



IEEE INTERNATIONAL CONFERENCE ON SYSTEM SCIENCE AND ENGINEERING

ICSSE 2019

July 19–21, 2019

Venue: Quang Binh University, Dong Hoi City, Vietnam

CONFERENCE DIGEST



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PREFACE



Prof. Dr. Do Van Dung,
President, HCMUTE, Vietnam



Prof. Dr. Yo-Ping Huang,
NTUT, Taiwan



Prof. Dr. Hoang Duong Hung,
President, QBU, Vietnam



A/Prof. Dr. Le Hieu Giang,
Vice President,
HCMUTE, Vietnam



A/Prof. Dr. Ngo Van Thuyen,
University Council Chairman,
HCMUTE, Vietnam



A/Prof. Dr. Hoang An Quoc,
Head of Sci. Tech. & Int'l Affairs
Office, HCMUTE, Vietnam

It is a great pleasure for the organizing committee to welcome you to the annual International Conference on System Science and Engineering (ICSSE 2019), which is held this year in Quang Binh University, Dong Hoi City, Quang Binh Province, Vietnam.

System Science and Engineering is obviously the research field that covers a wide spectrum of modern technologies due to the nature that a system itself comprises many components or sub-systems which come from different scientific fields. Nowadays, the combination is becoming more and more sophisticated in accordance with the rapid developments of research achievements, operation requirements taking into account people, cultures, activities and inter-relationships among them. Nevertheless, the countless new concepts in the era of Industrial Revolution 4.0 with the so-called Internet of Things, Artificial Intelligence, Big Data, Hybrid Cloud Computing, Cyber-physical Systems, etc. are challenging those who have been already familiar and working well with the traditional systems to change their mindsets and deal with new methodologies. Technology advancement on one hand provides opportunities for improving system capabilities, but on the other hand introduces development risks that must be weighed and managed.

To keep going on with a very successful annual series of International conference on system science and engineering that has been initiated since 2010, we are delighted to organize ICSSE 2019 to continue the stream of research in the field, to expose the most recent achievements and to promote active participation and networking of all attendees and presenters via plenary presentation sessions, keynote addresses, interactive workshops and panel discussions. As usual, ICSSE 2019 is jointly organized by a consortium of esteemed institutions including Ho Chi Minh City University of Technology and Education (Vietnam), Quang Binh University (Vietnam) and Taiwan Association of System Science and Engineering (TASSE, Taiwan).

We would like to express our sincere thanks to all delegates, conference speakers, special guests, session chairmen, reviewers, sponsors, supporters, exhibitors and volunteers for making ICSSE 2019 this wonderful success.

We wish you a pleasant and memorable stay in Vietnam. Thank you very much for being with us.

Do Van Dung, HCMUTE, Vietnam
Yo-Ping Huang, NTUT, Taiwan
Hoang Duong Hung, QBU, Vietnam
General Chairmen, ICSSE 2019

WELCOME SPEECH



Prof. Dr. Do Van Dung,
President,
Ho Chi Minh City University of
Technology and Education, Vietnam

Dear participants,

On behalf of Ho Chi Minh City University of Technology and Education, I am very pleased to welcome you, the distinguished guests, researchers, colleagues, authors and students to join in the IEEE International conference on System Science and Engineering (ICSSE 2019).

The era of Industry 4.0 is pushing all of us not only to come up with new innovative ideas for modern systems but also to renovate our working manner and methodologies to avoid the risk of being out-of-date. Therefore, among the countless number of scientific aspects, system science and engineering must always be the first to update and put into application the most modern achievements such as cyber-physical system, blockchain, internet of things, artificial intelligence, machine learning, big data, virtual reality and augmented reality, hybrid cloud computing, and so on. It is predicted that future systems could be human-like intelligent, sophisticated, automatically upgradable and even globally linked to increase their capability to many folds. We strongly believe that inventors and researchers in system science and engineering from all around the world are working extremely hard to make such prospect become true.

The series of ICSSE conference has been initiated since almost a decade ago by TASSE, Taiwan, in order to continuously observe and update the latest development through the annual exchange of scholars and experts of the field. This year, HCMUTE is pleased to take the

second chance to organize ICSSE 2019 in cooperation with Quang Binh University, IEEE and TASSE. We are so proud to see that, like in the ICSSE 2017 in HCMUTE campus, we have now in Vietnam again participants from almost 20 countries, such as Australia, France, China, India, Indonesia, Italy, Japan, Kazakhstan, Malaysia, New Zealand, Russia, Singapore, South Africa, South Korea, Sri Lanka, Taiwan, Thailand, United Kingdom and Vietnam who are gathering here today to share their most up-to-date research results in engineering and technology through many fruitful in-depth discussions. For HCMUTE and QBU, the two Vietnamese higher education institutions, this event also brings back to us one more big important and meaningful advantage. It is truly a great opportunity for our faculty members, researchers and students to witness and update with the state-of-the-art knowledge which could be utilized later to enrich their teaching and learning contents with respective suitable teaching and learning methodologies. The two universities have been taking an enthusiastic role in the development of system science and engineering in Vietnam through research and training to help foster the future human resource with well-equipped knowledge for the field.

We would like to thank all participants for saving your valuable time to attend and contribute to the conference. Also, we deeply thank the organizing committee and the co-organizer institutions for their devoted efforts in the overall organization work.

Finally, Vietnam is well-known as a peaceful country for tourism with many world-class sight-seeing places, one of which is Quang Binh Province with the world heritage Phong Nha Cave, beautiful mountains, rivers, streams and sea beaches. The ICSSE 2019 organizing committee would like to make use of this special occasion to offer you, especially the foreign guests, a good city tour on the last day of the conference time. Please kindly arrange your time and register for the tour at the earliest so that our organizing committee could do the best preparation for you.

I wish you good health, happiness and an enjoyable time in Vietnam!

Thank you!

OPENING SPEECH

Distinguished participants,
Ladies and gentlemen,

It is my great honor to deliver the opening speech on behalf of Quang Binh University, the Host university for the prestigious ICSSE International Conference in 2019.

First of all, I would like to warmly welcome you all here to beautiful Dong Hoi City to attend the IEEE International Conference on System Science and Engineering. Being a main co-partner of holding the conference on System Science and Engineering, we find it a great opportunity for learning from and experiencing an academic event of System Science and Engineering because it involves people, organizations, cultures, activities and interrelationships among them.

As a local university, we are fully aware of the significance of changes and innovation in many aspects for greater development of the university in specific, the province and the whole country Vietnam in general. We highly encourage and appreciate desires of sharing outstanding ideas, connecting scholars, researchers, people and organizations as a whole together finding solutions to problems in our lives. Therefore, it is the goal of the conference to bring together scholars from all areas, both local and international, to have a forum to discuss, demonstrate and exchange research ideas in the scope of system science and engineering.

With our significant efforts, we look forward to a great success of the conference. Hopefully, you earn a great time working in Dong Hoi City, with the best sharing and discussion. We also believe that participants from almost 20 countries, such as Australia, France, China, India, Indonesia, Italy, Japan, Kazakhstan, Malaysia, New Zealand, Russia, Singapore, South Africa, South Korea, Sri Lanka, Taiwan, Thailand, United Kingdom Viet Nam will share the same language of innovation in science to exchange their respective research achievements in engineering and technology through professional discussion.



Prof. Dr. Hoang Duong Hung,
President
Quang Binh University, Vietnam

In ICSSE 2019, there are totally 133 papers to be presented divided into 8 separated sessions with various scientific topics and distinguished chairmen. Participants are kindly invited to join in the sessions of their interest in order to gain the most knowledge and experience. To make sure you are familiar with QBU Campus and able to find the session room correctly, please refer to the Conference booklet for the information you need.

This event would not have been possible without the support of all the stakeholders. We would like to thank all participants for your invaluable participation and contribution to the conference. Many thanks also go to the organizing committee for their devoted assistance in the overall organization work. Despite the fact that Quang Binh University is the host of the event, we highly appreciate the cooperation of the outstanding team from Ho Chi Minh City University of Technology and Education. Such collaboration is for sure a milestone of the desirable brotherhood relationship between our two universities.

Thank you and best wishes!

CONFERENCE INFORMATION

In this 2nd time being held in Vietnam, the annual International Conference on Science System and Engineering (ICSSE 2019) is going to take place in the beautiful Dong Hoi City, Quang Binh Province on 19th-21st July 2019. Initiated and technically supported by the Taiwan Association of System Science and Engineering (TASSE) since 2010, the conference has been focusing on issues related to the global future of engineering and technology. ICSSE 2019 keeps featuring all active participation and networking in both formal and informal settings through dynamic keynote addresses and interactive sessions, workshops and panel discussions on system science and engineering.

The sophisticated interdisciplinary nature of new technologies and the impact of cyber-infrastructure appear to demand new and dramatic paradigms in engineering education, research and development. ICSSE 2019 is thus an opportunity bringing together a wide range of engineering and technology stakeholders from around the globe to explore and build up new capacities in engineering and technology education that are essential in creating environmentally and socially sustainable 21st century economies. This conference aims to enhance the latest trends and achievements that will shape the future worlds of engineering and technology education.

VENUE

All Conference sessions of ICSSE 2019 will be staged at the main campus of Quang Binh University (QBU) which is located at the Dong Hoi City of Quang Binh Province, only around 4km from Dong Hoi Airport. Founded in 1959, QBU (<https://quangbinhuni.edu.vn/>) is the only public education organization in Quang Binh province for multi-disciplinary, multi-level education including Junior College, Bachelor and Master. Its mission is to train highly-qualified human resources primarily for Quang Binh and neighboring provinces in the central part of Vietnam; to promote international cooperation and collaboration with foreign universities in training, scientific research and culture exchanging; and to support training for the border provinces of Laos. Over more than half a century of establishment and development, with great contribution in education and training, the university has been

honored with the Victory Medal, the Resistance Medal, the Labor Medal and Competitive Flag, Merit the Government, Ministry of Education & Training and Quang Binh Province.

CONFERENCE REGISTRATION

The Conference Registration desk is located at the Conference Hall, at the main campus of QBU, with the following opening hours:

Day 1: Friday, July 19th, 2019

From 02:00pm to 08:00pm

Day 2: Saturday, July 20th, 2019

From 07:00am to 08:00pm

Day 3: Sunday, July 21st, 2019

From 08:00am to 01:00pm

INFORMATION FOR PRESENTERS

A standard time allocation for a single paper presentation is 20 minutes, comprising 15 minutes for presentation and 5 minutes for Q&A and discussion. Please remember that all participants may come into your session from other break-out sessions of the conference or even from off-campus. It is important not to start early and fill gaps made by “no-show” with actual presentations or active discussion but don’t get out of the program sequence, please.

INFORMATION FOR SESSION CHAIRMEN

A chairman has been invited for every keynote session or paper presentation session. Chairmen are requested to maintain timelines. Please assure the time allowed for each paper presentation.

CONFERENCE PROCEEDINGS AND PUBLICATION

All selected papers have been carefully peer-reviewed by reviewing committee and all presented papers will appear in the published proceedings with **ISBN 978-1-7281-0525-3 (XPLORE COMPLIANT)**, **Online ISSN 2325-0925, 978-1-7281-0523-9 (CD-ROM) and 978-1-7281-0524-6 (USB)**.

AWARDS

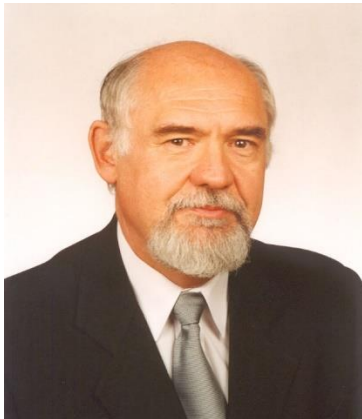
In ICSSE 2019, Best Paper Awards will be presented to recognize excellent research and presentations.

- The awards will be announced and given during the Gala Banquet on Saturday, July 20th 2019.
- Judges' decision is the objective final conclusion according to preset standards.
- The judges reserve the right not to award Best Paper awards.

ICSSE 2019 Best Paper Award Selection Criteria

- Present original and accurate scholarly work or practice
- The paper has been pre-registered
- The paper must be orally presented for evaluation
- Be comprehensively detailed and presented in a manner consistent with the best academic standards
- Stimulate delegates' interest and achieve delegate participation
- Use visual aids that are technically excellent in design and execution, that present information in a relevant and innovative manner
- Set the model for future ICSSE papers and presentations

KEYNOTE SPEAKERS



Prof. Dr. Imre J. Rudas

Head of Steering Committee of University
Research and Innovation Center
Óbuda University, Budapest, Hungary.
E-mail: rudas@uni-obuda.hu

Imre J. Rudas graduated from Bánki Donát Polytechnic, Budapest in 1971, received the Master Degree in Mathematics from the Eötvös Loránd University, Budapest, the Ph.D. in Robotics from the Hungarian Academy of Sciences in 1987, while the Doctor of Science degree from the Hungarian Academy of Sciences in 2004. He received Doctor Honoris Causa degree from the Technical University of Košice, Slovakia, from “Polytechnica” University of Timisoara, Romania, from Óbuda University, and from Slovak University of Technology in Bratislava. He was awarded by the Honorary Professor title of Wroclaw University of Technology in 2013. He is active as a full university professor. He served as the President of Budapest Tech from 2003 till 2010. He was the founder of Óbuda University, the successor of Budapest Tec and was elected as the first President in the period 2010-2014. He served as the President of the Hungarian Rector’s Conference and member of European University Association in 2008. Now he is the Head of the Steering Committee of the University Research and Innovation Center. He has been the president of the Central European Living Lab for Intelligent Robotics since 2014.

He is a Fellow of IEEE, Senior AdCom member of Industrial Electronics Society (IES), he served IES as a Vice-President in 2000-2001. He was elected as the Vice-President for Membership and Student Activities in IEEE System, Man and Cybernetics Society for the period 2015-2016. He is the Senior Past Chair of IEEE Hungary Section. He served IFSA (International Fuzzy System Association) as Vice-President and Treasurer for a period of 7 years; he had been the President of Hungarian Fuzzy Association for ten years. He had been the Vice-President of the Hungarian Academy of Engineers for four years. He serves as an associate editor of some scientific journals, including IEEE Transactions on Industrial Electronics, member of editorial board of Journal of Advanced Computational Intelligence, Editor-in-Chief of Acta Polytechnica Hungarica, member of various national and international scientific committees. He is the founder of the IEEE International Conference Series on Intelligent Engineering Systems (INES), IEEE International Conference on Computational Cybernetics (ICCC), IEEE International Symposium on Computational Intelligence and Informatics (CINTI, since 2000), IEEE International Symposium on Machine Intelligence and Informatics (SAMI, since 2003), IEEE International Symposium on Intelligent Systems and Informatics (SISY, since 2003), IEEE International Symposium on Applied Computational Intelligence and Informatics (SACI, since 2004), IEEE International Symposium on Logistics and Industrial Informatics (LINDI, since 2007). He has served as General Chair and Program Chair of numerous scientific international conferences. His present areas of research activities are Computational Cybernetics, Robotics, Cloud Robotics, Internet of Anything, Soft Computing, Fuzzy Control and Fuzzy Sets. He has edited and/or published 22 three books, published more than 800 papers in international scientific journal, conference proceedings and book chapters, and received more than 2000 citations.

Topic: Cyber-Physical System of Systems

Abstract:

Cyber-Physical Systems (CPSs) are the key elements of the Fourth Industrial Revolution (Industry 4.0) that started in the early 2010s. Since that time the development has dramatically accelerated, increasing number of existing and distributed CPSs are integrated providing services that go beyond the services of any of its isolated CPSs forming Cyber-Physical Systems of Systems (CPSoS). In the world of CPSoS a new type of Internet should connect any objects, any devices, any knowledge, any cyber-physical systems, any firms, companies, anyone, ...i.e., anything! This is the basic idea of the term: Internet of Anything (IoA). Internet of Anything is the interconnection of any things (devices, systems, skills), anyone, anywhere and anytime within the existing Internet infrastructure. Our research team investigates new ideas to connect distributed CPSs systems and system elements (sensors, actuators,

control logic, intelligent machines, data logging and data mining) to each other and represents them in a Virtual World forming a general-purpose information pool, which allows for large-scale CPSoS. The presentation summarizes the results and ideas of the software engine developed by our team, called MAXWHERE that provides effective working environments with spatial (Virtual Reality) multimodal arrangement and intelligent connectivity. The fundamental idea behind MAXWHERE is the generalization of the Document Object Model (DOM) introducing the Where Object Model (WOM) concept that covers the conventional WEB contents as well as the VR/AR building blocks in a coherent way empowered by the newest generation web APIs.

Typical applications of MAXWHERE includes industrial monitoring and facility support, context-based collaborative working environment, industrial training, and Interactive live presentations.

KEYNOTE SPEAKERS



Prof. Dr. Ljiljana Trajkovic
School of Engineering Science
Simon Fraser University, Canada
Email: ljilja@sfu.ca

Ljiljana Trajkovic received the Dipl. Ing. degree from University of Pristina, Yugoslavia, in 1974, the M.Sc. degrees in electrical engineering and computer engineering from Syracuse University, Syracuse, NY, in 1979 and 1981, respectively, and the Ph.D. degree in electrical engineering from University of California at Los Angeles, in 1986.

She is currently a Professor in the School of Engineering Science at Simon Fraser University, Burnaby, British Columbia, Canada. From 1995 to 1997, she was a National Science Foundation (NSF) Visiting Professor in the Electrical Engineering and Computer Sciences Department, University of California, Berkeley. She was a Research Scientist at Bell Communications Research, Morristown, NJ, from 1990 to 1997, and a Member of the Technical Staff at AT&T Bell Laboratories, Murray Hill, NJ, from 1988 to 1990. Her research interests include high-performance communication networks, control of communication systems, computer-aided circuit analysis and design, and theory of nonlinear circuits and dynamical systems.

Dr. Trajkovic serves as IEEE Division X Delegate/Director (2019–2020) and served as IEEE Division X Delegate-Elect/Director-Elect (2018). She is also serves as Senior Past President (2018–2019) of the IEEE Systems, Man, and Cybernetics Society and served as Junior Past President (2016–2017), President (2014–2015), President-Elect (2013), Vice President Publications (2012–2013, 2010–2011), Vice President Long-Range Planning and Finance (2008–2009), and a Member at Large of its Board of Governors (2004–2006). She served as 2007 President of the IEEE Circuits and Systems Society. She was a

member of the Board of Governors of the IEEE Circuits and Systems Society (2004–2005, 2001–2003). She is Chair of the IEEE Circuits and Systems Society joint Chapter of the Vancouver/Victoria Sections. She was Chair of the IEEE Technical Committee on Nonlinear Circuits and Systems (1998). She is General Co-Chair of SMC 2020 and SMC 2018 Workshop on BMI Systems and served as General Co-Chair of SMC 2016 and HPSR 2014, Special Sessions Co-Chair of SMC 2017, Technical Program Chair of SMC 2017 and SMC 2016 Workshops on BMI Systems, Technical Program Co-Chair of ISCAS 2005, and Technical Program Chair and Vice General Co-Chair of ISCAS 2004. She served as an Associate Editor of the IEEE Transactions on Circuits and Systems (Part I) (2004–2005, 1993–1995), the IEEE Transactions on Circuits and Systems (Part II) (2018, 2002–2003, 1999–2001), and the IEEE Circuits and Systems Magazine (2001–2003). She was a Distinguished Lecturer of the IEEE Circuits and Systems Society (2010–2011, 2002–2003). She is a Professional Member of IEEE-HKN and a Fellow of the IEEE.

Title: Complex Networks

Abstract:

The Internet, social networks, power grids, gene regulatory networks, neuronal systems, food webs, social systems, and networks emanating from augmented and virtual reality platforms are all examples of complex networks. Collection and analysis of data from these networks is essential for their understanding. Traffic traces collected from various deployed communication networks and the Internet have been used to characterize and model network traffic, analyze network topologies, and classify network anomalies. Data mining and statistical analysis of network data have been employed to determine traffic loads, analyze patterns of users' behavior, and predict future network traffic while spectral graph theory has been applied to analyze network topologies and capture historical trends in their development. Recent machine learning techniques have proved valuable for predicting anomalous traffic behavior and for classifying anomalies in complex networks. Further applications of these tools will help improve our understanding of the underlying mechanisms that govern behavior, improve their performance, and enhance their security of social networks such as Facebook, LinkedIn, Twitter, Internet blogs, forums, and websites.

KEYNOTE SPEAKERS



Prof. Dr. Yo-Ping Huang

Department of Electrical Engineering
National Taipei University of Technology
Taipei, Taiwan 10608
Email: yphuang@ntut.edu.tw

Yo-Ping Huang received the Ph.D. degree in electrical engineering from Texas Tech University, Lubbock, TX, USA. He is currently a Professor in the Department of Electrical Engineering and Director of AIOT R&D Center, National Taipei University of Technology, Taipei, Taiwan, where he served as the Secretary General. He was a Professor and the Dean of Research and Development, the Dean of the College of Electrical Engineering and Computer Science, and the Department Chair with Tatung University, Taipei. His current research interests include fuzzy systems design and modeling, deep learning modeling, intelligent control, medical data mining, and rehabilitation systems design.

Prof. Huang serves as the President of the Taiwan Association of Systems Science and Engineering, IEEE SMCS BoG, Chair of the IEEE SMCS Technical Committee on Intelligent Transportation Systems, Associate Editor of IEEE Trans. on SMC: Systems, Associate Editor of Int. Journal of Fuzzy Systems, and the Chair of the Taiwan SIGSPATIAL ACM Chapter. He was the Chair of IEEE SMCS Taipei Chapter, the Chair of the IEEE CIS Taipei Chapter, and the CEO of the Joint Commission of Technological and Vocational College Admission Committee, Taiwan. He is an IET Fellow and an

International Association of Grey System and Uncertain Analysis Fellow.

Topic: AIoT Systems and their Applications

Abstract:

Through several waves of downhills and uphill in the past decades, Artificial intelligence (AI) has now evolved into a must have new technology or tool in every domain. Furthermore, with the advent of powerful GPU, AI-related research or AI-based applications have sprouted in every corner of the world. Originated from pure internet connectivity the Internet of Things (IoT) has become a structure that can collect every piece of data from physical devices, daily activities, images or video into a data reservoir. As a result, tons of data are automatically generated into an enterprise database in a single day. This creates continuing demands on applying AI, IoT, and big data analytics to extract juicy contents from the huge databases. This talk will address from the AI and IoT, big data mining and system engineering perspective for systems developed to resolve the sensing, networking and applications faced in healthcare, defect image detection in manufacturing, and agriculture. Case study of AIOT in exercise monitoring and control using Kinect and Tensor flow, rehabilitation monitoring and tracking on joint rehabilitation monitoring after Total Knee Arthroplasty Reconstruction (TKA), Parkinson's Disease (PD) using sensor devices, ophthalmological images classification, AOI defect image detection and labelling, fruit, vegetable and fish growth monitoring will be demonstrated in the talk.

PROGRAM OUTLINE

IMPORTANT INFORMATION FOR ALL PARTICIPANTS

- Please wear your ICSSE 2019 Conference name tag at all times to gain admission to presentation in break-out rooms.
- Name tags and tickets are also required for Conference Gala Banquet.
- In case you may need any further information about the conference, please ask the student assistant volunteers or committee members.

FRIDAY, JULY 19th 2019

02:00pm - 03:30pm Registration

03:30pm - 05:30pm Committee Meeting

Venue: Conference Hall, The Main Campus of Quang Binh University

06:00pm - 08:00pm Welcome dinner

Venue: Sai Gon Quang Binh Hotel, 20 Quach Xuan Ky street, Hai Dinh Ward, Dong Hoi City

SATURDAY, JULY 20th 2019

07:00am - 05:30pm Registration

Venue: Conference Hall, The Main Campus of Quang Binh University

07:30am - 08:10am Opening Ceremony

Venue: The Main Campus of Quang Binh University

Music Performance of QBU students

Introduction

Opening Welcome

Presenting Flowers and Certificate to Keynote Speakers and Sponsors

08:10am - 9:00am Keynote Address 1

Venue: The Main Campus of Quang Binh University

09:00am - 9:50am Keynote Address 2

Venue: The Main Campus of Quang Binh University

9:50am - 10:05am VinTech City – Universities: Research Partnership Program

Venue: The Main Campus of Quang Binh University

10:05am - 10:10am Group Photo

Venue: The Main Campus of Quang Binh University

10:10am - 10:30am Morning Tea break

Venue: The Main Campus of Quang Binh University

10:30am - 12:00am

Breakout session No.2 (BS-2)

Topic: **Neural Networks and Fuzzy Systems**

Venue: Room No. 2

Breakout session No.3 (BS-3)

Topic: **Renewable Energy and Power Systems**

Venue: Room No. 3

Breakout session No.4 (BS-4)

Topic: **Information and Communication Engineering**

Venue: Room No. 4

Breakout session No.5 (BS-5)

Topic: **Industrial Engineering and Management**

Venue: Room No. 5

Breakout session No.6 (BS-6)

Topic: **Electrical and Electronics Engineering**

Venue: Room No. 6

Breakout session No.7 (BS-7)

Topic: **Mechatronics Engineering**

Venue: Room No. 7

Breakout session No.8 (BS-8)

Topic: **Mechanical and Automotive Engineering**

Venue: Room No.8 (Conference Hall)

12:00am - 01:30pm Lunch break

Venue: Luxe Palace Restaurant,
No. 35 Tran Quang Khai Street, Dong Hoi City, Quang Binh Province
(Pick up service will be available and covered by Organisers)

SATURDAY, JULY 20th 2019 (Cont.)

01:30pm - 03:00pm	Breakout session No.1 (BS-1) Topic: Special Session (Student authors) Venue: Room No. 1	Breakout session No.2 (BS-2) Topic: Neural Networks and Fuzzy Systems Venue: Room No. 2
	Breakout session No.3 (BS-3) Topic: Renewable Energy and Power Systems Venue: Room No. 3	Breakout session No.4 (BS-4) Topic: Information and Communication Engineering Venue: Room No. 4
	Breakout session No.5 (BS-5) Topic: Industrial Engineering and Management Venue: Room No. 5	Breakout session No.6 (BS-6) Topic: Electrical and Electronics Engineering Venue: Room No. 6
	Breakout session No.7 (BS-7) Topic: Mechatronics Engineering Venue: Room No. 7	Breakout session No.8 (BS-8) Topic: Mechanical and Automotive Engineering Venue: Room No.8 (Conference Hall)
03:30pm - 03:50pm	Afternoon Tea break Venue: At session sites, respectively	
03:50pm - 05:30pm	Breakout sessions (BS-1 to BS-8) Topics and Venues: Same as aboved	
06:00pm - 08:00pm	Gala banquet Venue: Luxe Palace Restaurant, No. 35 Tran Quang Khai Street, Dong Hoi City, Quang Binh Province (Pick up service will be available and covered by Organisers)	

SUNDAY, JULY 21st 2019

08:00am - 08:30am	Registration Venue: The Main Campus of Quang Binh University	
08:30am - 08:50am	Opening Welcome Music Performance of QBU students Representative of Board of President, QBU Venue: The Main Campus of Quang Binh University	
08:50am - 09:40am	Keynote Address 3 Venue: The Main Campus of Quang Binh University	
09:40am - 10:00am	Morning Tea break Venue: The Main Campus of Quang Binh University	
10:00am - 11:30am	Breakout session No.2 (BS-2) Topic: Neural Networks and Fuzzy Systems Venue: Room No. 2	Breakout session No.4 (BS-4) Topic: Information and Communication Engineering Venue: Room No. 4
	Breakout session No.6 (BS-6) Topic: Electrical and Electronics Engineering Venue: Room No. 6	Breakout session No.7 (BS-7) Topic: Mechatronics Engineering Venue: Room No. 7
11:30am - 01:00pm	Lunch Venue: Luxe Palace Restaurant, No. 35 Tran Quang Khai Street, Dong Hoi City, Quang Binh Province (Pick up service will be available and covered by Organisers)	

DETAILED CONFERENCE PROGRAM

FRIDAY, JULY 19th 2019

2:00pm - 03:30pm Registration

3:30pm - 05:30pm Committee Meeting

Venue: Conference Hall, The Main Campus of Quang Binh University

6:00pm - 08:00pm Welcome dinner

Venue: Sai Gon Quang Binh Hotel, 20 Quach Xuan Ky Street, Hai Dinh Ward, Dong Hoi City

SATURDAY, JULY 20th 2019

07:00am Registration

Venue: Conference Hall, The Main Campus of Quang Binh University

07:30am Opening Ceremony

Venue: Conference Hall, The Main Campus of Quang Binh University

Music Performance of QBU students

Introduction

Dr. Vo Thi Dung, Director, Department of Scientific Management and International Relations, QBU, Vietnam

Opening & Welcome

Prof. Dr. Do Van Dung, President, HCMUTE, Vietnam

Prof. Dr. Yo-Ping Huang, President of TASSE, Taiwan

Prof. Dr. Hoang Duong Hung, President, QBU, Vietnam

Guest of Honors

Dr. Tran Nam Tu, Representative of Ministry of Education and Training

Presenting Flowers and Certificate to Keynote Speakers and Sponsors

08:10am Keynote Address

Venue: Conference Hall, The Main Campus of Quang Binh University

Chair: **Assoc. Prof. Dr. Ngo Van Thuyen**, HCMUTE, Vietnam

Keynote Address 1:

Cyber-Physical System of Systems

Prof. Dr. Imre J. Rudas

Head of Steering Committee of University Research and Innovation Center Óbuda University, Budapest, Hungary

Keynote Address 2:

Complex Networks

Prof. Dr. Ljiljana Trajkovic

School of Engineering Science Simon Fraser University, Canada

9:50am VinTech City – Universities: Research Partnership Program

Representative of VinTech City

Venue: Conference Hall, The Main Campus of Quang Binh University

10:05am Group Photo

Venue: Conference Hall, The Main Campus of Quang Binh University

10:10am Morning Tea

Venue: Conference Hall, The Main Campus of Quang Binh University

10:30am - 05:30pm Paper Presentations - Breakout Sessions

Venue: Session Rooms (No.1-8), The Main Campus of Quang Binh University

(12:00pm - 01:30pm Lunch break)

(03:30pm - 03:50pm Afternoon Tea break)

(06:00pm - 08:00pm Gala banquet)

SUNDAY, JULY 21st 2019

08:00am Registration

Venue: Conference Hall, The Main Campus of Quang Binh University

08:30am Opening Ceremony

Music Performance of QBU students

Introduction

Dr. Vo Thi Dung, Director, Department of Scientific Management and International Relations, QBU, Vietnam

Opening Welcome

Prof. Dr. Hoang Duong Hung, President, QBU, Vietnam

Venue: Conference Hall, The Main Campus of Quang Binh University

08:50am Keynote Address

Venue: Conference Hall, The Main Campus of Quang Binh University

Chair: **Assoc. Prof. Dr. Hoang An Quoc**, HCMUTE, Vietnam

Keynote Address 3:

AIoT Systems and their Applications

Prof. Yo-Ping Huang

Department of Electrical Engineering, National Taipei University of Technology

09:40am Morning Tea

Venue: Conference Hall, The Main Campus of Quang Binh University

10:00am - 11:30am Paper Presentations - Breakout Sessions

Venue: Session Rooms (No. 2, 4, 6, 7), The Main Campus of Quang Binh University

11:30am - 01:00pm Lunch break

Venue: Luxe Palace Restaurant,

No. 35 Tran Quang Khai Street, Dong Hoi City, Quang Binh Province

(Pick up service will be available and covered by Organisers)

SESSION CHAIRMEN

SATURDAY, JULY 20th 2019

Breakout session No. 1 (BS-1) Topic: Special Session (Student authors) Venue: Room No. 1	01:30pm – 03:30pm	Prof. Dr. Wen-June Wang, Taiwan Prof. Dr. Pei-Jun Lee, Taiwan Assoc. Prof. Dr. Truong Dinh Nhon, Vietnam
	03:50pm – 05:30pm	Prof. Dr. Wen-June Wang, Taiwan Prof. Dr. Pei-Jun Lee, Taiwan Assoc. Prof. Dr. Truong Dinh Nhon, Vietnam
Breakout session No. 2 (BS-2) Topic: Neural Networks and Fuzzy Systems Venue: Room No. 2	10:30am – 12:00am	Prof. Dr. Chen-Chien Hsu, Taiwan Dr. Fuminori Kobayashi, Japan
	01:30pm – 03:30pm	Prof. Dr. Huei-Yung Lin, Taiwan Dr. Pham Ngoc Son, Vietnam
	03:50pm – 05:30pm	Prof. Dr. Chen-Chien Hsu, Taiwan Dr. Shang-Chih Lin, Taiwan
Breakout session No. 3 (BS-3) Topic: Renewable Energy and Power Systems Venue: Room No. 3	10:30am – 12:00am	Dr. Vu Van Phong, Taiwan Dr. Dinh Truc Ha, Vietnam
	01:30pm – 03:30pm	Dr. Dao Phuong Nam, Vietnam Dr. Tran Vi Do, Vietnam
	03:50pm – 05:30pm	Assoc. Prof. Dr. Hoang An Quoc, Vietnam Dr. Vu Van Phong, Vietnam
Breakout session No. 4 (BS-4) Topic: Information and Communication Engineering Venue: Room No. 4	10:30am – 12:00am	Dr. Pritpal Singh, India Dr. Pham Ngoc Hung, Vietnam
	01:30pm – 03:30pm	Prof. Dr. Chan-Yun Yang, Taiwan Dr. Hoang Van Dung, Vietnam
	03:50pm – 05:30pm	Prof. Dr. Yue-Shan Chang, Taiwan Assoc. Prof. Dr. Jiann-Jone Chen, Taiwan
Breakout session No. 5 (BS-5) Topic: Industrial Engineering and Management Venue: Room No. 5	10:30am – 12:00am	Prof. Dr. Josef Langerman, South Africa Dr. Nguyen Quoc Khanh, Vietnam
	01:30pm – 03:30pm	Assoc. Prof. Dr. Chih-Hua Tai, Taiwan Dr. Nguyen Phan Anh Huy, Vietnam
	03:50pm – 05:30pm	Assoc. Prof. Dr. Chih-Hua Tai, Taiwan Dr. Nguyen Phan Anh Huy, Vietnam
Breakout session No. 6 (BS-6) Topic: Electrical and Electronics Engineering Venue: Room No. 6	10:30am – 12:00am	Prof. Dr. Kuang-Yow Lian, Taiwan Prof. Dr. Hsuan-Ming Feng, Taiwan
	01:30pm – 03:30pm	Prof. Dr. Chih-Min Lin, Taiwan Prof. Dr. Ching-Chih Tsai, Taiwan
	03:50pm – 05:30pm	Dr. Le My Ha, Vietnam Dr. Kavalchuk Ilya, Vietnam
Breakout session No. 7 (BS-7) Topic: Mechatronics Engineering Venue: Room No. 7	10:30am – 12:00am	Assoc. Prof. Dr. Nguyen Truong Thinh, Vietnam Assoc. Prof. Dr. Do Duc Ton, Kazakhstan
	01:30pm – 03:30pm	Assoc. Prof. Dr. Dang Thien Ngon, Vietnam Dr. Nguyen Viet Hung, Vietnam
	03:50pm – 05:30pm	Assoc. Prof. Dr. Dang Thien Ngon, Vietnam Dr. Tran Ngoc Dang Khoa, Vietnam
Breakout session No.8 (BS-8) Topic: Mechanical and Automotive Engineering Venue: Room No. 8 (Conference Hall)	10:30am – 12:00am	Prof. Dr. Youn Cheol Park, Korea Dr. Le Minh Nhut, Vietnam
	01:30pm – 03:30pm	Assoc. Prof. Dr. Dang Thanh Trung, Vietnam Dr. Hoang Trung Kien, Vietnam
	03:50pm – 05:30pm	Assoc. Prof. Dr. Do Thanh Trung, Vietnam Assoc. Prof. Dr. Van Huu Thinh, Vietnam

SUNDAY, JULY 21st 2019

Breakout session No. 2 (BS-2) Topic: Neural Networks and Fuzzy Systems Venue: Room No. 2	10:30am – 11:30am	Prof. Dr. Kang-Hyun Jo , <i>Korea</i> Dr. Zhongyang Han , <i>China</i>
Breakout session No. 4 (BS-4) Topic: Information and Communication Engineering Venue: Room No. 4	10:30am – 11:30am	Assoc. Prof. Dr. Phan Van Ca , <i>Vietnam</i> Dr. Dang Xuan Ba , <i>Vietnam</i>
Breakout session No. 6 (BS-6) Topic: Electrical and Electronics Engineering Venue: Room No. 6	10:30am – 11:30am	Assoc. Prof. Dr. Vo Viet Cuong , <i>Vietnam</i> Assoc. Prof. Dr. Truong Dinh Nhon , <i>Vietnam</i>
Breakout session No. 7 (BS-7) Topic: Mechatronics Engineering Venue: Room No. 7	10:30am – 11:30am	Assoc. Prof. Dr. Nguyen Truong Thinh , <i>Vietnam</i> Dr. Le Van Nhu , <i>Vietnam</i>

BREAKOUT SESSIONS OF DAY 2

(SATURDAY, JULY 20th 2019)

BS-1 Special Session (Student authors, 11 papers)

Venue: Room No. 1

Saturday, July 20th 2019

01:30pm - 03:30pm

Chair: Prof. Dr. Wen-June Wang, *National Central University, Taiwan*

Prof. Dr. Pei-Jun Lee, *National Chi Nan University, Taiwan*

Assoc. Prof. Dr. Truong Dinh Nhon, *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **10-Control of Mobile Robot to Track Target by Using Image Processing**, Quang Thinh Truong, Ha Quang Thinh Ngo, Thanh Phuong Nguyen and Hung Nguyen
- (2) **38-Human Detection and Tracking for Autonomous Human-following Quadcopter**, Manh-Cuong Le and My-Ha Le
- (3) **75-Prediction of Tourist Behaviour : Tourist Visiting Places by Adapting Convolutional Long Short-Term Deep Learning**, Jaruwan Kanjanasupawan, Tipajin Thaipisitikul, Yi-Cheng Chen, Timothy K. Shih and Anongnart Srivihok
- (4) **77-A Generalized Space Vector Modulation for Cascaded H-Bridge Multi-Level Inverter**, Chung Mai Van, Phuong Vu Hoang, Son Pham Cong, Tu Nguyen Xuan, Minh Tran Trong and Lien Nguyen Van
- (5) **94-Application of the Part Rotation Effect for Reliability of the Robotic Assembly Process**, Trung Ta.Tran, Mikhail Vladimirovich.Vartanov and Maksim Viktorovich. Arkhipov
- (6) **98-MPPT Design for a DC Stand-Alone Solar Power System with Partial Shaded PV Modules**, Ngo Sy, Chian-Song Chiu and Wei-En Shao

03:50pm - 05:30pm

Chair: Prof. Dr. Wen-June Wang, *National Central University, Taiwan*

Prof. Dr. Pei-Jun Lee, *National Chi Nan University, Taiwan*

Assoc. Prof. Dr. Truong Dinh Nhon, *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **157-A Quasi-Z-Source T-Type Inverter with Fault-Tolerant Capability**, Duc-Tri Do, Minh-Khai Nguyen, Thanh-Hai Quach, Van-Nho Nguyen, Thanh-Phuong Nguyen and Vinh-Thanh Tran
- (2) **158-A Novel Offset Function for Three-Level T-Type Inverter to Reduce Switching Loss**, Vinh-Thanh Tran, Thanh-Hai Quach, Duc-Tri Do, Minh-Khai Nguyen, My-Ha Le and Ngoc-Anh Truong
- (3) **162-Mango Classification System Uses Image Processing Technology and Artificial Intelligence**, Nguyen Duc Thong, Nguyen Truong Thinh and Huynh Thanh Cong
- (4) **163-Application of Intelligent Lighting Control for Street Lighting System**, Nguyen Van Doai and Tran Phuong Nam
- (5) **213-Design and Development of a Low Cost Rescue Robot with Environmental Adaptability**, Ahalya Ravendran, Poom Ponpai, Parinthorn Yodvanich, Wimonsiri Faichokchai and Chung-Hao Hsu

BS-2 Neural Networks and Fuzzy Systems (15 papers)

Venue: Room No. 2

Saturday, July 20th 2019

10:30am - 12:00am

Chair: Prof. Dr. Chen-Chien Hsu, *National Taiwan Normal University, Taiwan*

Dr. Fuminori Kobayashi, *Kyushu Institute of Technology (retired), Japan*

- (1) **8-Robust U-Net-Based Road Lane Markings Detection for Autonomous Driving**, Le-Anh Tran and My-Ha Le
- (2) **17-Adaptive Dynamic Surface Control for Path Following of Ships**, Tuan Nguyen Khac, Dung Vo Tien, Le Ngo Thi and Thang Le Tran
- (3) **24-Space-and-Cost-Efficient Neural Control/Sensory Element Using an Analog FPGA**, Fuminori Kobayashi and Tetsuo Furukawa
- (4) **47-Adaptive Neural Network Controller-Based Chattering-Free Sliding Mode for 6-DOF Industrial Manipulators**, Minh-Chi Le, Shun-Feng Su, Van-Truong Nguyen, Lee-Wei Chen and Van-Yen Nguyen.

01:30pm - 03:30pm

Chair: Prof. Dr. Huei-Yung Lin, *National Chung Cheng University, Taiwan*

Dr. Pham Ngoc Son, *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **50-A Time-Frequency Signal-Based Convolutional Neural Network Algorithm for Fault Diagnosis of Gasoline Engine Fuel Control System**, Shang-Chih Lin, Shun-Feng Su and Yennun Huang
- (2) **54-Remote HeartRate Measurement Based on Signal Feature Detection in Time Domain**, Bing-Fei Wu, Bing-Ruei Tsai, Yin-Cheng Tsai, Yin-Yin Yang, Po-Wei Huang and Kuan-Hung Chen
- (3) **63-Using BEMD in CNN to Identify Landslide in Satellite Image**, Trong-An Bui, Pei-Jun Lee, Kai-Yew Lum, Chia-Ray Chen and Shiuan-Hal Shiu
- (4) **71-Development of a 3D Semantic Segmentation Camera Based on Mask Regional Convolutional Neural Network**, Van Luan Tran and Huei-Yung Lin
- (5) **95-A Method for High Resolution Satellite Image Compression Using Type-1 and Type-2 Fuzzy Sets**, Pritpal Singh, Yo-Ping Huang, Tsu-Tian Lee and Hoang An Quoc
- (6) **169-Toward the Flexible Automation for Robot Learning from Human Demonstration Using Multi-Modal Perception Approach**, Jing-Hao Chen, Guan-Yi Lu, Yi-Hsing Chien, Hsin-Han Chiang, Wei-Yen Wang and Chen-Chien Hsu

03:50pm - 05:30pm

Chair: Prof. Dr. Chen-Chien Hsu, *National Taiwan Normal University, Taiwan*

Dr. Shang-Chih Lin, *Academia Sinica, Taiwan*

- (1) **110-Effective Arrhythmia Detection Using Majority Voting**, Quang H. Nguyen, Trang T. T. Do, Abu Mathew Thoppan, Chee Farr Chong, Indu Arya, Kamal Manisha Maddi, Siddharth Pandey, Viknesh Kumar Balakrishnan, Hung N. Pham, Binh P. Nguyen and Matthew C. H. Chua
- (2) **111-Music Genre Classification Using Residual Attention Network**, Quang H. Nguyen, Trang T. T. Do, Thanh B. Chu, Loan V. Trinh, Dung H. Nguyen, Cuong V. Phan, Tuan A. Phan, Dung V. Doan, Hung N. Pham, Binh P. Nguyen and Matthew C. H. Chua
- (3) **113-Real-Time Facial Expression Recognition Based on CNN**, Keng-Cheng Liu, Chen-Chien Hsu, Wei-Yen Wang and Hsin-Han Chiang
- (4) **117-Neural Network Based Adaptive Control of Web Transport Systems**, Cuong Nguyen Manh, Dinh Nguyen Duc, Dung Pham Tien, Manh Tran Van, Lam Nguyen Tung and Ly Tong Thi
- (5) **131-Advanced Intelligent Fuzzy Control of Standalone PV-Wind-Diesel Hybrid System**, Ho Pham Huy Anh, Le Vinh Truong and Cao Van Kien

BS-3 Renewable Energy and Power Systems (14 papers)

Venue: Room No. 3

Saturday, July 20th 2019

10:30am - 12:00am

Chair: Dr. Vu Van Phong, *Ho Chi Minh City University of Technology and Education, Vietnam*

Dr. Dinh Truc Ha, *The University of Danang – University of Science and Technology Danang, Vietnam*

- (1) **48-A New Maximum Power Point Tracking Algorithm for the Photovoltaic Power System**, Binh Nam Nguyen, Van Tan Nguyen, Thi Bich Thanh Truong, Van Kien Pham, Duong Hung Hoang and Hong Viet Phuong Nguyen
- (2) **52-Multi-Objectives Problem for Load Shedding in Micro Grid**, Binh Phan, Nghia Le, Son Pham and Tan Le
- (3) **53-Transient Stability of Low Voltage Micro Grid**, Binh Phan, Hai Nguyen, Phuc Le, Hung Nguyen and Nghia Le
- (4) **62-Dynamic Voltage Stability Enhancement of a Grid-Connected Wind Power System by ANFIS Controlled Static Var Compensator**, Van-Tri Bui, Thi-Trang Hoang, Thanh-Long Duong and Dinh-Nhon Truong

01:30pm - 03:30pm

Chair: Dr. Dao Phuong Nam, *Hanoi University of Science and Technology, Vietnam*

Dr. Tran Vi Do, *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **66-Analysis of Uncertainties for the Operation and Stability of an Islanded Microgrid**, Van Tan Nguyen, Duong Hung Hoang, Huu Hieu Nguyen, Kim Hung Le, The Khanh Truong and Quoc Cuong Le
- (2) **68-Robust Observer Design and Fault Reconstruction for Wind Energy Conversion System: SOS Approach**, Van-Phong Vu, Wen-June Wang, Van-Dung Do, Ton Duc Do, Van-Thuyen Ngo and Dinh-Nhon Truong
- (3) **138-Optimal Placement and Sizing of Wind Farm in Vietnamese Power System Based on Particle Swarm Optimization**, Dinh Thanh Viet, Tran Quoc Tuan and Vo Van Phuong
- (4) **161-An Adaptive Backstepping Control for Switched Systems in Presence of Control Input Constraint**, Nguyen Truong Thanh, Pham Ngoc Sam and Dao Phuong Nam
- (5) **182-A Method to Estimate the Yield of Photovoltaic Power Plant Solely in MATLAB/Simulink**, Phuong Truong Le, Hoang An Quoc, Ngo Van Thuyen, Huan-Liang Tsai

03:50pm - 05:30pm

Chair: [Assoc. Prof. Dr. Hoang An Quoc](#), *Ho Chi Minh City University of Technology and Education, Vietnam*
[Dr. Vu Van Phong](#), *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **194-A New Metric to Quantify the Vulnerability of Power Grids**, Dinh Truc Ha, Nicolas Retière and Jean-Guy Caputo
- (2) **196-Dynamic Stability Improvement Issues with a Grid-Connected Microgrid System**, Dinh-Nhon Truong, Mi-Sa Nguyen Thi, Hieu-Giang Le, Van-Dung Do, Van-Thuyen Ngo and An-Quoc Hoang
- (3) **200-Facade Integrated Photovoltaic Systems: Potential Applications for Commercial Building in Vietnam**, Luan Duy Le Nguyen, Sang Dinh Ngoc, Dinh Truong Cong, Du Le Thuong, Son Nguyen Van, Vu Nguyen Hoang Minh and Ngoc Thien Le
- (4) **202-Potential Industrial Sectors Promising for Commercialization of Solar PV Rooftop Applications in Danang City**, Dinh Truc Ha, Van Kien Pham and Hong Viet Phuong Nguyen
- (5) **224-CO2 Reduction Potential by Putting Electric Vehicles into Operation in Phu Quoc Island, Viet Nam**, Hoang-Phuong Nguyen, Viet-Cuong Vo, Tan-Dong Le, Thi-Thanh-Binh Phan, Thanh-Phong Tran and Le-Duy-Luan Nguyen

BS-4 Information and Communication Engineering (15 papers)

Venue: Room No. 4

Saturday, July 20th 2019

10:30am - 12:00am

Chair: [Dr. Pritpal Singh](#), *National Taipei University of Technology, India*
[Dr. Pham Ngoc Hung](#), *Hanoi University of Science and Technology, Vietnam*

- (1) **61-A Wireless Sensor Network for Aquaculture Using Raspberry Pi, Arduino and Xbee**, Khanh Nguyen Tuan
- (2) **92-Controlling Web Traffic and Preventing DoS/DDoS Attacks in Networks with the Proxy Gateway Security Solution Built on Open Hardware**, Chinh N. Huynh, Tam T. Huynh, Thinh V. Le and Hanh Tan
- (3) **103-Higher Order Mutant Generator for Lustre Programs**, Le Van Phol, Nguyen Thanh Binh and Ioannis Parissis
- (4) **109-Breast Cancer Prediction Using Feature Selection and Ensemble Voting**, Quang H. Nguyen, Trang T. T. Do, Yijing Wang, Sin Swee Heng, Kelly Chen, Wei Hao Max Ang, Conceicao Edwin Philip, Misha Singh, Hung N. Pham, Binh P. Nguyen and Matthew C. H. Chua

01:30pm - 03:30pm

Chair: [Prof. Dr. Chan-Yun Yang](#), *National Taipei University, Taiwan*
[Dr. Hoang Van Dung](#), *Quang Binh University, Vietnam*

- (1) **115-Manipulator Robot System in Navigation and Action Implement Designs**, Hsuan-Ming Feng, Ren-Jie Chen, Ching-Chang Wong
- (2) **127-Energy Efficient Performance Analysis of NOMA for Wireless Down-link in Heterogeneous Networks under Imperfect SIC**, Thuy-Duong Nguyen, Van-Ca Phan and Phuc Q. Truong
- (3) **128-The Performance Characteristics of TCP with Network Coding in Power Line Communication Network**, Nguyen Viet Ha, Le Van Hau, Tran Thi Thao Nguyen and Masato Tsuru
- (4) **143-A Comparative Study for Classification of Skin Cancer**, Tri Cong Pham, Giang Son Tran, Thi Phuong Nghiem, Antoine Doucet, Chi Mai Luong and Van-Dung Hoang
- (5) **146-Predicting Hospital Readmission Patterns of Diabetic Patients Using Ensemble Model and Cluster Analysis**, Hung N. Pham, Anurag Chatterjee, Balasubramanian Narasimhan, Choon Wee Lee, Diksha Kumari Jha, Edric Yeng Fai Wong, Stella Ellyanti, Quang H. Nguyen, Binh P. Nguyen and Matthew C. H. Chua
- (6) **149-Multimodal Detection of Parkinson Disease Based on Vocal and Improved Spiral Test**, Hung N. Pham, Trang T. T. Do, Kelvin Yi Jie Chan, Gopa Sen, Andy Y. K. Han, Pier Lim, Teresa Siew Loon Cheng, Quang H. Nguyen, Binh P. Nguyen and Matthew C. H. Chua

03:50pm - 05:30pm

Chair: [Prof. Dr. Yue-Shan Chang](#), *National Taipei University, Taiwan*
[Assoc. Prof. Dr. Jiann-Jone Chen](#), *National Taiwan University of Science and Technology, Taiwan*

- (1) **154-A Consulting System for Estimating Costs of an Information Technology Hardware Project Based on Law of Public Investment**, Huan Pham Do, Nhon V. Do and Hien D. Nguyen
- (2) **164-A Wireless Physical Layer Security Method Based on Binary Exclusive-Or Jamming Message and CSI Alignment**, Tien-Thanh Nguyen, Van-Dung Hoang and Truc-Thanh Tran
- (3) **165-Impact Analysis of Imperfect CSIs on Secrecy Performance of Two-hop Cooperative Communication Networks**, Le Tien Si and Pham Ngoc Son
- (4) **167-High Performance and Security Design for Cryptosystem Using Simultaneous Multiple Hardware Threads and Power Aware Technique**, Que-Yen Luong Ha, Trong-Tuan Nguyen, Dac-Binh Ha and Minh-Tam Ngo Le

- (5) **171-Utilize Neighboring LCU Depth Information to speedup FVC/H.266 Intra Coding**, Jiann-Jone Chen, Yi-Ying Chiu, Cheng-Hwa Lee, Yao-Hong Tsai.

BS-5 Industrial Engineering and Management (12 papers)

Venue: Room No. 5

Saturday, July 20th 2019

10:30am - 12:00am

Chair: Prof. Dr. Josef Langerman, *University of Johannesburg, South Africa*

Dr. Nguyen Quoc Khanh, *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **7-New Organisational Models That Break Silos in Organisations to Enable Software Delivery Flow**, Mahlomola Motingoe and Josef J. Langerman
- (2) **55-A Simulation Modelling Approach for Selection of Inventory Policy in a Supply Chain**, Vo Thi Kim Cuc, Nguyen Truong Thi and Nguyen Thi Le Thuy
- (3) **64-A Systematic Framework to Integrate TRIZ into DFSS for New Product Development**, Yousef Amer, Mariel Sheryn B. Ong, Atiya Al-Zuheri, Linh Thi Truc Doan and Dung Thi My Tran
- (4) **72-A Survey on Security and Privacy Issues of Blockchain Technology**, Tam T. Huynh, Thuc D. Nguyen and Hanh Tan

01:30pm - 03:30pm

Chair: Assoc. Prof. Dr. Chih-Hua Tai, *National Taipei University, Taiwan*

Dr. Phan Nguyen Anh Huy, *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **99-Thermal Data Fusion for Building Insulation**, Dongyeob Han and Jungwon Huh
- (2) **102-Optimizing a Reverse Supply Chain Model Using Fuzzy Mathematical Programming**, Yousef Amer, Linh Thi Truc Doan, Sang-Heon Lee, Phan Nguyen Ky Phuc and Dung Thi My Tran
- (3) **104-Identifying Money Laundering Accounts**, Chih-Hua Tai and Tai-Jung Kan
- (4) **121-A Proposed Genetic Algorithm Approach for The Kidney Exchange Problem**, Diana Dababneh, Yousef Amer, Linh Thi Truc Doan and Dung Thi My Tran
- (5) **132-A Risk Management Tool for the Reverse Supply Chain Network**, Anh Son Nguyen and Minh Tai Le

03:50pm - 05:30pm

Chair: Assoc. Prof. Dr. Chih-Hua Tai, *National Taipei University, Taiwan*

Dr. Phan Nguyen Anh Huy, *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **181-Evaluating E-Commerce Design Platforms by a Fuzzy VIKOR Approach**, Phan-Anh-Huy Nguyen
- (2) **191-Technology Innovation and Firm Performance IN Vietnam's SME Sector**, Nguyen Thi Anh Van
- (3) **219-Ledger of Things – Future Technology for Value Creation**, Khanh Quoc Nguyen

BS-6 Electrical and Electronics Engineering (15 papers)

Venue: Room No. 6

Saturday, July 20th 2019

10:30am - 12:00am

Chair: Prof. Dr. Kuang-Yow Lian, *National Taipei University of Technology, Taiwan*

Prof. Dr. Hsuan-Ming Feng, *National Quemoy University, Taiwan*

- (1) **2-A New Novel Fractional Optimal Sliding Mode Control for Lower-limb Exoskeleton**, Do Xuan Phu, Tran Quang Nhu and Nguyen Duc Thinh
- (2) **16-Handling Missing Data Using Standardized Load Profile (SLP) and Support Vector Regression (SVR)**, Nguyen Tuan Dung and Nguyen Thanh Phuong
- (3) **20-Interval Type-2 Petri CMAC Design for 4D Chaotic System**, Tien-Loc Le, Chih-Min Lin and Tuan-Tu Huynh
- (4) **44-High Efficiency GaN Fet Based Three Port Halfbridge Converter**, Anh Tuan Duong, Phuong Vu, Dai Duong Vu, Phi Anh Nguyen, Bao Binh Pho and Quang Dang Bui

01:30pm - 03:30pm

Chair: Prof. Dr. Chih-Min Lin, *Yuan Ze University, Taiwan*

Prof. Dr. Ching-Chih Tsai, *National Chung Hsing University, Taiwan*

- (1) **76-Vision-Based Software-in-the-Loop-Simulation for Unmanned Aerial Vehicles Using Gazebo and PX4 Open Source**, Khoa Dang Nguyen and Trong-Thang Nguyen
- (2) **80-Disturbance Observer Synthesis for Linear Systems: Application for DC Motor**, Van-Phong Vu and Ton Duc Do
- (3) **81-Heart-Rate Monitoring Device Based on Fluxgate Sensors**, Van Su Luong, Anh Tuan Nguyen, Thanh Loan To and Thi Hoai Dung Tran

- (4) **116-Tension Regulation of Roll-to-Roll Systems with Flexible Couplings**, Ly Tong Thi, Lam Nguyen Tung, Cao Duc Thanh, Dich Nguyen Quang and Quyen Nguyen Van
- (5) **129-A High Precision Indoor Positioning System Based on Ultra-wideband Sensors**, Ru-Feng Liu, Hua-Ting Yuan and Kuang-Yow Lian
- (6) **130-Advanced PMSM Machine Parameter Identification Using Modified Jaya Algorithm**, Ho Pham Huy Anh, Pham Quoc Khanh and Cao Van Kien

03:50pm - 05:30pm

Chair: **Dr. Le My Ha**, *Ho Chi Minh City University of Technology and Education, Vietnam*
Dr. Kavalchuk Ilya, *RMIT University, Vietnam*

- (1) **156-Smart Key System Design for Electric Bike for Vietnam Environment**, Veerandi Maleesha Kulasekara, Ilya Kavalchuk and Andrew Smith
- (2) **177-LQR Based SMC for Three-Phase-Inverter with LC Filter in Renewable Energy Conversion Systems**, Zholtayev Darkhan Muratovich and Ton Duc Do
- (3) **180-Rotating Sensor for Multi-Direction Light Intensity Measurement**, Dung A. Hoang, Thai Thanh Tung, Cuong M. Nguyen and Kien P. Nguyen
- (4) **186-Implementation and Analysis of Control Strategies in Guided Munition**, Nguyen Thi Anh and Nguyen Tien Dat
- (5) **190-Study on Modelling of a DC Coaxial Motor in Marine Applications**, Thinh. Nguyen Duc, Quan. Duong Ngoc, Tien. Nguyen Tan and Phu. Do Xuan

BS-7 Mechatronics Engineering (15 papers)

Venue: Room No. 7

Saturday, July 20th 2019

10:30am - 12:00am

Chair: **Assoc. Prof. Dr. Nguyen Truong Thinh**, *Ho Chi Minh City University of Technology and Education, Vietnam*
Assoc. Prof. Dr. Do Duc Ton, *Nazarbayev University, Kazakhstan*

- (1) **26-Remote Healthcare for the Elderly, Patients by Tele-presence Robot**, Nguyen Dao Xuan Hai, Luong Huu Thanh Nam, Nguyen Truong Thinh
- (2) **49-An Approach of Shoulder Movement Analysis Using Opensim Software**, Tran Vi Do, Tran Manh Son, Paolo Dario and Stefano Mazzoleni
- (3) **58-A Novel Platform of Autonomous Vehicle in Multi-Disciplinary Industry**, Thanh Luan Nguyen, Ha Quang Thinh Ngo, Thanh Phuong Nguyen and Hung Nguyen
- (4) **65-Adaptive Nonsingular Fast Terminal Sliding Mode Tracking Control for Parallel Manipulators with Uncertainties**, Van-Truong Nguyen, Shun-Feng Su, Anh-Tu Nguyen and Van-Thien Nguyen

01:30pm - 03:30pm

Chair: **Assoc. Prof. Dr. Dang Thien Ngon**, *Ho Chi Minh City University of Technology and Education, Vietnam*
Dr. Nguyen Viet Hung, *Hanoi University of Industry, Vietnam*

- (1) **86-Fault-Tolerant Control of IPMSMs Based on an Modified Sliding Mode Observer**, Zhanat Makhataeva, Bayandy Sarsembayev and Ton Duc Do
- (2) **87-Sliding Mode Control with High-Order Disturbance Observer Design for Disturbance Estimation in SPMSM**, Bayandy Sarsembayev, Tatiana Kalganova, Azamat Kaibaldiyev, Ton Duc Do and Yernar Zhetpissov
- (3) **89-Integral Sliding Mode Controller Design for Permanent Magnet Synchronous Machines**, Kanat Suleimenov, Md. Hazrat Ali and Ton Duc Do
- (4) **90-Combined H_∞ and Integral Sliding Mode Controllers for Robust Speed Control of Permanent Magnet Synchronous Motor with Load Torque Observer**, Azamat Kaibaldiyev, Yernar Zhetpissov, Bayandy Sarsembayev and Ton Duc Do
- (5) **101-Mathematical model of the dynamics of a robotic assembly using vibration technology and adaptation**, Mikhail Vladimirovich Vartanov, Vladimir Kirillovich Petrov and Minh Tu Ho
- (6) **120-A Study of Signal Detection Based On a Compliant Bistable Mechanism**, Thien Ngon Dang and Ngoc Dang Khoa Tran.

03:50pm - 05:30pm

Chair: **Assoc. Prof. Dr. Dang Thien Ngon**, *Ho Chi Minh City University of Technology and Education, Vietnam*
Dr. Tran Ngoc Dang Khoa, *Industrial University of Ho Chi Minh City, Vietnam*

- (1) **137-Big Vibration Data Diagnosis of Bearing Fault Base on Feature Representation of Autoencoder and Optimal LSSVM-CRO Classifier Model**, VietHung Nguyen, Tien Dung Hoang, VanTrong Thai and XuanChung Nguyen
- (2) **179-A New Novel Exponential Optimal Sliding Mode Control and Its Application for Lower-limb Exoskeleton**, Nguyen Quoc Van and Do Xuan Phu
- (3) **187-Radially Symmetric-Tangent Phase Mask to Obtain Invariant Imaging System to Defocus**, Huucuong Thieu, Vannhu Le, Dinhbao Bui, Minhngia Pham, Vanbang Le and Vanduan Pham
- (4) **193-Design of Cable Measuring System of a Robot Spraying Pesticides in Agricultural Farm**, Nguyen Duc Tai and Nguyen Truong Thinh
- (5) **192-Study on Ankle Rehabilitation Device Using Linear Motor**, Dao Minh Duc, Le Thi Thuy Tram, Pham Dang Phuoc and Tran Xuan Tuy

BS-8 Mechanical and Automotive Engineering (16 papers)

Venue: Room No. 8 (Conference Hall)

Saturday, July 20th 2019

10:30am - 12:00am

Chair: **Prof. Dr. Youn Cheol Park**, *Jeju National University, Korea*
Dr. Le Minh Nhut, *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **1-Development of Empirical Correlations for Ignition Delay in a Single Cylinder Engine Fueled with Diesel/Biodiesel Blends**, Minh Q. Dương, Vu H. Nguyen and Phuong X. Pham
- (2) **59-Research on Factors Influencing the Formation Graphite and Effect of Graphite on Mechanical Properties of Grey Cast Iron**, Pham Thi Hong Nga, Tran Ngoc Thien, Patricia Josepha Pritadewi, Vo Ngoc Yen Phuong
- (3) **69-The Effect of Cooling-Air Flow Conditions on the Thermal State of High-Pressure Nozzle Blade**, Manh D. Vu, Kien T. Nguyen and Thang T. Dao
- (4) **70-Study on Vibration Transimibility Characteristic of a Novel Asymmetric Nonlinear Model Using Pneumatic Spring**, Vo Ngoc Yen Phuong, Nguyen Minh Ky and Le Thanh Danh

01:30pm - 03:30pm

Chair: **Assoc. Prof. Dr. Dang Thanh Trung**, *Ho Chi Minh City University of Technology and Education, Vietnam*
Dr. Hoang Trung Kien, *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **79-Analysis of Bus Structural Performance During Full Frontal Impact**, Nguyen Phu Thuong Luu
- (2) **91-Design and Fabrication of Vibrating Electrode for Vibration-assisted EDM**, Hoang Trung Kien, Ta Nguyen Minh Duc and Nguyen Hoai Nam
- (3) **93-A New Approach to Corrosion Mapping of Fuel Tank from Collected Images Using Phased Array Technology**, Thanh Tuan To and Thien Ngon Dang
- (4) **96-Experimental Comparisons on Heat Transfer Characteristics of CO2 Air Conditioning System with an Internal Heat Exchanger and without an Internal Heat Exchanger Using Minichannel Evaporator**, Tronghieu Nguyen, Thanhtrung Dang and Kimhang Vo
- (5) **97-A Numerical Simulation on Heat Transfer Behaviors in the Gas Cooler of a CO2 Air Conditioning System**, Thanhtrung Dang, Kiencuong Giang, Hoangtuan Nguyen and Baphuoc Le
- (6) **105-An Experimental Comparison on the Evaporation Process of Pure Water and Distilled Water in Microchannel Heat Sinks**, Thanhtrung Dang, Batan Le and Ngocsang Nguyen

03:50pm - 05:30pm

Chair: **Assoc. Prof. Dr. Do Thanh Trung**, *Ho Chi Minh City University of Technology and Education, Vietnam*
Assoc. Prof. Dr. Van Huu Thinh, *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **118-A Study on The Wave Energy Converter Using Mechanical PTO**, Van Huu Thinh and Phan Cong Binh
- (2) **122-Development of a New Material Analyzing Software Using X-Ray Diffraction**, Vinh Phoi Nguyen, Anh Van Ha Nguyen and Chi Cuong Le
- (3) **133-A Decision Support Model in Additive Manufacturing and CNC Machining**, Ngoc Thang Tran, Van Mai Dang and Minh Tai Le
- (4) **153-A Study on the Effect of the Weather Conditions on the Performance of the Solar Assisted Heat Pump Drying System for Red Chili**, Le Minh Nhut, Huynh Thi Thu Hien, Youn Cheol Park and Bui Quang Huy
- (5) **221-Experimental Study on External Air Heating for an Injection Molding Process**, Minh The Uyen Tran, Son Minh Pham and Thanh Trung Do
- (6) **222-Simulation Study on Polishing of Complex Surfaces by Non-Newtonian Fluids**, Nguyen Duc Nam

BREAKOUT SESSIONS OF DAY 3

(SUNDAY, JULY 21st 2019)

BS-2 Neural Networks and Fuzzy Systems (4 papers)

Venue: Room No. 2

Sunday, July 21st 2019

10:00am - 11:30am

Chair: Prof. Dr. Kang-Hyun Jo, *University of Ulsan, Korea*

Dr. Zhongyang Han, *Dalian University of Technology, China*

- (1) **136-Goods Recognition Using Tiny YOLOv2 Network for a Collaborative Air-Ground Robotic System in Indoor Warehouses**, Ching-Chih Tsai, Xin-Cheng Lin and Feng-Chun Tai
- (2) **141-A Word Similarity Feature-Based Semi-Supervised Approach for Named Entity Recognition**, Ze Wang, Zhongyang Han, Jun Zhao, Wei Wang and Feng Jin
- (3) **148-Lesion Segmentation and Automated Melanoma Detection Using Deep Convolutional Neural Networks and XGBoost**, Hung N. Pham, Chin Yang Koay, Tanmoy Chakraborty, Sudhanshu Gupta, Boon Leong Tan, Huaqing Wu, Apurva Vardhan, Quang H. Nguyen, Nirmal Raja Palaparathi, Binh P. Nguyen and Matthew C. H. Chua
- (4) **173-PydNet: An Efficient CNN Architecture with Pyramid Depthwise Convolution Kernels**, Van-Thanh Hoang and Kang-Hyun Jo

BS-4 Information and Communication Engineering (5 papers)

Venue: Room No. 4

Sunday, July 21st 2019

10:00am - 11:30am

Chair: Assoc. Prof. Dr. Phan Van Ca, *Ho Chi Minh City University of Technology and Education, Vietnam*

Dr. Dang Xuan Ba, *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **172-Data Visualization for Air Quality Analysis on Bigdata Platform**, Yu-Ren Zeng, Yue Shan Chang and You Hao Fang
- (2) **174-Convolutional Equalizer – A Convolutional Approach to Equalize Input Features in Dimension**, Liyu, Yu, K. Settu, B. H. Sudantha and C. Y. Yang
- (3) **184-Design and Implementation of Chatbot Framework for Network Security Cameras**, Truong Van Cuong and Tran Minh Tan
- (4) **211-Performance Analysis of NOMA for Wireless Downlink in Multi-tiers Heterogeneous Network**, Quoc-Thanh Trinh, Phuc Q. Truong and Van-Ca Phan
- (5) **220-Implementing the Markov Decision Process for Efficient Water Utilization with Arduino Board in Agriculture**, Tran Kim Toai and Vo Minh Huan

BS-6 Electrical and Electronics Engineering (5 papers)

Venue: Room No. 6

Sunday, July 21st 2019

10:00am - 11:30am

Chair: Assoc. Prof. Dr. Vo Viet Cuong, *Ho Chi Minh City University of Technology and Education, Vietnam*

Assoc. Prof. Dr. Truong Dinh Nhon, *Ho Chi Minh City University of Technology and Education, Vietnam*

- (1) **199-Gain-Learning Sliding Mode Control of Robot Manipulators with Time-Delay Estimation**, Dang Xuan Ba and My-Ha Le
- (2) **214-Robust Control of a Three-phase Induction Motor**, Quan Vinh Nguyen, Bon Nhan Nguyen and Tam Minh Nguyen
- (3) **215-Analysis of the Particular Improvement in the Generator-Grid with Adaptive Prediction Model**, Tran Van Dung, Nguyen Hoang Mai and Nguyen Doan Phuoc
- (4) **216-Sliding Mode Control for Cascaded Multilevel Inverters**, Vinh Quan Nguyen, Thanh Lam Le, Minh Tam Nguyen
- (5) **225-Forecast on Electricity Demand for Industry and Construction Sectors in Vietnam by 2030**, Viet-Cuong Vo

BS-7 Mechatronics Engineering (6 papers)

Venue: Room No. 7

Sunday, July 21st 2019

10:00am - 11:30am

Chair: *Assoc. Prof. Dr. Nguyen Truong Thinh, Ho Chi Minh City University of Technology and Education, Vietnam*
Dr. Le Van Nhu, Le Quy Don Technical University, Vietnam

- (1) **201-A Research on Automated Guided Vehicle Indoor Localization System via CSI**, Minh Khoi Huynh and Duy Anh Nguyen
- (2) **203-Command-Based Autopilot System for Ships Using Neural Network – PID Controller**, Long Le Ngoc Bao, Duy Anh Nguyen and Vo Hong Hai
- (3) **204-Fuzzy Controller Design for Autonomous Underwater Vehicles Path Tracking**, Duy Anh Nguyen, Do Duy Thanh, Nguyen Tran Tien and Pham Viet Anh
- (4) **206-Storage Assignment Policy and Route Planning of AGVS in Warehouse Optimization**, Ly Gia Bao, Truong Giang Dang and Nguyen Duy Anh
- (5) **207-Applying Sliding Mode Control to Massage Robot Apply for Healthcare Therapy**, Phan Thanh Phuc, Nguyen Duc Tai and Nguyen Truong Thinh
- (6) **209-Detection and Classification Defects on Exported Banana Leaves by Computer Vision**, Duong Tan Dat, Nguyen Dao Xuan Hai and Nguyen Truong Thinh

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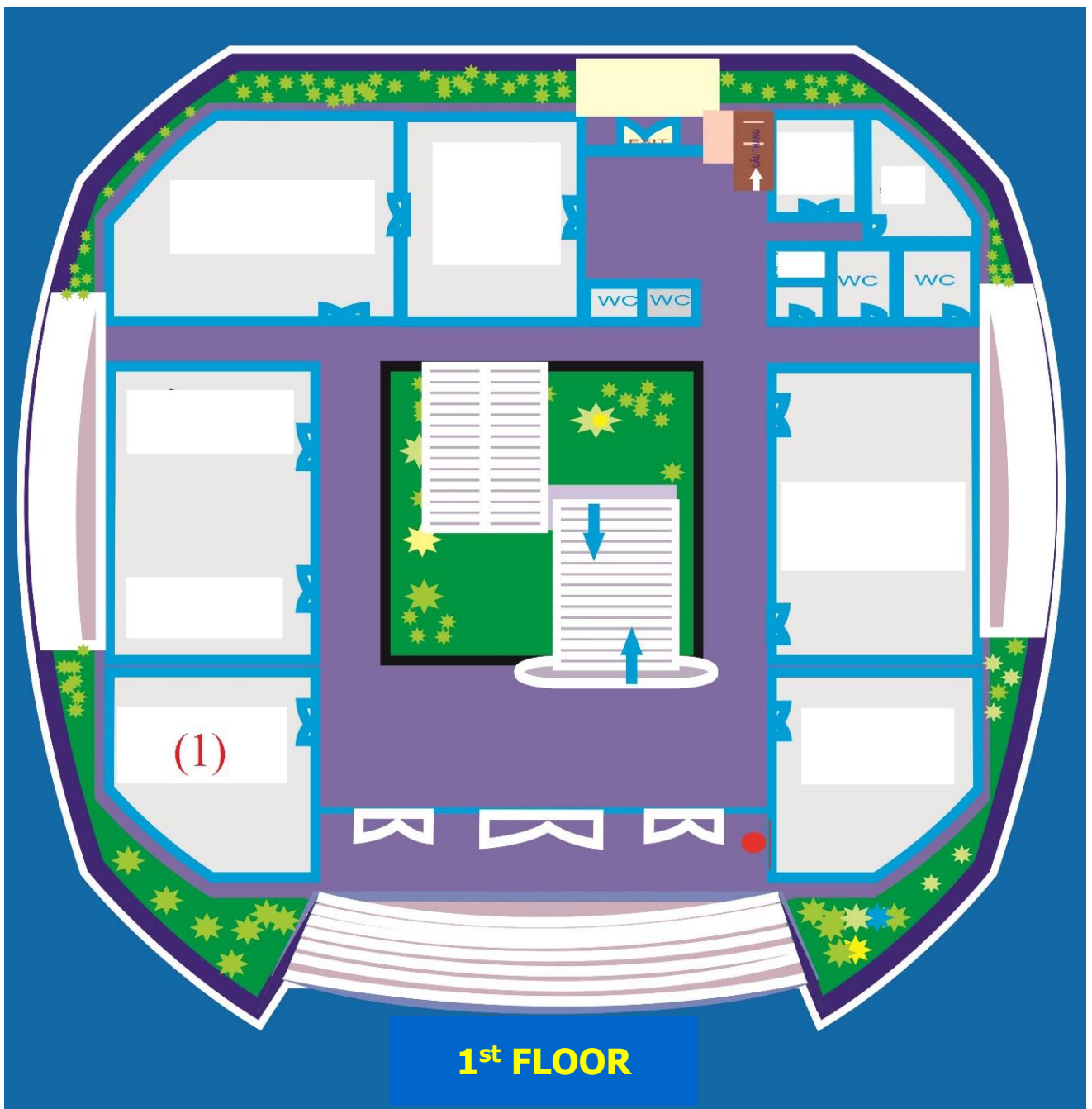
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VENUE LAYOUTS



- A. PRESIDENTIAL BOARD BUILDING**
- B. LEARNING RESOURCE CENTER**
- C. CONFERENCE HALL (Breakout session No. 8 (BS-8))**

LEARNING RESOURCES CENTRE (1st FLOOR LAYOUT)



Breakout session No. 1 (BS-1)

Topic: **Special Session (Student authors)**

Venue: Room No. 1

LEARNING RESOURCES CENTRE (2nd FLOOR LAYOUT)



Breakout session No. 2 (BS-2)

Topic: **Neural Networks and Fuzzy Systems**

Venue: Room No. 2

Breakout session No. 3 (BS-3)

Topic: **Renewable Energy and Power Systems**

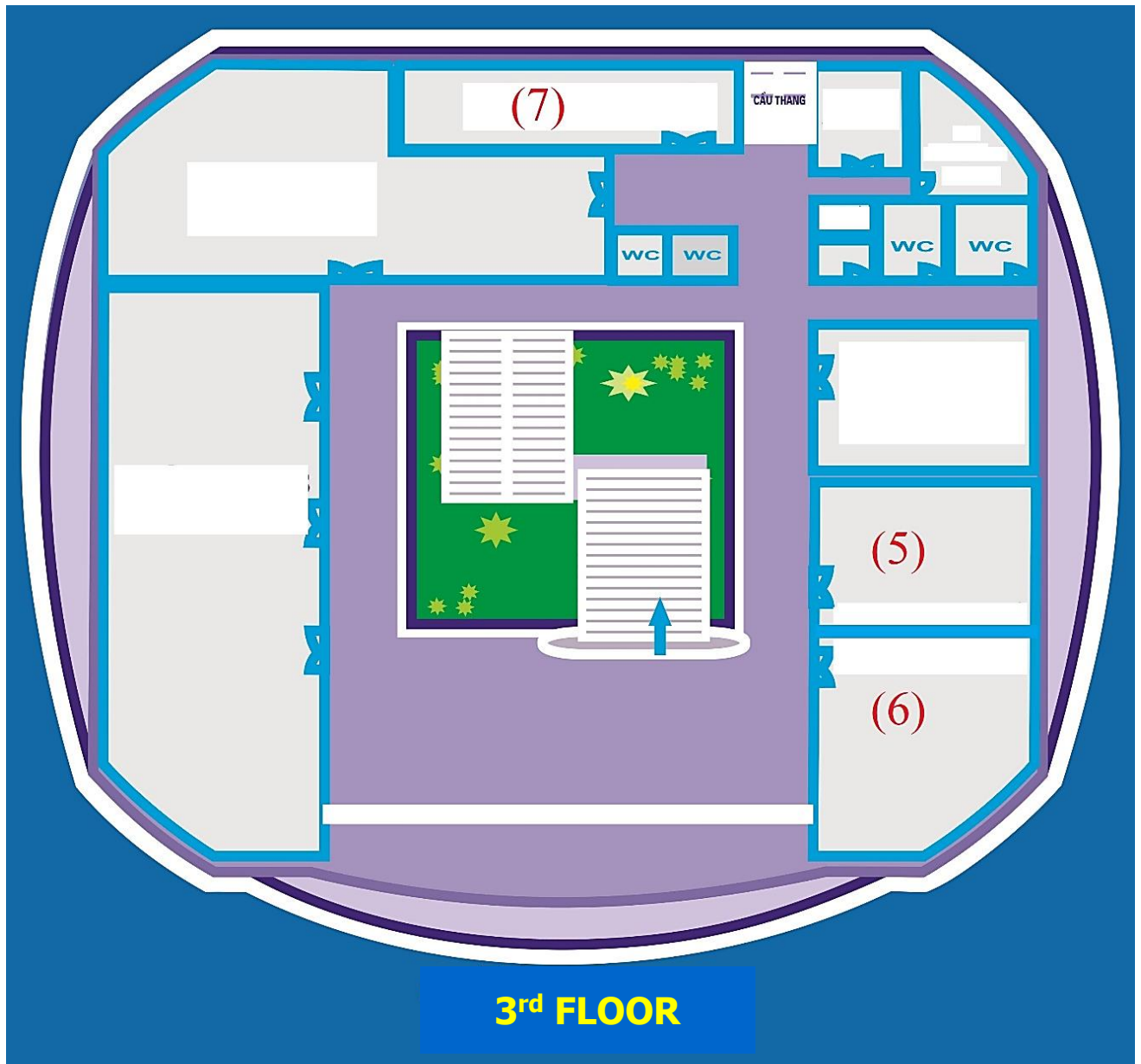
Venue: Room No. 3

Breakout session No. 4 (BS-4)

Topic: **Information and Communication Engineering**

Venue: Room No. 4

LEARNING RESOURCES CENTRE (3rd FLOOR LAYOUT)



Breakout session No. 5 (BS-5)

Topic: **Industrial Engineering and Management**

Venue: Room No. 5

Breakout session No. 6 (BS-6)

Topic: **Electrical and Electronics Engineering**

Venue: Room No. 6

Breakout session No. 7 (BS-7)

Topic: **Mechatronics Engineering**

Venue: Room No. 7



ANNOUNCEMENT

Sponsorship Program for Scientific and Technological Research

I. Scientific and technological research fields

There is no limit but the following fields should be focused on: Mechanical and Automatic Engineering, Electrical – Electronics and Information Technology; Chemistry, Pharmacy and Food Technology; Material Technology; Biotechnology; Urban Development and Management. Among these, priority is given to products, services and solutions that are applied directly to production and bring high socio-economic efficiency with co-investments from other sources.

II. Implementation methods

1. Ordered research

Organizations submit applications according to the list of science and technology tasks annually announced by Ho Chi Minh City Department of Science and Technology.

2. Sponsored research

Organizations propose their own scientific and technological tasks. The maximum support fund is 1 billion VND for tasks in the fields of natural sciences and engineering sciences; and a maximum of 500 million VND for tasks in the field of social sciences and humanities.

3. Featured product development

Organizations coordinate with enterprises in proposing scientific and technological tasks to form and develop target products with large market size and high economic value. Contribution from the companies is required not to be less than 50% of the total cost.

4. Start-up project

Incubator organizations propose innovation projects. The support budget shall not exceed 2 billion VND/ project.

III. General Information

1. Detailed information:

<http://www.dost.hochiminhcity.gov.vn>

For the Start-up project, please visit <http://sihub.vn/speedup2019/>

2. Proposal submission:

Online or by courier or Email.

For the Start-up project, please submit through <http://sihub.vn/speedup2019/>

or through email: speedup@sihub.vn

3. Submission time:

Starting from 01/03/2019

4. Result announcement:

- For proposals submitted before 31/03: Consideration and selection in April.
- For proposals submitted before 30/06: Consideration and selection in July
- For proposals submitted before 30/09: Consideration and selection in October

5. Contact information:

Ho Chi Minh City Department of Science and Technology

Office of Science Management: Mr. Pham Van Xu

No. 244 Dien Bien Phu Street, Ward 7, District 3, Ho Chi Minh City.

Tel: 028.39322147.

Email: quanlykhoahoc.skhcn@tphcm.gov.vn

VinTech City - a member of Vingroup - was established with the mission of providing comprehensive support for applied research and developing a tech-startup ecosystem in Vietnam following the success model of “**Silicon Valley**”. To realize such mission, VinTech City focuses its activities on three fundamental areas: **Technological workforce, Tech products, and a supporting ecosystem and infrastructure**. Among these factors, the workforce and tech products with competitive edges have been considered the stepping stones of the development strategy of VinTech City.

Keeping in mind such development direction, VinTech City supports science and technology companies, scientists, innovators, university lecturers and students with additional resources in order to help them to create science and technology products with competitive edges, and works as the bridge as well as the supporting ecosystem to enable the commercialization potential of tech products. In May 2019, VinTech City officially introduced **06 key programs** focusing on technological workforce development and supports for applied research projects for Vietnamese worldwide. Namely, VinTech City is implementing the VinTech Fund for Applied Research; the Research Laboratory Sponsorship program; the “Enterprise Semester” program; the SAP Training program; the Sponsorship program for events related to applied research and technological workforces; and finally, the “Tech and Start-up” clubs for students. Such wide range of support activities and programs demonstrates the comprehensive cooperation between Vingroup and the science and technology universities in Vietnam.

Among the aforementioned programs, VinTech Fund has been managed by VinTech City with the objectives of **providing financial resources and other supports in order to bring science and technology products with significant commercialization potential closer to the reality of the market**. VinTech Fund has received overwhelming response from the science and technology community since its announcement, as it offers not only financial grant up to U\$500,000 but also **supports from business perspectives** to overcome the constraints of product test and commercialization challenges. For Vietnamese research community worldwide, VinTech Fund opens the door for fostering research collaboration inside and outside Vietnam.

Vietnamese researchers, who works at prestigious research institutes and universities, can contribute to the development of science and technology in Vietnam through research collaboration, tech product development, and educational activities with domestic universities within the sponsorship framework of VinTech Fund. Moreover, VinTech Fund also provides effective support to Vietnamese expatriate researchers to test, deploy and commercialize their research results in Vietnam, in the neighbor regions, and with a further aim for the global market.

We believe that VinTech City can serve as a catalyst for **“Made in Vietnam”** tech products in the market and accomplish the mission of supporting Vietnam startup and technology ecosystem.

VinTech Fund: From Lab to Market

APPLICANTS

- Experts, researchers, technology lecturers currently working at Vietnamese universities;
- Experts, technology researchers currently working abroad
- Tech start-ups

APPLICATION TYPE

- Independence:** Group (a)-via their respective university
- Partnership:** Group (b) and (c) - under partnership with Vietnamese universities

Condition: **Commit to support one(s) of the universities signed MoU with Vingroup**

CONTACT

Email	Hotline
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Northern Vietnam address: VinTech City, COGO Office, Floor 4, Sun Plaza Ancora Building, 3 Luong Yen, Hai Ba Trung District, Hanoi.	Southern Vietnam address: VinTech City, MoonLab Office, 1Bis Nguyen Thi Minh Khai, District 1, Ho Chi Minh City

MOTIVATION TO APPLY VINTECH FUND

Applied research and tech start-up complete grant as “Silicon Valley model”

Financial support up to U\$500,000/project

Support pilot research results, market probe and product commercialization as well as start-up after R&D

REGISTRATION

For more detail about VinTech Fund, please visit webpage: <https://vintechcity.com/application-form/>



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