Pham (Le Quy Don Technical University, Vietnam); Vannhu Le (Le Quy Don Technical University, Vietnam); Dung DuongQuoc (Le Quy Don Technical University, Vietnam); Sang Van Doan (Vietnam Naval Academy, Vietnam)	Micro-Doppler signatures based human activity classification using Dense-Inception Neural Network
11:29	Truong Giang Vu (VinUniversity, Vietnam); Makhanov Nursultan and <u>Nguyen Anh Tu</u> (Nazarbayev University, Kazakhstan); Kok-Seng Wong (VinUniversity, Vietnam)	On the Trade-off Between Privacy Protection and Data Utility for Chest X-ray Images
11:46	<u>Van-Tai Nguyen</u> , Van-Chuc Hoang, Xuan-Ha Nguyen and Le Kim-Hung (University of Information Technology, Vietnam)	Towards a high-performance threat-aware system for software-defined networks

Conference Schedule Details

Room: Laguna - S11: Electronics

Chair: Dr. Loan Pham-Nguyen (Hanoi University of Science and Technology, Vietnam)

Friday, October 21 13:50 - 15:32

Time	Authors	Title
13:30	<u>Sylvain Guilley</u> (TELECOM-Paris, General Manager and CTO of Secure-IC, France)	Invited Talk 2: Multi-certified root-of-trust: exploiting synergies
13:50	Dung V. Vu (Viettel High Technology Industries Corporation, Vietnam); <u>Thiem V. Pham</u> and Dong Nguyen (Viettel Group, Vietnam)	A path-following guidance algorithm for fixed-wing UAV swarms on a decentralized network
14:07	Hue Luu Thi (Electric Power University, Vietnam); <u>Nguyen Pham Thuc Anh</u> (Ha Noi University of Science and Technology Ha Noi, Viet Nam, Vietnam)	Planning the optimal trajectory for a dual-arm robot system using a genetic algorithm considering the controller
14:24	Emranul Haque (Independent University, Bangladesh (IUB), Bangladesh); Abdullah Al Noman (Independent University, Bangladesh); <u>Md. Anwar Hossain</u> (Bangladesh University of Business and Technology, Bangladesh); Nguyen Hoang Hai (Hanoi University of Science and Technology, Vietnam); Feroz Ahmed (Independent University, Bangladesh)	Gold Coated Photonic Crystal Fiber-Based Biosensor for Pathogenic Bacteria Detection
14:41	<u>Van-Ngoc Dinh</u> and Ngoc-My Bui (AMST, Vietnam); Tinh Van Nguyen (Le Quy Don Technical University, Vietnam); Khoa-Sang Nguyen, Quang-Manh Duong and Quang-Kien Trinh (Le Quy Don Technical University, Vietnam)	A Study on Adversarial Attacks and Defense Method on Binarized Neural Network
14:58	Van Binh Nguyen (International University, Vietnam); Van An Vo (Eastern International University, Vietnam); <u>Thi Thuy Nga Le</u> (University of Transport and Communication, Vietnam); Van Son Nguyen (Hanoi Open University, Vietnam)	Build Full Model for Production Data Monitoring and Managing using IoT Technology
15:15	Debaleena D Gupta and Susmoy Kundu (Independent University Bangladesh, Bangladesh); <u>Emranul Haque</u> (Independent University, Bangladesh (IUB), Bangladesh); Abdullah Al Noman (Independent University, Bangladesh); Nguyen Hoang Hai (Hanoi University of Science and Technology, Vietnam); Md. Anwar Hossain (Bangladesh University of Business and Technology, Bangladesh); Feroz Ahmed (Independent University, Bangladesh)	A Comparative Performance Analysis of Lead & Bismuth Incorporated PCF Based Dual Polarized SPR Sensor

Conference Schedule Details

Room: Sentosa - S12: Recent Advances in B5G/6G Wireless Communications 2

Chair: Dr. Nguyen Tien Hoa (Hanoi University of Science and Technology, Vietnam)

Dr. Nguyen Thanh Chuyen (Hanoi University of Science and Technology, Vietnam)

Friday, October 21 13:50 - 15:32

Time	Authors	Title
13:30	<u>Francis C.M. LAU</u> (The Hong Kong Polytechnic University, IEEE Fellow)	Invited Talk 1: A new type of ultimate-Shannon-limit channel codes
13:50	<u>Sang Quang Nguyen</u> (Ho Chi Minh City University of Transport, Vietnam); Thai-Hoc Vu and Sunghwan Kim (University of Ulsan, Korea (South))	Residual Transceiver Hardware Impairment and Imperfect Interference Cancellation With Two Way-enabled RIS Systems
14:07	<u>Duong Minh Nguyen</u> (Pusan National University, Korea (South)); Hong-Son Luong (Vinfast, Vietnam); Tung Nguyen, Quoc-Viet Pham, Quang Vinh Do and Won-Joo Hwang (Pusan National University, Korea (South))	FFD: A Full-Stack Federated Distillation method for Heterogeneous Massive IoT Networks
14:24	Trinh Van Chien and <u>Phong Hong Le</u> (Hanoi University of Science and Technology, Vietnam); Phuc Xuan Dao (Hanoi Open University, Vietnam); Nguyen Tien Hoa (Hanoi University of Science and Technology, Vietnam)	Image Restoration under Semantic Communications
14:41	Nguyen Trong Huan and Tran Trung Duy (Posts and Telecommunications Institute of Technology, Vietnam); Lam Thanh Tu (Ton Duc Thang University, Vietnam); <u>Sang Quang Nguyen</u> (Ho Chi Minh City University of Transport, Vietnam); Hien Ta (International University, Vietnam); Pham Viet Tuan (Hue University, Vietnam)	Incremental Cooperation Based Multi-hop Relaying Scheme With Fountain Codes, Wirelessly Energy Harvesting and Partial Relay Selection
14:58	Van-Nhat Do (University of Engineering and Technology & UET, VNU, Vietnam); Duc-Huy Luong and <u>Quang-Truong Can</u> (VNU University of Engineering and Technology, Vietnam); Trung Ninh Bui (University of Engineering and Technology, VNU-Hanoi, Vietnam); Thai-Mai Dinh (VNU University of Engineering and Technology, Vietnam)	Applying Dynamic Threshold in SDN to Detect DDoS Attacks
15:15	Tai Ta Viet and Nguyen Thi Xuan Uyen (University of Science, Vietnam); <u>Dang Le Khoa</u> (University of Science, VNUHCM, Vietnam)	Optimal User Clustering and Power Allocation in NOMA Systems

Conference Schedule Details

Room: Laguna - S13: Signal Processing 2

Chair: Dr. Xiem Hoang (VNU-UET, Vietnam)

Dr. Huu-Tien Vu (Post and Telecommunications Institute of Technology, Vietnam)

Friday, October 21 15:50 - 17:32

Time	Authors	Title
15:50	<u>Hoang Thi Yen</u> (The University of Electro-Communications, Japan); Van-Phuc Hoang (Le Quy Don Technical University, Vietnam); Nguyen Huu Son (The University of Electro-Communications, Japan); Quang-Kien Trinh and Xuan Nam Tran (Le Quy Don Technical University, Vietnam); Koichiro Ishibashi and Guanghao Sun (The University of ElectroCommunications, Japan)	Real-Time Medical Radar-based Vital Sign Monitoring System Implemented with Signal Quality Classification Algorithm
16:07	<u>Nguyen Huu Son</u> , Hoang Thi Yen, Guanghao Sun and Koichiro Ishibashi (The University of Electro-Communications, Japan)	High-Accuracy Heart Rate Estimation by Half/Double BBI Moving Average and Data Recovery Algorithm of 24GHz CW-Doppler Radar
16:24	Huu-Tien Vu (Post and Telecommunications Institute of Technology, Vietnam); Huy Phi (Posts and Telecommunications Institute of Technology, Vietnam); Thippaphone Sisouvong (Posts and Telecommunications Institute of Technology, Vietnam); Xiem Hoang (VNU-UET, Vietnam); Sang NguyenQuang and <u>Minh DoNgoc</u> (University of Engineering and Technology, Vietnam)	VMAF based quantization parameter prediction model for low resolution video coding
16:41	Huy Hoang Nguyen, Quang Hieu Dang and Ba Luan Dang (Hanoi University of Science and Technology, Vietnam); Nguyen D. Minh (HUST, Vietnam); <u>Dam Hoang Phuong</u> (Ha Noi University of Science and Technology, Vietnam); Viet Anh Vo (Hanoi University of Science and Technology, Vietnam)	A novel implementation of sleeping posture classification using RANC ecosystem
16:58	Van Binh Nguyen (International University, Vietnam); Phu Duy Trinh (FPT Group, Vietnam); <u>Thi Thuy Nga Le</u> (University of Transport and Communication, Vietnam); Van Son Nguyen (Hanoi Open University, Vietnam)	Fast Warning System for Driver of Distraction with Traffic Object Recognition by Image Processing
17:15	<u>Duc-Hieu Nguyen</u> (Posts and Telecommunications Institute of Technology, Vietnam); Minh-Tuan Nguyen (Posts and Telecommunications Institute of Technology (PTIT), Vietnam); Hai-Chau Le (Posts and Telecommunications Institute of Technology, Vietnam)	An Efficient Electrocardiogram R-peak Detection Exploiting Ensemble Empirical Mode Decomposition and Hilbert Transform

Conference Schedule Details

Room: Sentosa - S14: Communications 3

Chair: Dr. Trong-Minh Hoang (Posts and Telecommunications Institute of Technology, Vietnam)

Friday, October 21 15:50 - 17:32

Time	Authors	Title
15:50	Toshiharu Kojima and <u>Yuto Yoshinaka</u> (The University of Electro-Communications, Japan)	An Initial Acquisition Scheme with Reduced Complexity for Modified Walsh-Hadamard Code Division Multiplexing
16:07	Toshiharu Kojima and <u>Riki Azuma</u> (The University of Electro-Communications, Japan)	Data-Aided Channel Estimation for Time Diversity in Helicopter Satellite Communications
16:24	<u>Trung Thanh Nguyen</u> (Le Quy Don Technical University, Vietnam); Toan Van Hoang (Telecommunications University, Vietnam); Le Huyen and Xuan Nam Tran (Le Quy Don Technical University, Vietnam)	Physical Layer Security for UAV-Based Full-Duplex Relay NOMA System
16:41	<u>Nga Thi Nguyen</u> (Le Quy Don Technical University & Institute of Electronic, Vietnam); Anh Phan (Military Institute of Science and Technology, Vietnam); Van Loi Cao, Nguyen Huyen and Pham Thanh Hiep (Le Quy Don Technical University, Vietnam)	Pilot Enrichment Methods for Improving Quality of Received Signal in Underwater Acoustic OFDM Systems
16:58	<u>Inna Valieva</u> (Malardalen University, Sweden); Iurii Voitenko (Wireless P2P Technologies AB, Sweden); Mats Björkman and Johan Åkerberg (Malardalen University, Sweden); Mikael Ekström (Mälardalen University, Sweden)	Blind Symbol Rate Estimation Using Wavelet Transform and Deep Learning For FSK Modulated Signals
17:15	<u>Duy-Thai Nguyen</u> (Institute of Electronics, Academy of Military Science and Technology, Vietnam); Hai Le (Military Institute of Science and Technology, Vietnam); Van-Phuc Hoang (Le Quy Don Technical University, Vietnam); Sang Van Doan (Vietnam Naval Academy, Vietnam); DuyThang Thai (Vietnam Naval Academy, Vietnam)	Combining U-Net Auto-encoder and MUSIC Algorithm for Improving DOA Estimation Accuracy under Defects of Antenna Array

Conference Schedule Details

Venue: Lobby in front of Victoria Room - Posters Session

Chair: Dr. Thi-Hong-Tham Tran (Le Quy Don Technical University, Vietnam)

Thursday, October 20 15:20 - 15:50

No.	Authors	Title
1	<u>Duc-Nguyen Tran Viet</u> (Le Quy Don Technical University, Ha Noi, Vietnam); Huy-Hung Tran, (Phenikaa University, Ha Noi, Vietnam); Dinh Nguyen Quoc (Le Quy Don Technical University, Ha Noi, Vietnam)	A Compact Design of Flexible and Bandwidth Reconfigurable Antenna Using PIN Diodes
2	<u>Hoa T. Le</u> (Posts and Telecommunications Institute of Technology, Hanoi, Vietnam); Thang V. Nguyen (University of Aizu, Aizu-wakamatsu, Japan); Hien T. T. Pham and Ngoc T. Dang (Posts and Telecommunications Institute of Technology, Hanoi, Vietnam)	Energy Harvesting in FSO Unmanned Aerial Vehicle Communication Systems with Atmospheric Turbulence and Hovering
3	<u>Tran Thi Quynh</u> , Khuat Dinh Chinh, Phi Van Lam, Tran Thi Lan (University of Transport and Communications Hanoi, Vietnam)	A Multiband Planar F-Inverted Antenna for 3G/4G/5G Mobile Devices
4	Doan Phi Hung (Switching Technology Research Center, Viettel High Technology Industries Corporation, Hanoi, Vietnam); Nguyen Tai Hung (Faculty of Communication Engineering, Hanoi University of Science and Technology, Hanoi, Vietnam); Dinh Viet Quan, Do Ngoc Thanh and <u>Ba Dinh Hoai</u> (Switching Technology Research Center, Viettel High Technology Industries Corporation, Hanoi, Vietnam)	CoTCP – A New Approach to The Concurrent TCP
5	Phuong Thi Hoai Nguyen, Huy Duc Nguyen, Linh Duc Nguyen, Lam The Nguyen and <u>Vuong Van Ngo</u> (Viettel High Tech, Viettel Group, Hanoi, Vietnam)	Enhanced Routing Algorithm with Session Initiation Protocol in IMS system
6	<u>Tran Huy Long</u> and Tran Thien Chinh (Research Institute of Posts and Telecommunications, HaNoi, VietNam); Tran Hoai Trung (University of Transport and Communications, HaNoi, VietNam); Nguyen Manh Hung (HaNoi Open University, HaNoi, VietNam)	Security Issues of Wireless Sensor Network in Smart City

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