



ICCAIS 2022

**The 11th International Conference on
Control, Automation and Information Sciences**

<http://www.iccais2022.org>

Hanoi, Viet Nam, November 21-24, 2022

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WELCOME FROM THE GENERAL CHAIR

On behalf of the Hanoi University of Science and Technology, it is my great honor to welcome you to the International Conference on Control, Automation and Information Sciences (ICCAIS 2022).

The area of Control, Automation and Information Science is one of the prioritized areas in developed industries. They bring great benefits serving human beings in life and industrial manufacture. Nowadays, instrumentations and automation systems become more intelligent thanks to the combination of modern control techniques, sensors, and classical power electronics with artificial intelligence and data science. These sophisticated technologies challenge scientists, universities and companies in the world to research and create impactful applications. Hence, we believe that the ICCAIS 2022 will be a venue to connect, exchange, and collaborate in Control, Automation and Information Sciences.

Hanoi University of Science and Technology (HUST) remains to be the leading technical university in Vietnam. Currently, the University has 1065 academic staff, of which 805 holds a doctorate degree and 279 are Associate and Full professors, accounting for about 76.3% and 26% of total faculty members respectively. Recently in 2022, four of our subjects namely: Electrical and electronic engineering; Mechanical, aeronautical and manufacturing; Computer science and information systems; and Mathematics have been ranked from 300-500 worldwide by QS Ranking by Subjects. For over the period of 2021-2025, we have strategically focused on improving quality in education, research, and innovation and technology transfers. The University has set out 10 key tasks and solutions with 32 challenge indicators to measure the performance in 2025. Hanoi University of Science and Technology is consistently with a principle “The University is the educational foundation – The lecturer is the driving force of development – The learner is the center of all learning and teaching activities”. With a vision of becoming a research university in the region, 4 science and technology areas namely Data technology and intelligent system, Sustainable energy and environment, Advanced materials, and Health science and technology are the forefront of our university development. I am pleased that the conference today contributes meaningfully to our university’s development priorities.

The School of Electrical and Electronic Engineering (SEEE) of Hanoi University of Science and Technology is one of the largest and leading institutions nationwide in electrical and electronic and has contributed practical research and products to the Vietnamese society. I am pleased that together with the university, SEEE is an active organizer of the conference.

This is the 11th time that the ICCAIS is organized. We are proud that the conference has grown up to become a prestigious international open forum for both academia and industry, and a well-

recognized conference within the Asia scale. This year, together with the VNU University of Engineering and Technology, we are pleased to organize the ICCAIS 2022 at HUST. The ICCAIS will bring in latest research and cutting-edge technologies of the very important topics in Control, Automation, and Information Sciences.

I would like to express our sincere thanks and appreciation to our co-organizer, the VNU University of Engineering and Technology to make ICCAIS 2022 possible. The collaboration between our University has enhanced the quality and the reputation of the conference regionally and internationally, as well as expanded the international partnerships of our scientists.

I would like to also thanks all the researchers, scientists, anonymous reviewers, and stakeholders to your meaningful contributions to this conference. With your strong collaboration and great commitment, I believe that the conference will bring about meaningful results as well as establish promising collaborations to promote Control, Automation and Information Sciences for our communities.

The conference's sessions will bring about fruitful discussions on control, automation and information sciences among respected researchers, invited speakers, and experts. I hope you enjoy the symposium and have interesting conversations with colleagues. Besides, I also do hope that after this conference in Hanoi, you will bring home not only new knowledge, new relationships but also great memories of the Vietnamese landscape, culture and people.

Finally, on behalf of Hanoi University of Science and Technology, I wish our distinguished guests, scientists, researchers, and delegates good health and great success.

Wish you a very fruitful conference!

Thank you!

General Chair

Thang Quyet Huynh

President, Hanoi University of Science and Technology, Hanoi, Vietnam

MESSAGE FROM THE TECHNICAL PROGRAM COMMITTEE

The technical committee for ICCAIS 2022 is very proud to warmly welcome you all to this year's International Conference on Control, Automation and Information Sciences (ICCAIS) set in the beautiful and historical city of Hanoi.

This year's conference offers an interesting and diverse technical program, with a wide range of topics to be presented, including the latest scientific results in control, information fusion, machine learning, autonomous robotics, target tracking, smart grids, sensors and instrumentation and many more. A total of 149 papers were submitted to this year's conference from Asia, Australia, Europe and the Americas. Of these, 98 papers have been accepted for presentation, together with 2 tutorials covering themes of Ensemble Kalman and Particle filters and radar technologies. We also proudly announce 4 keynote presentations, providing insights from experts in the areas of Control, Automation and Signal Processing.

On behalf of the ICCAIS 2022 technical committee, we would like to thank all the authors of submitted articles for their contributions, without which ICCAIS would not be possible. We also thank all program committee members, session organizers, session chairs, reviewers and all other participants for their careful dedication and time in contributing to this conference.

Last but not least we would like to show our appreciation and gratitude to the students, faculty and staff from Hanoi University of Science and Technology for their continuous service and hard work in making this conference a success.

On behalf of the ICCAIS technical committee it is with pleasure and pride that we wish you all an enjoyable and memorable stay in Hanoi, Vietnam.

Technical Program Chair
Martin Adams
University of Chile, Chile

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PROGRAM AT A GLANCE

Day 1: Monday, November 21 - Novotel, 2 Thai Ha, Dong Da, Ha Noi 11500		
13:00 – 13:30	Registration - Hotel lobby	Registration
13:30 – 15:30	Tutorial - Room: Orchid	
15:30 – 15:45	Coffee break	
15:45 – 17:45	Industrial talk - Room: Orchid	
Day 2: Tuesday, November 22 - Novotel, 2 Thai Ha, Dong Da, Ha Noi 11500		
Day 3: Wednesday, November 23 - Novotel, 2 Thai Ha, Dong Da, Ha Noi 11500		
Day 4 Thursday, November 24, Ha Long Bay Tour for the registered authors		

Day 2: Tuesday, November 22 - Novotel, 2 Thai Ha, Dong Da, Ha Noi 11500						
8:30 - 8:45	Registration	Hotel lobby				
8:45 - 9:00	Opening Ceremony	Grand Ballroom				
9:00 - 10:00	Keynote 1					
10:00 - 10:15	Coffee break					
Session 1: Automation Room: Orchid		Session 2: Power Electronics Room: Jasmine		Session 3: Machine Learning Room: Ballroom		
Chair: Lam Tung Nguyen		Chair: Dinh Duy Nguyen		Chair: Linh Hoai Tran		
Co-chair: Sven Nordholm		Co-chair: Vuong Quoc Dang		Co-chair: Norikazu Ikoma		
10:15 - 10:35	Paper 1570842174	10:15 - 10:35	Paper 1570841720	10:15 - 10:35	Paper 1570842283	Poster session 1
10:35 - 10:55	Paper 1570841945	10:35 - 10:55	Paper 1570843547	10:35 - 10:55	Paper 1570841833	
10:55 - 11:15	Paper 1570835410	10:55 - 11:15	Paper 1570837032	10:55 - 11:15	Paper 1570839639	
11:15 - 11:35	Paper 1570842180	11:15 - 11:35	Paper 1570847467	11:15 - 11:35	Paper 1570837617	
11:35 - 11:55	Paper 1570841937	11:35 - 11:55	Paper 1570838019	11:35 - 11:55	Paper 1570837869	
11:55 - 12:15	Paper 1570836535	11:55 - 12:15	Paper 1570840756	11:55 - 12:15	Paper 1570843528	
12:15 - 14:00	Lunch					
14:00 - 15:00	Keynote 2	Grand Ballroom				
15:00 - 15:15	Coffee break					
Session 4: Tracking & Data Fusion Room: Orchid		Session 5: Machine Learning Room: Jasmine		Session 6: Power Electronics Room: Ballroom		
Chair: Kien Trung Dao		Chair: Truong Van Pham		Chair: Tuan Anh Phung		
Co-chair: Reza Hoseinnezhad		Co-chair: Amirali Gostar		Co-chair: Phuong Hoang Vu		
15:15 - 15:35	Paper 1570837632	15:15 - 15:35	Paper 1570831843	15:15 - 15:35	Paper 1570843550	Poster session 2
15:35 - 15:55	Paper 1570821832	15:35 - 15:55	Paper 1570845392	15:35 - 15:55	Paper 1570838491	
15:55 - 16:15	Paper 1570827931	15:55 - 16:15	Paper 1570837587	15:55 - 16:15	Paper 1570843681	
16:15 - 16:35	Paper 1570831471	16:15 - 16:35	Paper 1570837680	16:15 - 16:35	Paper 1570834279	
16:35 - 16:55	Paper 1570833335	16:35 - 16:55	Paper 1570841767	16:35 - 16:55	Paper 1570836436	
16:55 - 17:15	Paper 1570833981			16:55 - 17:15	Paper 1570837678	

Day 3: Wednesday, November 23 - Novotel, 2 Thai Ha, Dong Da, Ha Noi 11500					
8:30 - 9:00	Registration	Hotel lobby			
9:00 - 10:00	Keynote 3	Grand Ballroom			
10:00 - 10:15	Coffee break				
Session 7: Control Theory & Applications Room: Orchid		Session 8: Systems Room: Jasmine		Session 9: Tracking & Data Fusion Room: Ballroom	
Chair: Chinh Duc Hoang		Chair: Huy Duc Nguyen		Chair: Phat Huu Nguyen	
Co-chair: Nga Thi Thuy Vu		Co-chair: Brett Nener		Co-chair: Martin Adams	
10:15 - 10:35	Paper 1570831230	10:15 - 10:35	Paper 1570830425	10:15 - 10:35	Paper 1570833419
10:35 - 10:55	Paper 1570843652	10:35 - 10:55	Paper 1570837682	10:35 - 10:55	Paper 1570837556
10:55 - 11:15	Paper 1570833446	10:55 - 11:15	Paper 1570841981	10:55 - 11:15	Paper 1570837619
11:15 - 11:35	Paper 1570842150	11:15 - 11:35	Paper 1570842038	11:15 - 11:35	Paper 1570838014
11:35 - 11:55	Paper 1570831269	11:35 - 11:55	Paper 1570842440	11:35 - 11:55	Paper 1570840227
11:55 - 12:15	Paper 1570836924	11:55 - 12:15	Paper 1570838773	11:55 - 12:15	Paper 1570841057
12:15 - 14:00	Lunch				
14:00 - 15:00	Keynote 4	Grand Ballroom			
15:00 - 15:15	Coffee break				
Session 10: Machine Learning Room: Orchid		Session 11: Tracking & Data Fusion Room: Jasmine		Session 12: Control Theory & Applications Room: Ballroom	
Chair: Lan Thi Le		Chair: Xiem Van Hoang		Chair: Minh Hoang Trinh	
Co-chair: Hai Vu		Co-chair: Branko Ristic		Co-chair: Tuan Hoang	
15:15 - 15:35	Paper 1570812795	15:15 - 15:35	Paper 1570837642	15:15 - 15:35	Paper 1570829725
15:35 - 15:55	Paper 1570836927	15:35 - 15:55	Paper 1570830820	15:35 - 15:55	Paper 1570842136
15:55 - 16:15	Paper 1570836870	15:55 - 16:15	Paper 1570837275	15:55 - 16:15	Paper 1570846186
16:15 - 16:35	Paper 1570842075	16:15 - 16:35	Paper 1570843710	16:15 - 16:35	Paper 1570842148
16:35 - 16:55	Paper 1570851601	16:35 - 16:55	Paper 1570841930	16:35 - 16:55	Paper 1570829881
16:55 - 17:15	Paper 1570822106			16:55 - 17:15	Paper 1570842091
17:15 - 18:15	Free time – Networking				
18:15 – 22:00	Gala dinner	Grand Ballroom			

KEYNOTES

Keynote 1

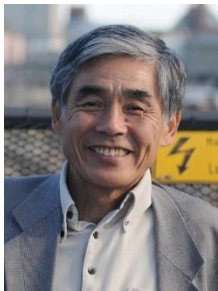
GLOCAL (GLOBAL/LOCAL) CONTROL ANALYSIS AND SYNTHESIS: FROM FUNDAMENTAL THEORY TO PRACTICAL APPLICATIONS

by
Shinji Hara

University of Tokyo, Japan

Abstract

There are a lot of large-scale networked dynamical systems that can be regarded as multi-agent systems in a variety of fields including control. One of the ideas to properly handle such systems is "Glocal (Global/Local) Control," which means that the global objective is achieved mainly by local actions of measurement and control cooperatively. This is a new control framework for realizing smart cities. The key for the development is hierarchically networked dynamical systems with multiple resolutions in time and space depending on the layer, and one of the important issues is how to compromise the global and local control objectives. The main purpose of this talk is to show that several new ideas, by exploiting the special structure of the target networked systems, enable us to develop scalable methods for control analysis and design. The proposed methods are based on the powerful theory in classical, modern, and robust control, and the effectiveness is confirmed through practical applications. The talk starts with explanations of the background, the idea, and the concept of glocal control as the introduction. The first part is concerned with analysis of hierarchically decentralized control for networked dynamical systems by focusing on the stability and robust stability. The second part is devoted to a type of hierarchical optimal control based on the standard LQ optimal control, which gives a systematic way of compromising the global and local objectives. In the third part, a fairly general framework for investigating the trade-off between the global and local achievable performances by utilizing a novel setting in the standard robust control. Finally, some remarks on the future research direction are addressed.



Shinji Hara received the B.S., M.S., and Ph.D. in engineering from Tokyo Institute of Technology, Japan, in 1974, 1976, and 1981, respectively. In 1984, he joined Tokyo Institute of Technology as an Associate Professor and served as a Full Professor for ten years. From 2002 to 2017 he was a Full Professor in the Department of Information Physics and Computing at the University of Tokyo. He is Professor Emeritus of Tokyo Institute of Technology and the University of Tokyo. His current research interests are in robust control, decentralized cooperative control for large-scale networked dynamical systems,

system biology, and glocal control. Hara has received many awards in control including the George S. Axelby Outstanding Paper Award from the IEEE Control System Society in 2006. He was the President of SICE (Society of Instrument and Control Engineers, Japan) in 2009, a Vice President of the IEEE Control Systems Society in 2009 to 2010, and an IFAC Council member from 2011 to 2017. He is a Fellow of IFAC, IEEE, and SICE.

Keynote 2

RECENT ADVANCES IN STOCHASTIC SENSOR CONTROL FOR MULTI-OBJECT SYSTEMS: A RANDOM FINITE SET-BASED APPROACH

by

Reza Hoseinnezhad

RMIT University, Melbourne, Australia

Abstract

In many engineering applications, there are time-varying number of objects with unknown states, and time-varying state-dependent measurements (corrupted with noise and false alarms) are available at each time step. The problem of estimating the number and states of the objects using the measurements is a multi-object estimation problem and the solution is called a multi-object system. This talk presents examples of applications in need of a multi-object system and focuses on those applications where the measurement source (sensors) can be controlled. Then overviews the most recent solutions for sensor control in multi-object systems, concentrated on deciding on best control actions that are most likely to return accurate and reliable measurements for multi-object estimation.



Reza Hoseinnezhad is a Professor and Associate Dean (Mechanical & Automotive) at School of Engineering, RMIT University, Melbourne, Australia. He received his PhD in Electrical Engineering from University of Tehran in 2002. Since then, he has held various academic positions in different universities including University of Tehran, Swinburne University of Technology (Melbourne), The University of Melbourne and RMIT University. His current research concentration is mainly in statistical information fusion, random finite sets, multi-object tracking, deep learning, and robust multi-structure data fitting in computer vision.

Keynote 3

ADVANCES IN ROBUST STATISTICS FOR SIGNAL PROCESSING

by

Abdelhak M. Zoubir

Technische Universität Darmstadt, Germany

Abstract

Robust statistics continue to gain importance due to an increase of impulsive measurement environments and outliers in practical engineering systems. Classical estimation and detection theories do not apply in such situations and robust statistical methods are sought for. The talk aims at discussing the most recent advances in robust statistics and at showing their power to solving signal processing problems. First, we highlight the motivation for using robust statistics in real-life situations and how robust statistics can be expected to remedy problems in such practical systems. We then introduce some definitions of robustness and discuss some robust estimators. The second part of the talk concerns robust detection. The theoretical treatment is supported by applications in various areas of signal and antenna array processing.



Abdelhak M. Zoubir has been Professor of Signal Processing and Head of the Signal Processing Group at Technische Universität Darmstadt, Germany since 2003. His research interest lies in statistical methods for signal processing with emphasis on bootstrap techniques, robust detection and estimation and array processing applied to radar, sonar, telecommunications, automotive monitoring and safety, and biomedicine.

He published over 500 journal and conference papers on the above areas. Zoubir served as General Chair and Technical Chair of numerous international IEEE conferences and workshops, most notably as Technical Chair of ICASSP-14. He also served on publication boards or as Guest Editor for various journals, notably as Editor-in-Chief of the IEEE Signal Processing Magazine (2012-2014). Zoubir was the Chair (2010-2011) of the IEEE Signal Processing Society (SPS) Technical Committee Signal Processing Theory and Methods (SPTM) and served on the Board of Governors of the IEEE SPS as a Member-at-Large (2015-2017). He was the president of the European Association of Signal Processing (EURASIP) from 2017 to 2018. He is a Fellow of the IEEE and an IEEE Distinguished Lecturer (Class 2010- 2011). He received several best paper awards, and the 2018 IEEE Leo L. Beranek Meritorious Service Award.

Keynote 4

MULTI-SOURCE ENERGY MANAGEMENT FOR LAND AND SEA VEHICLES

by

João Pedro F. Trovão

University of Sherbrooke, Sherbrooke, QC, Canada

Abstract

Sustainable mobility aims to achieve the most efficient use of energy systems by promoting the modes of transportation that can reduce energy usage and environmental impacts. Electric and hybrid powertrains or propulsions play a fundamental role in land and sea sustainable mobility. In this lecture, state-of-the-art research of our e-TEESC laboratory is presented, which covers a vast range of key technologies of land and sea electric vehicles (EVs), focused multi-sources energy management. Energy Storage Systems (ESSs) presently available for EVs have either high specific energy (HSE) or high specific power (HSP), but not both. However, their combinations and configurations are still being researched. On other hand, sea vehicles are responsible for almost 3% of greenhouse gas (GHG) emissions worldwide and this figure is expected to grow due to market expansion. A road towards green maritime shipping by proposing shore power, also known as cold ironing or alternative marine power, as a key measure to decarbonize the industry is discussed. Also, a multi-objective approach to select and size a multi-source shore power system for bulk carriers to minimize capital expenditure (CAPEX) and carbon dioxide (CO₂) emissions of the auxiliary system is presented. This approach is versatile, considering most of the possible shore power source systems in a single model for real scenarios. The methodology is used in a case study of a bulk carrier with three different load profiles.



João Pedro F. Trovão received M.Sc. degree and the Ph.D. degree in Electrical Engineering from the University of Coimbra, Coimbra, Portugal, in 2004 and 2013, respectively. Trovão serves as Professor of Polytechnic of Coimbra–Coimbra Institute of Engineering (IPC–ISEC), Portugal. Since 2014, he has been a Professor with the University of Sherbrooke, Sherbrooke, QC, Canada, where he holds the Canadian Research Chair position in Efficient Electric Vehicles with Hybridized Energy Storage Systems. He is an author/coauthor of over 80 journal papers. His research interests cover the areas of electric vehicles, hybridized energy storage systems, energy management and rotating electrical machines. Trovão was the General Chair of the 2018 IEEE Vehicle Power and Propulsion Conference, Chicago, US. He was a Guest Editor for the Special Issue of IET Electrical Systems in Transportation on Energy Storage and Electric Power Sub-Systems for Advanced Vehicles. He was a Guest Editor for the Special Issues of IEEE Transactions on Vehicular Technology on Electric Powertrains for Future Vehicles and on Advanced Vehicle Power Propulsion Systems. He is a founding member and the director of the electric-Transport, Energy Storage and Conversion (e-TEESC) Lab of the University of Sherbrooke. He is a Senior Editor for the Automotive Electronics area of the IEEE Vehicular Technology Magazine.

TUTORIAL

AN OVERVIEW ON ENSEMBLE KALMAN AND PARTICLE FILTERS

by
Pierre Del Moral

University of Bordeaux, France



Abstract

In the last three decades, Particle Filters (PF) and Ensemble Kalman Filters (EnKF) have become one of the main numerical techniques for nonlinear filtering. In contrast with genetic-type PF, the EnKF is defined by a system of particles evolving as the signal in some state space with an interaction function that depends on the sample covariance matrices of the system. Despite widespread usage, little is known about the mathematical foundations of EnKF.

Most of the literature on EnKF amounts to designing different classes of useable observer-type particle methods. To design any type of consistent and meaningful PFs, it is crucial to understand their mathematical foundations and their tracking capabilities. The aim of this tutorial is to introduce these particle methodologies and to provide several tools to analyze their performance and long time behavior. To have appreciation of the difficulty in handling unstable effective signal directions, we recall that under natural observability and controllability conditions in Kalman Bucy filtering theory, the optimal filter is able to track any (possibly unstable) signals uniformly with respect to the time horizon. To answer any stability question related to PF or EnKF we first need to extend the theory of Kalman and Bucy to this class of approximating particle filters. This tutorial is organized in three parts:

- The first part provides a pedagogical introduction to PF and EnKF methodologies. We present PF and EnKF as universal particle methodologies for sampling the optimal nonlinear filter. This probabilistic framework connects the stability and the performance of PF and EnKF with the ones of the optimal nonlinear filter.
- The second part is concerned with the performance analysis and the long time behavior of particle filters in the context of stable and ergodic signals. We review some technical tools to estimate and quantify the errors between the optimal filters and particle filters uniformly w.r.t. the time horizon.
- The third part focuses on the performance and the stability properties of EnKF methodologies for discrete and continuous time models. In the context of linear-Gaussian models, we present

some technical tools to estimate and quantify the errors between the EnKF and the Kalman filter uniformly w.r.t. the time horizon, under appropriate observability and controllability conditions.

This tutorial is based on a series of joint works summarized in the review articles:

1. On the mathematical theory of ensemble (linear-Gaussian) Kalman-Bucy filtering A.N Bishop & P Del Moral - arXiv preprint arXiv:2006.08843 (2020).
2. On the stability of Kalman-Bucy diffusion processes. A.N. Bishop & P. Del Moral (2017). SIAM Journal on Control and Optimization. vol. 55, no. 6, pp. 4015-4047. <https://arxiv.org/pdf/1610.04686v3.pdf>

Theoretical aspects for one dimensional continuous and discrete time models:

1. On one-dimensional Riccati diffusions. A.N. Bishop, P. Del Moral, K. Kamatani & B. Remillard (2019). Annals of Applied Probability. Volume 29, Number 2, pp. 1127-1187 <https://arxiv.org/abs/1711.10065>
2. A theoretical analysis of one-dimensional discrete generation ensemble Kalman particle filters P Del Moral, E Horton (to appear in Annals of Applied Probability), arXiv preprint arXiv:2107.01855 (2021).

PAPERS PRESENTATIONS

Day 1: Tuesday, November 22, 2022

Session 1: Automation

Chair: Lam Tung Nguyen
Co-chair: Sven Nordholm

Paper 1570842174	MULTI-UAV COVERAGE STRATEGY WITH V-SHAPED FORMATION FOR PATROL AND SURVEILLANCE <i>Hung Pham Quang, Truong Nguyen Dam, Vu Nguyen Hoang and Hung Pham Duy</i> VNU Hanoi-University of Engineering and Technology; University of Engineering and Technology, Vietnam
Paper 1570841945	MULTISENSOR DATA FUSION FOR RELIABLE OBSTACLE AVOIDANCE <i>Thanh Nguyen Canh, Truong Son Nguyen, Quach Hoang, Xiem Hoang Van and Manh Duong Phung</i> University of Engineering and Technology, Vietnam & Vietnam National University; VNU University of Engineering and Technology, Vietnam; Fulbright University Vietnam, Vietnam
Paper 1570835410	A ROBUST LIDAR SLAM SYSTEM BASED ON MULTI-SENSOR FUSION <i>Fubin Zhan, Bingshuo Zhang and Chenghao Sun</i> Northwestern Polytechnical University, China
Paper 1570842180	AUTONOMOUS LANDING SCHEME OF VTOL UAV ON MOVING SHIP USING DEEP LEARNING TECHNIQUE EMBEDDED IN COMPANION COMPUTER <i>Tuan Do Trong, Manh Van Vu and Binh Thai Nguyen</i> Hanoi University of Science and Technology, Vietnam; ASE Laboratory, Vietnam
Paper 1570841937	FORMAL MODELLING OF SMART GRIDS: CONFIGURABILITY VS. CONVENTIONALITY <i>Bui Hoai Thang, Tuan Cong Bui, Tuyen Nguyen Dinh, Duy Anh Nguyen, Liem Van Nguyen and Huan Luong</i> Ho Chi Minh City University of Technology, Vietnam; SaiGon University, Vietnam
Paper 1570836535	TORQUE RIPPLE REDUCTION OF THE SRM MOTOR USING NONLINEAR CONTROLLER FOR ELECTRIC VEHICLES APPLICATION <i>Ha Thanh Vo</i> University of Transport and Communications, Vietnam

Session 2: Power Electronics

Chair: Dinh Duy Nguyen
Co-chair: Vuong Quoc Dang

Paper 1570841720	A NOVEL MODULATION METHOD TO ELIMINATE LEAKAGE CURRENT AND MINIMIZE CAPACITOR VOLTAGE RIPPLE FOR GRID-CONNECTED THREE-LEVEL T-TYPE INVERTER
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Tuan Anh Duong, Long Thanh Pham, Dung Anh Pham, Huy Quoc Pham, Khoi Vu Nguyen Nguyen, Nam Van Giap, Phuong Vu Hoang and Khoi Xuan Le
Hanoi University of Industry, Vietnam; Hanoi University of Science and Technology, Vietnam

Paper 1570843547	ACTIVE POWER FILTER DC VOLTAGE CONTROL BASED ON CAPACITOR ENERGETIC MODEL <i>Quang-Manh Hoang, Bao Huy Nguyen, Thanh Vo-Duy, Joao Pedro Trovao and Minh C. Ta</i> Hanoi University of Science and Technology, Vietnam; University of Sherbrooke & IPC-ISEC, Canada; University of Sherbrooke, Canada
Paper 1570837032	VOLTAGE AND CURRENT BALANCING CONTROL OF WBG MULTILEVEL CONVERTERS <i>Tran Duc Hoan</i> IRT Saint Exupery, France
Paper 1570847467	ANALYTICAL TECHNIQUE FOR COMPUTATION OF THE BACK EMF AND ELECTROMAGNETIC TORQUE FOR IPM MOTORS <i>Vuong Quoc Dang</i> School of Electrical and Electronic Engineering, Hanoi University of Science and Technology, Vietnam
Paper 1570838019	THE CBPWM AND PR CURRENT CONTROLLER FOR SINGLE-PHASE T-TYPE GRID-CONNECTED INVERTER <i>Tuyen Nguyen Dinh, Huy Quang Le and Hung Duc Nguyen and Tung Ngo Thanh</i> Ho Chi Minh City University of Technology, Vietnam; Telecommunication University, Vietnam
Paper 1570840756	IMPACTS OF HIGH SOLAR INVERTER INTEGRATION ON PERFORMANCE OF FLIRS FUNCTION: CASE STUDY FOR DANANG DISTRIBUTION NETWORK <i>Tran The Hoang, Tuan-Quoc Tran, Hoai Son Le, Hoang Nhan Nguyen and Minh Quan Duong</i> The University of Auckland, New Zealand & French Commission on Atomic Energy and Alternative Energies - National Institute of Solar Energy, France; CEA-INES, France; Danang Power Company, Vietnam; The University of Danang, Vietnam

Session 3: Machine Learning

Chair: Linh Hoai Tran
Co-chair: Norikazu Ikoma

Paper 1570842283	DUAL-SCALE GENERALIZED RADON-FOURIER TRANSFORM FOR LONG TIME COHERENT INTEGRATION <i>Bailu Wang, Suqi Li, Giorgio Battistelli and Luigi Chisci</i> University of Electronic Science and Technology of China, China; Università di Firenze, Italy
Paper 1570841833	AN EFFECTIVE DESIGN APPROACH TO IMPLEMENTATION OF MIMO-SDM-PNC RELAY STATIONS ON FPGA <i>Minh Thuong Nguyen, Xuan Nam Tran, Vu-Duc Ngo, Duc Thang Nguyen, Tien Anh Vu and Quang-Kien Trinh</i> Military Information Technology Institute, Vietnam; Le Quy Don Technical University, Vietnam; Hanoi University of Science and Technology, Vietnam
Paper 1570839639	MAXIMIZATION OF GEOMETRIC MEAN OF SECRECY RATES IN RIS-AIDED COMMUNICATIONS NETWORKS <i>Ngoc-Tan Nguyen, Hongwen Yu, Hoang D. Tuan, Diep N. Nguyen and Eryk Dutkiewicz</i>

VNU-University of Engineering and Technology, Vietnam; Shanghai University, China;
University of Technology, Sydney, Australia

Paper 1570837617	DEVELOPMENT OF ESTIMATION SYSTEMS OF CALVING TIME BASED ON TIME-FREQUENCY ANALYSIS FOR VENTRAL TAIL BASE SURFACE TEMPERATURE <i>Tatsuya Komatsu and Kansei Matsumoto</i> Tokyo City University, Japan
Paper 1570837869	CONTINUOUS REAL-TIME HAND GESTURE RECOGNITION METHOD BASED ON SKELETON <i>Tien-Thanh Nguyen, Nam-Cuong Nguyen, Duy-Khanh Ngo, Viet-Lam Phan, Minh-Hung Pham, Duc-An Nguyen, Minh-Hiep Doan and Thi-Lan Le</i> Asilla Inc; Hanoi University of Science and Technology, Vietnam; School of Electronics and Telecommunications, Vietnam
Paper 1570843528	MULTIPLE STEP AHEAD FORECASTING OF ROOFTOP SOLAR POWER BASED ON A NOVEL HYBRID MODEL OF CEEMDAN - BIDIRECTIONAL LSTM NETWORK WITH STRUCTURE OPTIMIZED BY PSO METHOD <i>Thi Hoai Thu Nguyen, Bao Quoc Phan and Nam Vu Nhat Nguyen</i> Hanoi University of Science and Technology, Vietnam; Hanoi University of Science and Technology, School of Electrical and Electronic Engineering, Vietnam

Session 4: Tracking & Data Fusion

Chair: Kien Trung Dao
Co-chair: Reza Hoseinnezhad

Paper 1570837632	DISTRIBUTED MULTI-SENSOR CONTROL FOR MULTI-TARGET TRACKING <i>Aidan Blair, Amirali Khodadadian Gostar, Ruwan Tennakoon, Alireza Bab-Hadiashar, Xiaodong Li, Jennifer L. Palmer and Reza Hoseinnezhad</i> RMIT University, Australia
Paper 1570821832	RESILIENCE OF MULTI-OBJECT DENSITY FUSION AGAINST CYBER-ATTACKS <i>Lin Gao; Giorgio Battistelli and Luigi Chisci</i> University of Electronic Science and Technology of China, China; Università di Firenze, Italy
Paper 1570827931	GENERALIZED LABEL GROUPING FOR SCALABLE MULTI-OBJECT TRACKING <i>Changbeom Shim, Ji Youn Lee, Diluka Moratuwage, Du Yong Kim and Yon Dohn Chung</i> Curtin University, Australia; RMIT University, Australia; Korea University, Korea (South)
Paper 1570831471	AN ADAPTIVE MULTI-SENSOR GENERALISED LABELLED MULTI-BERNOULLI FILTER FOR LINEAR GAUSSIAN MODELS <i>Tran Thien Dat Nguyen, Cong-Thanh Do and Hoa V Nguyen</i> Curtin University, Australia
Paper 1570833335	TARGET MOTION ANALYSIS VIA HARD AND SOFT DATA FUSION <i>Yuthika Gardiyawasam Punchihewa, Ba-Tuong Vo, Ba-Ngu Vo, Amanda Bessell, Sanjeev Arulampalam, Jessica Irons and Samuel Davey</i> Curtin University of Technology, Australia; Defence Science and Technology Group, Australia; DST Group, Australia
Paper 1570833981	TRACK LABEL AND CLASSICAL AND QUANTUM PROBABILITY DENSITIES <i>Mahendra Mallick, Steve Rubin and Yun Zhu</i> Independent Consultant, USA; Shaanxi Normal University, China

Session 5: Machine Learning

Chair: Truong Van Pham
Co-chair: Amirali Gostar

Paper 1570831843	DEREVERBERATION AND SIGNAL SEPARATION OF SPEECH SIGNAL MIXTURES <i>Nordholm Sven and Dam Hai Huyen</i> Curtin University of Technology, Australia; Curtin University, Australia
Paper 1570845392	COMPUTED TOMOGRAPHY IMAGE OF LUNG: A VISUALIZATION ENHANCEMENT APPROACH BASED ON UNSHARP MARKING AND THRESHOLDED LOCAL INTENSITY AREA DESCRIPTOR <i>Chi-Kien Tran</i> Hanoi of Industry & Samsung Display Vietnam, Vietnam
Paper 1570837587	MAXIMIZING THE GEOMETRIC MEAN OF USER-RATES TO IMPROVE RATE-FAIRNESS IN DOUBLE RIS-ASSISTED SYSTEM <i>Yufeng Chen, Fang Yong, Wenbo Zhu, Guannan Tan and Hongwen Yu</i> Shanghai University, China; University of Technology Sydney, Australia; Huizhou Speed Wireless Technology Company, China
Paper 1570837680	INTELLIGENT BEARING FAULT DIAGNOSIS WITH A LIGHTWEIGHT NEURAL NETWORK <i>Nguyen Duc Thuan, Nguyen Thi Hue, Pham Quang Vuong and Hong Hoang Si</i> Hanoi University of Science and Technology, Vietnam; MICA, Vietnam; Phenikaa University, Vietnam
Paper 1570841767	2D BEAMFORMING FOR 3D FULL-DIMENSIONAL MASSIVE MIMO <i>Wenbo Zhu, Hoang D. Tuan and Fang Yong</i> University of Technology Sydney, Australia; Shanghai University, China

Session 6: Power Electronics

Chair: Tuan Anh Phung
Co-chair: Phuong Hoang Vu

Paper 1570843550	SLIDING MODE SOLUTION FOR ROTOR FLUX CONTROL AND ESTIMATION OF INDUCTION MOTORS USING ENERGETIC MACROSCOPIC REPRESENTATION <i>Khanh-Linh Dang, Bao-Huy Nguyen, Minh C. Ta, Joao Pedro Trovao, Thanh Vo-Duy</i> Hanoi University of Science and Technology, Vietnam; University of Sherbrooke, Canada; University of Sherbrooke & IPC-ISEC, Canada
Paper 1570838491	OPTIMISATION OF AN ELECTRIC BUS CHARGING STRATEGY CONSIDERING A SEMI-EMPIRICAL BATTERY DEGRADATION MODEL AND WEATHER CONDITIONS <i>Jônatas Augusto Manzolli, Joao Pedro Trovao and Carlos Henggeler Antunes</i> University of Coimbra, Portugal; University of Sherbrooke & IPC-ISEC, Canada; University of Coimbra & INESC Coimbra, Portugal
Paper 1570843681	A TRANSITION COMPLETION DETECTION CIRCUIT FOR DUAL ACTIVE BRIDGE CONVERTERS <i>Duy-Dinh Nguyen, Pham The Tiep and Tat-Thang Le</i>

Hanoi University of Science and Technology, Vietnam; Seoul National University of Science and Technology, Korea (South)

Paper 1570834279	IMPLEMENTATION OF DISCRETIZATION METHODS FOR SECOND-ORDER GENERALIZED INTEGRATOR IN GRID VOLTAGE ESTIMATION SYSTEMS <i>Anh Tan Nguyen and Duy-Dinh Nguyen</i> Hanoi University of Science and Technology, Vietnam
Paper 1570836436	OPERATING TEMPERATURE SYSTEMIC MANAGEMENT OF A FUEL CELL SYSTEM CONSIDERING THE IMPACT ON THE POWER ELECTRONICS PERFORMANCES <i>Thang Van Do, Pascal Messier, Joao Pedro Trovao and Loic Boulon</i> University of Sherbrooke & IPC-ISEC, Canada; UQTR, Canada
Paper 1570837678	SURFACE-MOUNTED PERMANENT MAGNET SYNCHRONOUS MOTOR DESIGN READY FOR SENSORLESS CONTROL AT ZERO AND LOW SPEED <i>Anh-Tuan Phung and Tinh Duy Hoang</i> Hanoi University of Science and Technology & School of Electrical Engineering, Vietnam

Day 2: Wednesday, November 23, 2022

Session 7: Control Theory & Applications

Chair: Chinh Duc Hoang
Co-chair: Nga Thi Thuy Vu

Paper 1570831230	A MODEL-FREE APPROACH FOR OUTPUT REGULATION OF UNCERTAIN 4 DOF SERIAL ROBOT WITH DISTURBANCE <i>Duy Hoang, Dung Manh Do, Nam H. Nguyen and Phuoc Nguyen Doan</i> Hanoi University of Science and Technology, Vietnam
Paper 1570843652	MODELING AND CONTROL OF ALL-WHEEL-DRIVE AND INDEPENDENT STEERING ELECTRIC VEHICLES USING ENERGETIC MACROSCOPIC REPRESENTATION APPROACH <i>Quang-Huy Nguyen, An-Toan Nguyen, Minh Binh Nguyen, Minh C. Ta and Thanh Vo-Duy</i> Hanoi University of Science and Technology, Vietnam; University of Sherbrooke, Canada; University of Sherbrooke, Canada; University of Tokyo, Japan
Paper 1570833446	AN IMPROVED ADAPTIVE AND ROBUST INITIAL ALIGNMENT METHOD FOR ROTATION MEMS-BASED SINS <i>Jianguo Liu, Xiyuan Chen and Junwei Wang</i> Southeast University & None, China; Southeast University & Instrument and Advanced Navigation Technology, China; Southeast University, China
Paper 1570842150	A ROBUST NEURAL PREDICTIVE CONTROL APPROACH FOR ROBOTIC MANIPULATORS WITH ONLINE LEARNING ABILITY <i>Dang Xuan Ba</i> HCMC University of Technology and Education (HCMUTE), Vietnam
Paper 1570831269	DATA-DRIVEN OUTPUT REGULATION OF UNCERTAIN 6 DOF AUV VIA LAGRANGE INTERPOLATION <i>Dung Manh Do, Duy Hoang, Nam H. Nguyen and Phuoc Nguyen Doan</i>

Hanoi University of Science and Technology, Vietnam

Paper 1570836924	PRESCRIBED TRACKING PERFORMANCE FOR LATERAL CONTROL OF AN AUTONOMOUS VEHICLE WITH HIGH-GAIN OBSERVER <i>Nhu Toan Nguyen, Duc Thinh Le, Van Trong Dang, Viet Hung Pham, Danh Huy Nguyen and Tung Lam Nguyen</i> Hanoi University of Science and Technology, Vietnam
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Session 8: Systems

Chair: Huy Duc Nguyen
Co-chair: Brett Nener

Paper 1570830425	A PREDICTION SYSTEM FOR THE EFFECT OF ELECTRICAL DEFIBRILLATION BASED ON EFFICIENT COMBINATIONS FOR FEATURE PARAMETERS <i>Yuta Yoshikawa</i> Tokyo City University, Japan
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Paper 1570837682	PREDICTION OF FREQUENCY RESPONSE OF FULLY-ASSEMBLED ROTOR BASED ON MODAL TESTING DATA ON PARTIALLY-ASSEMBLED ROTOR <i>Khanh Tan Le, Myounggyu Noh and Young-Woo Park</i> Chungnam National University, South Korea
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Paper 1570841981	PREDICTION OF ANOMALOUS VARIATION IN GAN-BASED CHEMICAL SENSORS <i>Jeremy Gillbanks, Gilberto A Umana-Membreno, Matthew B Myers, Brett Nener and Giacinta Parish</i> CSIRO Energy & University of Western Australia, Australia
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Paper 1570842038	IMPLEMENTATION OF A HITL-ENABLED HIGH AUTONOMY DRONE ARCHITECTURE ON A PHOTO-REALISTIC SIMULATOR <i>Minh Duc Huynh, Duy Anh Nguyen, Huy Nam Nguyen, Duong Hai Tran, Jesus Pestana and Anh Quang Nguyen</i> Hanoi University of Science and Technology, Vietnam; Graz University of Technology, Austria
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Paper 1570842440	WIRELESS SMART SHOES FOR RUNNING GAIT ANALYSIS BASED ON DEEP LEARNING <i>Hong Hoang Si and Nguyen Duc Thuan</i> Hanoi University of Science and Technology, Vietnam
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Paper 1570838773	DEPLOYMENT OF UAVS FOR OPTIMAL MULTI-HOP AD-HOC NETWORKS USING PARTICLE SWARM OPTIMIZATION AND BEHAVIOR-BASED CONTROL <i>Duy Nam Bui, Duong Thi Thuy Ngan, Manh Duong Phung and Hung Pham Duy</i> VNU University of Engineering and Technology, Vietnam; Fulbright University Vietnam, Vietnam
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Session 9: Tracking & Data Fusion

Chair: Phat Huu Nguyen
Co-chair: Martin Adams

Paper 1570833419	A MOVING WINDOW BASED APPROACH TO MULTI-SCAN MULTI-TARGET TRACKING
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Diluka Moratuwage, Changbeom Shim and Yuthika Punchihewa
Curtin University, Australia

Paper 1570837556	MULTI-CLASS MULTI-TARGET TRACKING WITH THE POISSON LABELED MULTI-BERNOULLI FILTER <i>Martin D Adams</i> University of Chile & Advanced Mining Technology Centre, Chile
Paper 1570837619	PSO-COLA: A ROBUST SOLUTION FOR CORRESPONDENCE-FREE POINT SET REGISTRATION <i>Pablo Barrios, Martin D Adams and Vicente A Guzman</i> Universidad de Chile, Chile
Paper 1570838014	SPATIO-TEMPORAL GP MODEL LEARNING FOR INTENTION-DRIVEN MOTIONS <i>Zonglin Hou, Linfeng Xu and Bingyang Fu</i> Northwestern Polytechnical University, China
Paper 1570840227	DISTRIBUTED COMPLEMENTARY FUSION FOR CONNECTED VEHICLES <i>James Klupacs, Amirali Khodadadian Gostar, Alireza Bab-Hadiashar, Jennifer L. Palmer and Reza Hoseinnezhad</i> RMIT University, Australia
Paper 1570841057	DECENTRALIZED MULTI-BERNOULLI MULTITARGET TRACKING USING MULTISTATIC DOPPLER-ONLY MEASUREMENTS <i>Benru Yu, Hong Gu, Weimin Su and Tiancheng Li</i> Nanjing University of Science & Technology, University of Salamanca, Spain

Session 10: Machine Learning

Chair: Lan Thi Le
Co-chair: Hai Vu

Paper 1570812795	PROPOSING VIETNAMESE TEXT RECOGNITION ALGORITHM COMBINING CRAFT AND VIETOCR <i>Phat Huu Nguyen, Thanh Tran and Quang Tran Minh</i> Hanoi University of Science and Technology, Vietnam; Hochiminh City University of Technology, Vietnam
Paper 1570836927	A KEYPHRASE EXTRACTION METHOD BASED ON MULTI-FEATURE EVALUATION AND MASK MECHANISM <i>Liwen Ma and Weifeng Liu</i> Shaanxi University of Science and Technology, China
Paper 1570836870	KPMIXER-A CONV-MIXER-BASED NETWORK FOR FINGER KNUCKLE PRINT RECOGNITION <i>Ngoc-Du Tran, Huy-Hoang Le, Van-Truong Pham and Thi-Thao Tran</i> Hanoi University of Science and Technology, Vietnam
Paper 1570842075	AUTOMATIC CLASSIFICATION OF UPPER GASTROINTESTINAL TRACT DISEASES FROM ENDOSCOPIC IMAGES <i>Phuong-Thao Nguyen, Minh-Quan Le, Quoc-Trung Dao, Vu Anh Tran, Viet-Hang Dao and Thanh-Hai Tran</i>

Hanoi University of Science and Technology, Vietnam; Hanoi Medical University Hospital, Vietnam; Gameloft Han Studio, Vietnam

Paper 1570851601	TRANS2UNET: NEURAL FUSION FOR NUCLEI SEMANTIC SEGMENTATION <i>Dinh-Phu Tran, Quoc-Anh Nguyen, Van-Truong Pham and Thi-Thao Tran</i> Hanoi University of Science and Technology, Vietnam
Paper 1570822106	A STUDY OF DATUM SEARCH PATTERNS USING A STOCHASTIC GAME FRAMEWORK <i>Branko Ristic, Alex Skvortsov, Sanjeev Arulampalam and Du Yong Kim</i> RMIT University, Australia; Defence Science and Technology Group, Australia

Session 11: Tracking & Data Fusion

Chair: Xiem Van Hoang
Co-chair: Branko Ristic

Paper 1570837642	INTERACTION-AWARE LABELED MULTI-BERNOULLI FILTER WITH ROAD CONSTRAINTS <i>Nida Ishtiaq, Amirali Khodadadian Gostar, Alireza Bab-Hadiashar, Jennifer L. Palmer and Reza Hoseinnezhad</i> RMIT University, Australia
Paper 1570830820	MESSAGE PASSING BASED DATA ASSOCIATION ALGORITHM FOR MULTIPLE EXTENDED OBJECT TRACKING <i>Feng Yang, Wei Yuankun and Linfeng Xu</i> Northwestern Polytechnical University, China
Paper 1570837275	DESIGN, FABRICATION, AND WIRELESS CONTROL OF 3D-MICROPRINTED ROBOTS FOR BIOMEDICAL APPLICATIONS <i>Van Du Nguyen, Kim Tien Nguyen, Jong-Oh Park and Eunpyo Choi</i> Korea Institute of Medical Microrobotics, Korea; Chonnam National University, Korea
Paper 1570843710	STATIC SCHEDULING OPTIMIZATION FOR OUTDOOR MONITORING SENSOR NETWORKS BASED ON CUSTOMIZABLE NODES <i>Van Phuong Ha; Trung-Kien Dao; Minh-Hoang Le; Ngoc-Yen Pham; Nguyen Viet Tung and Dinh-Van Nguyen</i> Hanoi University of Industry, Vietnam; MICA Institute (HUST - CNRS/UMI 2954 - INP Grenoble), Vietnam
Paper 1570841930	AN INTEGRAL MULTI-TARGET CONTINUOUS-TIME TRAJECTORY ASSIGNMENT METRIC <i>Yue Xin; Tiancheng Li</i> Northwestern Polytechnical University & School of Automation, China; University of Salamanca, Spain

Session 12: Control Theory & Applications

Chair: Minh Hoang Trinh
Co-chair: Tuan Hoang

Paper 1570829725	ADAPTIVE CONSENSUS ALGORITHMS FOR MATRIX-WEIGHTED NETWORKS WITH PARAMETRIC UNCERTAINTIES <i>Minh Hieu Nguyen, Hung Manh Nguyen, Viet Hoang Pham, Quoc Van Tran, Chuong Van Nguyen, Minh Hoang Trinh and Hyo-Sung Ahn</i> Gwangju Institute of Science and Technology (GIST), Korea (South); Hanoi University of Science and Technology, Vietnam; University of South California, USA
Paper 1570842136	DISTRIBUTIONALLY ROBUST OPTIMIZATION FOR VEHICLE-TO-GRID WITH UNCERTAIN RENEWABLE ENERGY <i>Qi Li, Pengchao Tian, Ye Shi and Yuanming Shi and Hoang D. Tuan</i> University of Technology, Sydney, Australia; ShanghaiTech University, China
Paper 1570846186	ACCELERATION SLIP REGULATION FOR ELECTRIC VEHICLES BASED ON FUZZY PID CONTROLLER <i>An-Toan Nguyen, Minh Binh Nguyen, Joao Pedro Trovao, Minh C. Ta</i> University of Technology, Sydney, Australia; ShanghaiTech University, China
Paper 1570842148	AN ADAPTIVE ROBUST NONLINEAR CONTROL APPROACH OF A QUADCOPTER WITH DISTURBANCE OBSERVER <i>Dang Xuan Ba</i> (HCMC University of Technology and Education (HCMUTE), Vietnam)
Paper 1570829881	SAMPLE-EFFICIENT REINFORCEMENT LEARNING FOR POSE REGULATION OF A MOBILE ROBOT <i>Walter Brescia, Luca De Cicco and Saverio Mascolo</i> Politecnico di Bari, Italy
Paper 1570842091	SLIDING MODE CONTROL FOR THE HOVERING FLIGHT OF A TILT TRI-ROTOR UAV <i>Thi Tuyet Nhung Le, Dinh-Quy Vu, Tung Pham Xuan and Hung Nguyen Quang</i> Hanoi University of Science and Technology, Vietnam

POSTER SESSIONS

Day 1: Tuesday, November 22, 2022

Morning

Poster Session 1: Automation, Control & Systems

Chair: Phuong Huy Nguyen
Co-chair: Changbeom Shim

Paper 1570842008	ROBUST HUMAN POSE QUALITY ASSESSMENT USING OPTIMAL SUB-PATTERN ASSIGNMENT <i>Yun Zhu, Shuang Liang, Peng Li and Xiaojun Wu</i> Shaanxi Normal University, China; Xidian University, China
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Paper 1570831596	DISTRIBUTED COORDINATION OF POWER GENERATION AND TRANSMISSION FOR AN ENERGY NETWORK <i>Hyo-Sung Ahn, Viet Hoang Pham and Hung Manh Nguyen</i> Gwangju Institute of Science and Technology (GIST), Korea (South)
Paper 1570841936	A NEW AXIAL GAP BEARINGLESS MOTOR DRIVE SYSTEM WITH NONLINEAR ROBUST CONTROL <i>Duc Thinh Le, Manh Tung Ngo, Van Trong Dang, Nam Van Giap, Binh Minh Nguyen and Tung Lam Nguyen</i> Hanoi University of Science and Technology, Vietnam; Hanoi university of industry, Vietnam; Toyota Technological Institute, Japan
Paper 1570826515	DISTURBANCE-OBSERVER BASED REINFORCEMENT LEARNING FOR OVERHEAD CRANE SYSTEMS <i>Thanh Trung Cao</i> HaNoi University of Science and Technology, Vietnam
Paper 1570838089	DEVELOPMENT OF THE SYSTEM OF MONITORING TRAFFIC VEHICLE VOLUME AND DENSITY ON THE VIETNAM'S STREET <i>Mien Trinh Luong</i> University Transport and Communications & Faculty of Electrical and Electronic Engineering, Vietnam
Paper 1570827198	FOC CONTROL PROTOTYPING OF 48V IDB SYSTEM FOR HARDWARE ENGINEERS <i>Minhye Yu and Sung Su Han</i> Mando, Korea (South); Infineon Technologies Korea Co., Ltd
Paper 1570841750	EXPERIENCE WITH A DIGITAL SUBSTATION PILOT PROJECT OF VIETNAM ELECTRICITY <i>Tien Dung Le, Hoang Ngoc Hoai Quang and Kieu Van Minh</i> The University of Danang, Vietnam; Thua Thien Hue Power Company, Vietnam; National Power Transmission Service Company, Vietnam.
Paper 1570837463	A MODULATED MODEL PREDICTIVE CONTROL FOR THREE-PHASE THREE-LEVEL T-TYPE INVERTER <i>Quoc-Binh Nguyen, Chi Dung Pham, Huu-Cong Vu, Tuyen Nguyen Dinh and Quoc-Hoan Tran</i> Ton Duc Thang University, Vietnam; Telecommunication University, Vietnam; Hanoi University of Civil Engineering, Vietnam; Ho Chi Minh City University of Technology, Vietnam; Tran Dai Nghia University, Vietnam
Paper 1570843742	PERFORMANCE ANALYSIS AND EXPERIMENT OF DATA TRANSMISSION RATE OF LEDS IN OPTICAL CAMERA COMMUNICATION FOR INDOOR POSITIONING SYSTEM <i>Nam Nguyen Hoang, Loan Pham-Nguyen, Nguyen Thi Hue, Thi Lan Huong Nguyen, Nguyen Viet Son, Hong Hoang Si</i> Hanoi University of Science and Technology, Vietnam; MICA, Vietnam
Paper 1570843256	ANALYZE THE TRANSIENT OVERVOLTAGES IN THE STATION OF VIETNAMESE MODEL HVDC-MMC SYSTEM <i>Nguyen Nhat Tung, Nguyen Xuan Phuc and Truong Hoang Nam</i> Thuyloi University, Vietnam; Institute of Energy, Vietnam
Paper 1570842109	OPTIMAL PLANNING OF A MICROGRID CONSIDERING DEMAND RESPONSE AND ENERGY STORAGE SYSTEM <i>Nhung Nguyen Hong, Duc Huy Nguyen and Cuong Manh Dao</i>

Hanoi University of Science and Technology, Vietnam

Paper 1570840356	PV ARRAY FAULT CLASSIFICATION BASED ON MACHINE LEARNING <i>Minh Nguyen</i> Hanoi University of Science & Technology, Vietnam
Paper 1570837016	A QUADRATIC CORRELATION ALGORITHM WITH VARIABLE SETS OF LAGS FOR FREQUENCY ESTIMATION <i>Yan Xu, Huiyue Yi, Wuxiong Zhang and Hui Xu</i> University of Chinese Academy of Sciences, China; Shanghai Institute of Microsystem and Information Technology, China; Shanghai Research Center for Wireless Communications, China
Paper 1570837636	MULTI-SENSOR CONTROL FOR JOINTLY SEARCHING AND TRACKING MULTI-TARGET USING THE POISSON MULTI-BERNOULLI MIXTURE FILTER <i>Ke Chen, Lei Chai and Wei Yi</i> University of Electronic Science and Technology of China, China

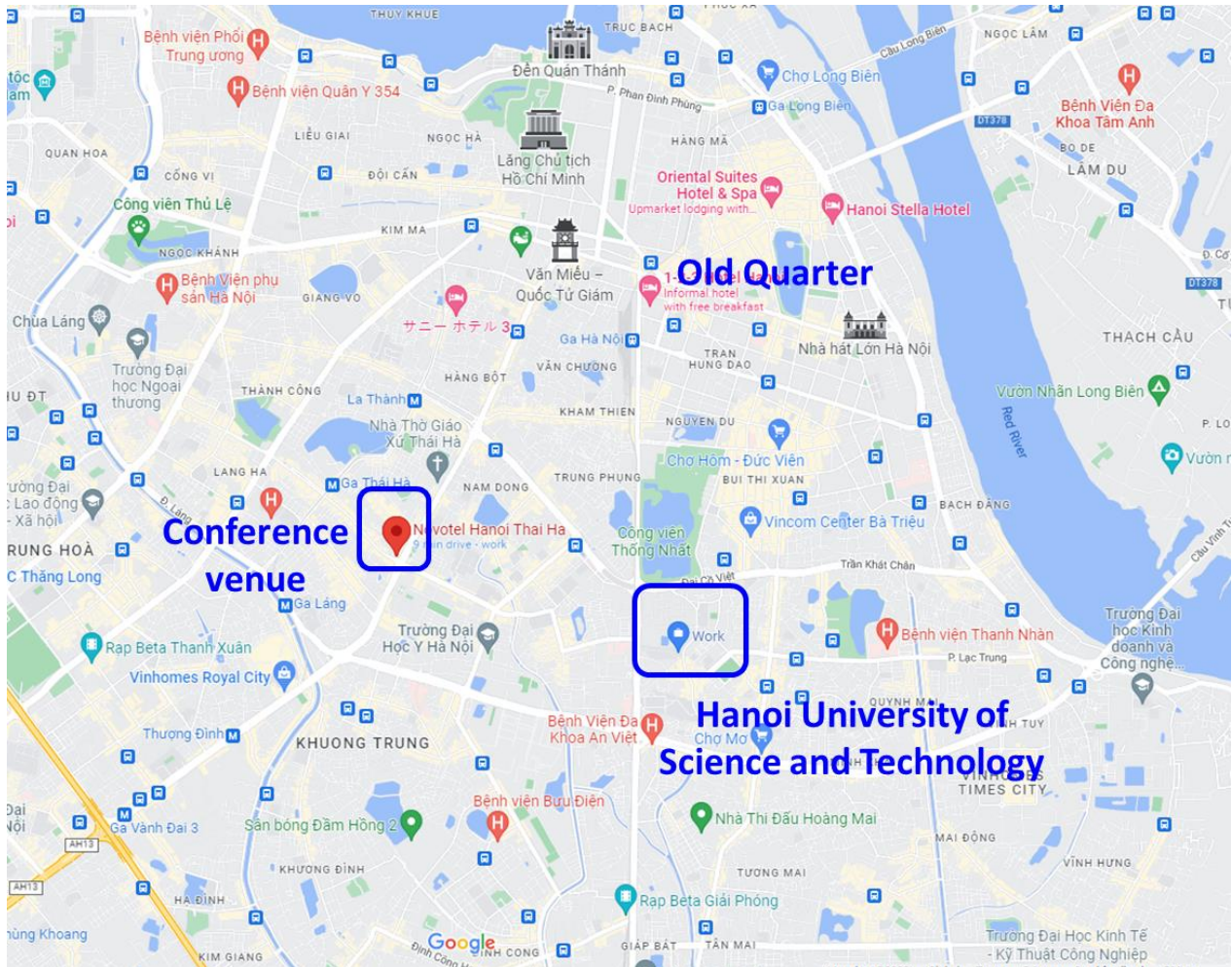
Afternoon

Poster Session 2: Tracking, Data Fusion & Machine Learning

Chair: Ba-Ngu Vo
Co-chair: DuYong Kim

Paper 1570830903	AN IMAGE CAPTION MODEL BASED ON THE SCENE GRAPH AND SEMANTIC PRIOR NETWORK <i>Weifeng Liu, Zhang Nan and Yaning Wang</i> Shaanxi University of Science and Technology, China; Hangzhou Dianzi University, China
Paper 1570837595	TWO-STAGE NETWORKS WITH ADVERSARIAL CLUTTER SUPPRESSION FOR MARITIME RADAR TARGET DETECTION <i>Yiru Lin, Yuanhang Wu and Wei Yi</i> University of Electronic Science and Technology of China, China
Paper 1570837029	GAME FOR UPPER LIMB REHABILITATION USING OPENCV <i>Phan Kien Nguyen, Dao Duy Anh, Tran Thuy Hanh, Hoang Thi Lan Huong, Lan Luu Hoang, Thang Tran Xuan, Linh Tran Thi Dieu, Vu Anh Tran and Thuy Anh Nguyen</i> Hanoi University of Science and Technology, Vietnam
Paper 1570842059	REAL-TIME ROS IMPLEMENTATION OF CONVENTIONAL FEATURE-BASED AND DEEP-LEARNING-BASED MONOCULAR VISUAL ODOMETRY FOR UAV <i>Minh Anh Nguyen, Tuan Nguyen, Quyen Pham, Thuong H Nguyen, Dinh Tuan Tran and J H Lee and Anh Quang Nguyen</i> School of Electrical and Electronic Engineering, Hanoi University of Science and Technology, Vietnam; Ritsumeikan University, Japan
Paper 1570847487	MACHINE FAULT DETECTION USING VIBRATION SIGNALS AND IMPROVED FUZZY CLUSTERING ALGORITHM <i>Linh Hoai Tran and Thanh Duc Nguyen</i>

Paper 1570841954	COMPREHENSIVE-FACTOR AUTHENTICATION IN EDGE DEVICES IN SMART ENVIRONMENTS: A CASE STUDY <i>Chalee Vorakulpipat, Ekkachan Rattanalerdnusorn and Sasakorn Pichetjamroen</i> National Electronics and Computer Technology Center, Thailand; NECTEC, Thailand
Paper 1570841988	MULTI-FRAME STAP STRATEGY IN RANGE-DOPPLER DOMAIN FOR AIRBORNE RADARS <i>Xingyue Long, Wen Qin, Wei Zhang, Chuan Zhu, Yong Zhao and Wei Yi</i> University of Electronic Science and Technology of China, China
Paper 1570841989	DBU-NET BASED ROBUST TARGET DETECTION FOR MULTI-FRAME TRACK-BEFORE-DETECT METHOD <i>Chuan Zhu, Jie Deng, Xingyue Long, Wei Zhang and Wei Yi</i> University of Electronic Science and Technology of China, China
Paper 1570842020	A MULTI-FRAME JOINT TRACKING AND CLASSIFICATION METHOD FOR WEAK TARGET IN RADAR SYSTEM <i>Wei Zhang, Kai Zeng, Chuan Zhu, Xingyue Long and Wei Yi</i> University of Electronic Science and Technology of China, China
Paper 1570842143	PHD FILTER BASED TRAFFIC TARGET TRACKING FRAMEWORK WITH FMCW RADAR <i>Xi Cao, Chuan Zhu and Wei Yi</i> University of Electronic Science and Technology of China, China
Paper 1570831449	AN IMPROVED ROBUST ESTIMATION METHOD FOR GNSS/SINS UNDER GNSS-CHALLENGED ENVIRONMENT <i>Junwei Wang, Xiyuan Chen, Jianguo Liu and Chunfeng Shi</i> Southeast University & Instrument and Advanced Navigation Technology, China
Paper 1570836801	A FASTER IMPLEMENTATION OF MULTI-SENSOR GENERALIZED LABELED MULTI-BERNOULLI FILTER <i>Diluka Moratuwage, Yuthika Punchihewa and Ji Youn Lee</i> Curtin University, Australia
Paper 1570842918	REVISITING THE BEARINGS-ONLY FILTERING PROBLEM <i>Mahendra Mallick, Xiaoqing Tian, Radhika Mandya Nagaraju and Zhansheng Duan</i> Independent Consultant, USA; Xi'an Jiaotong University; PET Research Centre & Mandya, Karnataka, India; College of Electronics and Information Engineering, China
Paper 1570826524	HANDS TRACKING OF CAR DRIVER OVER STEERING WHEEL BASED ON MULTI-BERNOULLI FILTER FRAMEWORK WITH HAND LANDMARKS DETECTOR AND SEMANTIC SEGMENTATION <i>Norikazu Ikoma</i> Nippon Institute of Technology, Japan



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TECHNOLOGY TRANSFER GROUP CORPORATION (TT-GROUP)

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Established in 2006, TT-Group has always adhered to the mission of providing solutions to enhance productivity, quality for research, manufacturing and technology application of Research Institutes, Universities and Electricity Sector. Considering technical know-how the backbone of our business, TT-Group has built a team of experts and senior engineers, ensuring the ability to transfer, effectively exploit and maintain high-tech equipment in the fields of R&D, Test & Measurement, and Online Monitoring.

Since 2015, TT-Group has built and maintained a calibration laboratory accredited to ISO / IEC 17025:2017 with a high degree of automation. The investment is our commitment to ensure the highest quality and reliability of the products and services supplied to our customers.

TT-Group is the first in Vietnam to introduce real-time simulation technology and applications for Research, Hardware-in-the-Loop (HIL) and Power HIL testing, Power system protection and control schemes, Digital substations, Automation, Power Electronics, Microgrid, Smart-grid and Cyber Security.

Partnering with RTDS Technologies, the world's leader of real-time digital simulation technology, TT-Group is willing to cooperate with Universities, Research Institutes, and R&D units to jointly develop solutions, applications or supply real-time simulation equipment/ solutions.



Simulated Network

