

2019 6th NAFOSTED Conference on Information and Computer Science (NICS 2019)

**Hanoi, Vietnam
12 – 13 December 2019**



**IEEE Catalog Number: CFP19C61-POD
ISBN: 978-1-7281-5164-9**

**Copyright © 2019 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP19C61-POD
ISBN (Print-On-Demand):	978-1-7281-5164-9
ISBN (Online):	978-1-7281-5163-2

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

Table of Contents

Welcome Messages.....	xx
Executive Committee.....	xxii
Technical Program Committee.....	xxiv
Additional Reviewers.....	xxix
Keynote Speakers.....	xxxi

Communication and Networking #1

- **Amplify-and-Forward Relay Transmission in Uplink Non-Orthogonal Multiple Access Networks**
.....
Dac-Binh Ha (Duy Tan University, Vietnam), Yoonill Lee (Purdue University Northwest, USA), Truong Van Truong (Duy Tan University, Vietnam), Thong Vo (Duy Tan University, Vietnam) 1
- **Modeling and Performance Analysis for Opportunistic Energy Harvesting Networks: Network Lifetime Aspect**
.....
Su Van Pham (Posts and Telecommunications Institute of Technology, Vietnam), Dinh Quoc Nguyen (Posts and Telecommunications Institute of Technology, Vietnam) 7
- **Physical Layer Security in a downlink-NOMA Network with Hardware Impairment**
.....
Thi Anh Le (Ulsan University, South Korea), Van Phu Tuan (University of Ulsan, South Korea), Hyung-Yun Kong (University of Ulsan, South Korea) 12
- **Coding in Term-rank Metric**
.....
Loc Huu Pham (Moscow Institute of Physics and Technology, Russia), Linh Le Thi Trang (Electric Power University, Vietnam) 18
- **Performance Analysis of Partial Relay Selection Networks with Short Packet Communications**
.....
Vo Nguyen Quoc Bao (Posts and Telecommunications Institute of Technology, Vietnam), Thien Thanh Tran (Ho Chi Minh City University of Transport, Vietnam) 23

Computational Intelligence #1

- **An Unsupervised Method for Web User Interest Analysis**
.....
Diep Nguyen Ngoc (Posts and Telecommunications Institute of Technology, Vietnam), Tu Minh Phuong (Posts and Telecommunications Institute of Technology, Vietnam), Tien Nguyen Van (Posts & Telecommunications Institute of Technology, Vietnam), Anh

- Hoang Nguyen (Posts and Telecommunications Institute of Technology & Centre for Development Information Technology, Vietnam) 27
- Data Fusion-Based Network Anomaly Detection Towards Evidence Theory
Cong Thanh Bui (Hi-tech Telecommunication Center, Vietnam), Quang Uy Nguyen (Le Quy Don Technical University, Vietnam), Minh Hoang (Institute of Science Technology and Innovation, Vietnam), Van Loi Cao (Le Quy Don Technical University, Vietnam) 33
 - A Stacking Ensemble Learning Model for Mental State Recognition Towards Implementation of Brain Computer Interface
Hoang-Anh The Nguyen (Institute of Information Technology, Vietnam), Le Thanh Ha (VNU Ha Noi, Vietnam), Duy Bui (College of Technology, Vietnam National University, Vietnam) 39
 - ACOGNA2: A Novel Algorithm for Maximizing Accuracy in Global Network Alignment
Ha Tran Ngoc (Thai Nguyen University of Education, Vietnam), Đông Đỗ Đức (Vietnam National University-Hanoi, Vietnam), Ngọc Anh Vũ (The Hanoi College of Industrial Economics, Vietnam), Phuc Thai Dinh (Vietnam National University Hanoi, Vietnam) 44
 - A Multi-Objective Competitive Co-Evolutionary Approach for Classification Problems
Van Truong Vu (Le Quy Don Technical University, Vietnam), Lam Thu Bui (Le Quy Don Technical University, Vietnam), Trung Thanh Nguyen (Liverpool John Moores University, United Kingdom (Great Britain)) 49

Foundations of Computer Science

- Platform for Integrating Internet of Things Based Smart Healthcare System and Blockchain Network
Adhitya Bhawiyuga (University of Brawijaya, Indonesia) 55
- Analyzing Role of Joint Subset Selection in Human Action Recognition
Dinh-Tan Pham (Hanoi University of Science and Technology & Hanoi University of Mining and Geology, Vietnam), Tien-Nam Nguyen (MICA, HUST, Vietnam), Thi-Lan Le (MICA, HUST, Vietnam), Hai Vu (International Research Institute MICA, Hanoi University of Science and Technology, Vietnam) 61
- A Bidirectional Proxy Re-Signature Scheme in the Standard Model for Lightweight Devices
Cuong Trinh (Hong Duc University, Vietnam) N/A
- Solving Resource Constrained Project Scheduling Problem by a Discrete Version of Cuckoo Search Algorithm
Huu Quoc Dang (Thuong Mai University, Vietnam), Nguyen The Loc (Hanoi National University of Education, Vietnam), Doan-Cuong Nguyen (Military Science and Technology Institute, Vietnam), Toan Phan Thanh (Ha Noi National University of Education, Vietnam) 73

- Environmental Prediction Using Thermal Index Due to Statistical Physics of Q-Ising Model
Yohei Saika (National Institute of Technology, Numazu College, Japan) 77

Interactive Session #1

- A Decentralized Solution for Web Hosting
Tam Huynh (Post And Telecommunication Institute Of Technology, Vietnam), Thuc Nguyen (University of Science, HCM, Vietnam), Tan Hanh (Posts and Telecommunications Institute of Technology, Vietnam) 82
- Joint Optimization of Gateway Placement and Multi-hop Routing for the Internet of Things
Hoai-Nam Chu (University of Transport and Communications, Vietnam), Tuan-Minh Pham (Phenikaa University, Vietnam) 88
- Muscle Fiber Conduction Velocity During Cycling Exercise
Luu Gia Thien (Posts and Telecommunications Institute of Technology & PTIT, Vietnam), Philippe Ravier (Université d'Orléans, France), Olivier Buttelli (Université d'Orléans, France) 94
- Mode Switch for On-Chip Optical Interconnects Using Multimode Interference Couplers
Ho Duc Tam Linh (Danang University of Science and Technology & Hue University of Sciences, Vietnam), Cao Dung Truong (Posts and Telecommunications Institute of Technology & Faculty of Electronics Engineering, Vietnam), Duy Quang Duong (Posts and Telecommunications Institute of Technology, Hanoi, Vietnam), Vo Phuc (The University of Danang, Vietnam), Hung Nguyen (The University of Danang, Vietnam) 98
- A Method to Reduce the Computational Cost of Modified Hausdorff Distance in Face Recognition
Chau Dang (Ho Chi Minh City University of Technology, Vietnam), Tinh Thanh Bui (Ho Chi Minh City University of Technology, Vietnam), Nhan Thien Truong (Ho Chi Minh City University of Technology, Vietnam) 103

Special Session #1: Emerging Photonic Technologies For 5G And Beyond (5G-Photonics)

- Carrier-less Amplitude and Phase Modulation in Visible Light Communications: Recent Progress
Paul Anthony Haigh (Newcastle University, United Kingdom (Great Britain)) 109
- Alignment Error Mitigation Techniques for Airborne Free-Space Optical Communication Systems
Vuong Mai (KAIST, South Korea), Hoon Kim (KAIST, South Korea) 115
- HAP-based Multi-hop FSO Systems Using All-Optical Relaying and Coherent Receiver
Nga Nguyen Thi Thu (Posts and Telecommunications Institute of Technology, Vietnam), Binh-Minh Vu (Posts and Telecommunications Institute of Technology,

- Vietnam), Hoa Le (Post and Telecommunications Institute of Technology (PTIT) & Telecoms Faculty 1, Vietnam), Vuong Mai (KAIST, South Korea), Ngoc Dang (Posts and Telecommunications Institute of Technology, Vietnam) 119
- Dimensioning of Free-Space Optical Mesh Network Using High-Altitude Platforms
Dieu Linh Truong (HUST, Vietnam), Ngoc Dang (Posts and Telecommunications Institute of Technology, Vietnam), Pham Minh Hien Vu (Vietnam Maritime University, Vietnam) 125
 - An Efficient Column Generation Approach for Solving the Routing and Spectrum Assignment Problem in Elastic Optical Networks
Duc Manh Nguyen (Hanoi National University of Education, Vietnam), Ngoc Le Anh (Electric Power University, Vietnam), Pham Thi Viet Huong (Vietnam National University, Hanoi, Vietnam), Ngo Hong Son (Phenikaa-Uni, Vietnam), Dao Thanh Hai (Phenikaa University, Vietnam) 130
 - Single Side Band Direct Detection for Data Center Interconnect and Digital Radio over Fiber
Son T Le (5306 Schindler Drive & Nokia Bell Labs, USA), Hung Nguyen (The University of Danang, Vietnam) 136

Special Session #2: Emerging Technologies In Information, Coding, And Signal Processing For Communications

- A Prototype of FPGA-based Centralized Multiple Transmitters for Visible Light Communications
Nguyen Duc Phuc (Posts and Telecommunications Institute of Technology, Vietnam), Dinh-Dung Le (Hue Industrial College, Vietnam), Tuan-Kiet Tran (University of Science - Ho Chi Minh City, Vietnam), Vo Nguyen Quoc Bao (Posts and Telecommunications Institute of Technology, Vietnam) 142
- Design Framework for FPGA-based Hardware Accelerators with Heterogeneous Interconnect
Cuong Pham-Quoc (Ho Chi Minh City University of Technology (HCMUT) & Faculty of Computer Science and Engineering, Vietnam) 148
- Experimental UWB Wireless Sensor System for Locomotive Engine Parameters Monitoring
Dang Anh Tuan (Vietnam Research Institute of Electronics, Informatics and Automation, Vietnam), Hung Viet Nguyen (Post and Telecommunications Institute of Technology & IETR, Université de Rennes 1, Vietnam), Nguyen The Truyen (Vietnam Research Institute of Electronics, Informatics and Automation, Vietnam), Nguyen Hong Vu (Vietnam Research Institute of Electronics, Informatics and Automation, Vietnam) 154
- Novel Hardware-Oriented Integer Motion Estimation Algorithms for High Efficiency Video Coding
Thang Nguyen (Hanoi University of Science and Technology, Vietnam), Tung Vu (School of Electronics & Telecommunications, Vietnam), Hoan Nguyen (School of

Electronics & Telecommunications, Vietnam), Anh Dao (Hanoi University of Science and Technology, Vietnam) 160

- Implementation of High Speed Rainbow Table Generation Using Keccak Hashing Algorithm on GPU
Thuong Dat Nguyen (National Defense Academy, Japan), Keisuke Iwai (National Defense Academy, Japan), Takashi Matsubara (National Defense Academy, Japan), Takakazu Kurokawa (National Defense Academy, Japan)

166

Software Engineering

- Proposing Distortion Compensation Algorithm for Determining Distance Using Two Cameras
Phat Nguyen Huu (Hanoi University of Science and Technology, Vietnam), Tinh Tran (Hanoi University of Science and Technology, Vietnam), Nguyet Giap (Hanoi University of Science and Technology, Vietnam) 172
- The Technique of Locking Memory on Linux Operating System - Application in Checkpointing
Huyen Xuan Do (Hue University of Sciences, Vietnam) 178
- An Approach to Analyze Software Security Requirements in ABAC Model
Nhan Luong (UET & UET, Vietnam), Thuan Truong (VNU - University of Engineering and Technology, Vietnam), Hieu Vo (University of Engineering and Technology, VNU, Vietnam) 184
- Constructing a Digital Signature Algorithm Based on the Difficulty of Some Expanded Root Problems
Luu Xuan Van (People's Security Academy, Vietnam), Luu Hong Dung (Hoc vien Ky thuat quan su, Vietnam) 190
- A Visualization Monitoring Technique in Camera Surveillance System
Manh Toan Ha (Institute Of Information Technology, Vietnam), Hien Anh Trinh (Institute Of Information Technology & Institute of Information Technology, Vietnamese Academy of Science and Technology, Vietnam), Xuan Hung Trinh (Institute Of Information Technology, Vietnam) 196

Communication and Networking #2

- LOS/NLOS Channel Identification Technology Based on CNN
Fei Wang (Beijing Information Science and Technology University, China), Zhan Xu (Beijing Information Science and Technology University, China), Ruxin Zhi (Beijing Information Science & Technology University, China), Jinhui Chen (Beijing Information Science and Technology University, China), Peiyue Zhang (Beijing Information Science and Technology University, China) 200
- Efficiency of Transmission Distortion Compensation Using Optical Backpropagation

Nhan Nguyen (Posts and Telecommunications Institute of Technology, Vietnam), Binh Thuy Tran (PTIT, Vietnam)	204
• Proposal Gesture Recognition Algorithm Combining CNN for Health Monitoring Phat Nguyen Huu (Hanoi University of Science and Technology, Vietnam), Huong Nguyen (Graduate School of Electronics and Telecommunications, Vietnam)	209
• Performance of Deep Learning LDPC Coded Communications in Large Scale MIMO Channels Viet Quoc Pham (Ho Chi Minh City University of Technology, Vietnam), Hung Dang (Posts and Telecommunications Institute of Technology, Vietnam), Thuy V. Nguyen (Posts and Telecommunications Institute of Technology, Vietnam), Hieu T. Nguyen (University in Southeast Norway, Norway)	214
• Variable Guard Interval Orthogonal Frequency Division Multiplexing (OFDM) System Baskoro Widiyarachmanto (Kyushu Intitute of Technology, Japan)	219

Computational Intelligence #2

• Content Based Side Information Creation for Distributed Video Coding Huu-Tien Vu (Post and Telecommunications Institute of Technology, Vietnam), Thao Nguyen Thi Huong (Posts and Telecommunications Institute of Technology, Vietnam), San Vu Van (Posts and Telecommunications Institute of Technology, Vietnam)	223
• EEG Source Localization: A New Multiway Temporal-Spatial-Spectral Analysis Le Xuyen (Hanoi University of Science and Technology, Vietnam), Le Trung Thanh (Vietnam National University, Hanoi, Vietnam), Nguyen Linh Trung (Vietnam National University, Hanoi, Vietnam), Tran Thi Thuy Quynh (VNU University of Engineering and Technology, Vietnam), Nguyen Thuan (Hanoi University of Science and Technology, Vietnam)	228
• A Convolutional Transformation Network for Malware Classification Duc-Ly Vu (University of Trento, Italy), Trong Kha Nguyen (Hongik University, South Korea, Vietnam), Tam V Nguyen (University of Dayton, USA), Tu N. Nguyen (Purdue University Fort Wayne, USA), Fabio Massacci (University of Trento, Italy), Phu H. Phung (University of Dayton, USA)	234
• An Effective Coverage Approach for Attention-based Neural Machine Translation Quan Nguyen (University of Engineering and Technology - VNU, Vietnam), Thuan Nguyen (University of Engineering and Technology, Vietnam), Vu Huy Hien (University of Engineering and Technology, VNU Hanoi, Vietnam), Van Vinh Nguyen (Vietnam National University, Hanoi, Vietnam), Thai Phuong Nguyen (College of Technology, Vietnam National University, Hanoi, Vietnam), Dao Thi Nga My (University of Languages and International Studies, VNU Hanoi, Vietnam), Tran Kieu Hue (University of Languages and International Studies, VNU Hanoi, Vietnam), Dinh Khac Quy (University of Engineering and Technology, Vietnam)	240

- Developing the New Proposal of Intelligence System in Heart and Cardiovascular Diagnosis
Hieu Le Ngoc (Ho Chi Minh City Open University, Vietnam), Cong Hung Tran (Posts and Telecoms Institute of Technology, Vietnam), Sang Do Phuoc (Hanoi University of Home Affairs Branch in Ho Chi Minh City, Vietnam), Khue Bui Dan (HCMC Open University, Vietnam) 246

Computational Intelligence #3

- FSKYMINE: A Faster Algorithm for Mining Skyline Frequent Utility Itemsets
Phan Viet Anh (MTA, Vietnam), Lai V Pham (MITI, Vietnam), Hung Nguyen (Military Technical Academy, Vietnam) 251
- DIRAC: A Hybrid Approach to Customer Demographics Analysis for Advertising Campaigns
Tran Anh Tuan, Dr (Tan Tao University, Vietnam), Tien-Dung Cao (Tan Tao University, Vietnam), Tram Truong-Huu (Agency for Science, Technology and Research (A*STAR), Singapore) 256
- One-Sided Synthetic-RZ Control Charts: a New Method for Anomaly Detection
Thi Hien Nguyen (EISTI, France), Nguyen Huu Du (Division of Artificial Intelligence, Dong A University, Danang, Belgium), Tran Kim Duc (Division of Artificial Intelligence, Dong A University, Danang, Vietnam), Huong Thu Truong (Hanoi University of Science and Technology, Vietnam), Kieu-Ha Phung (Hanoi University of Science and Technology, Vietnam), Nguyen Le Hoang (Faculty of Electrical Engineering, Dong A University, Danang, Vietnam), Le Thi Thanh Nga (Faculty of Electrical Engineering, Dong A University, Danang, Vietnam), Kim Phuc Tran (ENSAIT & GEMTEX Laboratory, France) 262
- Designing Digital Beamformer in Massive MIMO Systems Using Particle Swarm Optimization
Quang Tri Le Nguyen (University of Technology, Vietnam), Tuan Do-Hong (Ho Chi Minh City University of Technology, Vietnam) 268
- A Dynamic Model for Temperature Prediction in Glass Greenhouse
Sam Nguyen-Xuan (Posts and Telecoms Institute of Technology, Vietnam), Nguyen Luong Nhat (Posts and Telecommunications Institute of Technology, Vietnam) 274

Interactive Session #2

- Embedded Machine Learning for Mango Classification Using Image Processing and Support Vector Machine
Minh-Thanh Vo (International University, Vietnam), Tuan-Duc Nguyen (International University, HCMC VNU, Vietnam), Nhan T Dang (VNU-International University, Vietnam) 279
- Three Lowest Optical Modes Simultaneous Generator Based on Silicon Multimode Interference and Y-Junction Couplers
Duy Quang Duong (Posts and Telecommunications Institute of Technology, Hanoi, Vietnam), Ho Duc Tam Linh (Danang University of Science and Technology & Hue

- University of Sciences, Vietnam), Cao Dung Truong (Posts and Telecommunications Institute of Technology & Faculty of Electronics Engineering, Vietnam), Hung Nguyen (The University of Danang, Vietnam), Bac Hoai Dang (PTIT, Vietnam), Cong Duan Luong (PTIT University, Vietnam) 285
-
- A Comparison of AMQP and MQTT Protocols for Internet of Things
Quoc Uy Nguyen (PTIT University, Vietnam), Vu Nam (PTIT, Vietnam) 292

 - Design and Implementation of Configurable Convolutional Neural Network on FPGA
Phu Huynh (University of Information Technology, Vietnam), Tan Tran (University of Information Technology, Vietnam), Men Phan (University of Information Technology, Vietnam), Hieu Nguyen (University of Information Technology, Vietnam), Cuong Truong (University of Information Technology & UIT, Vietnam) 298

 - An Adaptive Large Neighborhood Search Solving Large People and Parcel Share-a-Ride Problem
Son Van Nguyen (Ha Noi University of Science and Technology & Academy of Cryptography Techniques, Vietnam), Dung Pham (HUST, Vietnam), Tu Phan (Ha Noi University of Science and Technology, Vietnam) 303

Communication and Networking #3

- Compact Triple-Band Antenna Based on Fibonacci Sequence for Wi-Fi/LTE-A/5G Below 6GHz Applications in IoT Devices
Thanh Tu Duong (Posts and Telecommunications Institute of Technology, Vietnam), Tan Nguyen (Posts and Telecommunications Institute of Technology, Vietnam), Hung Viet Nguyen (Post and Telecommunications Institute of Technology & IETR, Université de Rennes 1, Vietnam) 309

- From Single Band to Multiband Reconfigurable Compact Antenna Using Double Ring Structure for 4G/5G Applications
Thanh Tu Duong (Posts and Telecommunications Institute of Technology, Vietnam), Sang Nguyen (Posts and Telecommunications Institute of Technology, Vietnam), Bac Hoai Dang (PTIT, Vietnam), Anh Quan Tran Hung (Posts and Telecommunications Institute of Technology & AceAntenna Company, Vietnam), Thao Hoang Thi Phuong (Hanoi University of Science and Technology & Electric Power University, Vietnam) 314

- High Data Density Encoding Resonator for Ultra Wideband Chipless RFID Tag
Thanh Huong Nguyen (Hanoi University of Science and Technology & MICA, Vietnam), Nguyen Viet Tung (MICA, Vietnam) 320

- Design of High Gain Triple Band Antenna for Indoor Wireless Energy Harvesting
Thanh Huong Nguyen (Hanoi University of Science and Technology & MICA, Vietnam), Tuan Ninh Nguyen (Hanoi University of Science and Technology, Vietnam) 325

- An Approach for UAV Indoor Obstacle Avoidance Based on AI Technique with Ensemble of ResNet8 and Res-DQN

Tuan Do Trong (Hanoi University of Science and Technology, Vietnam), Han Trong Thanh (Hanoi University of Science and Technology, Vietnam), Nam Tran (Hanoi University of Science and Technology, Vietnam), Quan Tran (Hanoi University of Science and Technology, Vietnam), Dat Nguyen1 (Hanoi University of Science and Technology, Vietnam) 330

Computational Intelligence #4

- An Approach for Discovering Affiliation Network from XES Formatted Workflow Log

 Dinh-Lam Pham (Kyonggi University, Republic of Korea, South Korea), Hyun Ahn (Kyonggi University, South Korea), Kwanghoon Kim (Kyonggi University, South Korea), Kyoung-Sook Kim (Kyonggi University, South Korea) 336
- Semi-supervised Convolutional Neural Networks for Flood Mapping Using Multi-modal Remote Sensing Data

 Hung Luu (VNU University of Engineering and Technology, Vietnam), Minh-Son Dao (National Institute of Information and Communication Technology, Japan), Thanh Nguyen (VNU University of Engineering and Technology, Vietnam), Stuart W. Perry (University of Technology Sydney, Australia), Koji Zettsu (NICT, Japan) 342
- Long-Short Term Memory Networks for Resource Allocation Forecasting in Wifi Networks

 Son Ta Anh (HUST & Applied Mathematics and Informatics, Vietnam), Phuong Nguyen (HUST, Vietnam), Phong Le (AWING Company, Vietnam) 348
- Cau Giay: A Dataset for Very Dense Building Extraction from Google Earth Imagery

 Anh Nguyen (VNU University of Engineering and Technology, Vietnam), Hung Luu (VNU University of Engineering and Technology, Vietnam), Anh Phan (VNU University of Engineering and Technology, Vietnam), Hung Bui (VNU University of Engineering and Technology, Vietnam), Thanh Nguyen (VNU University of Engineering and Technology, Vietnam) 352
- An Image Inpainting Method Based on Adaptive Fuzzy Switching Median

 Nguyen Van Son (Military Weapon Institute, Vietnam), Dang N. H. Thanh (Hue College of Industry, Vietnam), Uğur Erkan (Karamanoğlu Mehmetbey Üniversitesi, Yunus Emre Yerleşkesi, Turkey), V. B. Surya Prasath (Cincinnati Children's Hospital Medical Center & University of Cincinnati, USA) 357

Computational Intelligence #5

- An Effective Semi-Supervised Learning Framework for Temporal Student Classification

 Chau Thi Ngoc Vo (Ho Chi Minh City University of Technology, Vietnam), Phung Hua Nguyen (Ho Chi Minh City University of Technology, Vietnam) 363
- Image Denoising with Overlapping Group Sparsity and Second Order Total Variation Regularization

Nguyen Minh Hue (Ho Chi Minh City University of Transport, Vietnam), Dang N. H. Thanh (Hue College of Industry, Vietnam), Le Thi Thanh (Ho Chi Minh city University of Transport, Vietnam), Nguyen Ngoc Hien (Dong Thap University, Vietnam), V. B. Surya Prasath (Cincinnati Children's Hospital Medical Center & University of Cincinnati, USA) 370

- **VNDS: A Vietnamese Dataset for Summarization**
 Van-Hau Nguyen (Hung Yen University of Technology and Education, Vietnam), Nguyen Thanh Chinh (AI Academy Vietnam, Vietnam), Nguyen Minh Tien (Hung Yen University of Technology and Education, Vietnam), Nguyen Xuan Hoai (HUTECH, Vietnam) 375
- **End-to-End Deep Background Subtraction Based on Encoder-Decoder Network**
 Duy Le (University of Danang, Vietnam), Pham Van Tuan (Da Nang University of Science and Technology, Vietnam) 381
- **Towards Recognizing Facial Expressions at Deeper Level: Discriminating Genuine and Fake Smiles from a Sequence of Images**
 Tu Minh Nguyen (Le Quy Don Technical University, Vietnam), Kazunori Kotani (JAIST, Japan), Khanh Quoc Nguyen (Le Quy Don Technical University, Vietnam), Prarinya Siritanawan (JAIST, Japan) 387

Communication and Networking #4

- **Modeling a Virtual Reality System with Caching and Computing Capabilities at Mobile User' Device**
 Huy Phi (Posts and Telecommunications Institute of Technology, Vietnam), Ha Huu Tran (VNU-University of Engineering and Technology, Vietnam), Vu Trinh (University of Engineering and Technology, Vietnam), Thang X. Vu (University of Luxembourg, Luxembourg) 393
- **Early Phase Warning Solution About System Security Based on Log Analysis**
 Hieu Le Ngoc (Ho Chi Minh City Open University, Vietnam), Cong Hung Tran (Posts and Telecoms Institute of Technology, Vietnam), Huy Nguyen Duc (VNPT Binh Duong, Vietnam), Hang Nguyen Thi Thanh (HCMC Open University, Vietnam) 398
- **An Approach to Handover Bandwidth Reservation in the Wireless Future Convergence Network**
 Hung Ngoc Le (Ha noi, Viet nam, Vietnam) 404
- **A Study of Hierarchical Topology and Spatial Reuse Superframe for Cluster-Based WBAN**
 Ta Chi Hieu (Le Quy Don Technical University, Vietnam), Pham Thanh Hiep (Le Quy Don Technical University, Vietnam), Thuyen Hoang (Le Quy Don Technical University, Vietnam) 410
- **SDNLog-Foren: Ensuring the Integrity and Tamper Resistance of Log Files for SDN Forensics Using Blockchain**
 Phan The Duy (University of Information Technology, VNU-HCM, Vietnam), Hien Do Hoang (University of Information Technology - VNU-HCM, Vietnam), Do Thi Thu

Hien (University of Information Technology, VNU-HCM, Vietnam), Nguyen Ba Khanh (University of Information Technology - VNU-HCM, Vietnam), Van-Hau Pham (University of Information Technology, Vietnam) 416

Computational Intelligence #6

- Toward Deep and Handcraft Features for Detecting Violent Behaviors
Khang Tran (Ho Chi Minh city University of Education, Vietnam), Duy Nguyen (Ho Chi Minh city University of Education, Vietnam), Hung Nguyen (Ho Chi Minh city University of Education, Vietnam) 422
- Mining Maximal High Utility Itemsets Without Generating Candidates
Loan Nguyen (International University, VNU-HCM, Vietnam), Trinh Nguyen (University of Information Technology, VNU-HCM, Vietnam), Bao Vu (University of Information Technology, VNU-HCM, Vietnam) 428
- Face Detection Method in Surveillance Systems Using Haar Feature and Deep Neural Network
Tin Trung Thai (International University - Ho Chi Minh city, Vietnam), Tuan-Duc Nguyen (International University, HCMC VNU, Vietnam) 434
- A Novel Volume Coherence Optimization Method for Forest Height Retrieval over Slope Terrain Using PolInSAR Images
Pham Nghia (Le Qui Don Technical University, Vietnam), Mai Vinh (Le Qui Don Technical University, Vietnam), Nguyen Tan (Le Qui Don Technical University, Vietnam), Cuong Thieu Huu (Le Qui Don Technical University, Vietnam) 439
- Modeling of Mobile Antenna Optimization Based on Artificial Neural Network
Trung Xuan Vu Nguyen (Hanoi University of Science and Technology, Vietnam), Thuan Bui Bach (Hanoi University of Science and Technology, Vietnam), Bui Manh Cuong (Hanoi University of Science and Technology, Vietnam), Son Xuat Ta (Hanoi University of Science and Technology, Vietnam), Nguyen Khac Kiem (Hanoi University of Science and Technology, Vietnam), Chien Ngoc Dao (Hanoi University of Science and Technology, Vietnam) 444

Computational Intelligence #7

- Intrusion Detection in IoT Systems Based on Deep Learning Using Convolutional Neural Network
Pham Van Huong (Academy of Cryptography Techniques, Vietnam), Le Duc Thuan (ACT, Vietnam), Le Thi Hong Van (Academy of Cryptography Techniques, Vietnam), Dang Viet Hung (Academy of Cryptography Techniques, Vietnam) 448
- Evaluate Control Laws Related to Interaction Matrix for Image-Based Visual Servoing
Vo Duy Cong (Ho Chi Minh City University of Technology, Vietnam), Le Duc Hanh (Ho Chi Minh city University of Technology, Vietnam) 454
- Hybrid Tree-Fuzzy-Rough Set Decision Support for Determining Plant Growth Using Vision-Based Descriptors

Pocholo James Loresco (De La Salle University, Manila & Far Eastern University Institute of Technology, Philippines), Elmer P. Dadios (Philippines, Philippines) 460

- A Novel Method for Automatic Detection of Basic Shapes on Whiteboard Images Using Faster RCNN
Quang H. Nguyen (Hanoi University of Science and Technology, Vietnam), Loan Trinh (Hanoi University of Science and Technology, Vietnam), Ha Quang Thai (ARS Viet Nam Co., Ltd., Vietnam), Nguyen Thanh Binh (ARS Viet Nam Co., Ltd., Vietnam), Tran Van Sang (ARS Viet Nam Co., Ltd., Vietnam), Tran Phuong Nam (ARS Viet Nam Co., Ltd., Vietnam) 466
- A Simple and Effective Approach for Distilling Knowledge from BERT into NMT
Hao Yang (Beijing University of Posts and Telecommunications, China), Ying Qin (Huawei Co. Ltd., China), Minghan Wang (Huawei Co. Ltd., China), Lizhi Lei (Huawei Co. Ltd., Vietnam), Ning Xie (Huawei Co. Ltd., China), Daimeng Wei (Huawei Co. Ltd., China) N/A

Interactive Session #3

- A Single-Column Convolutional Neural Networks for Crowd Counting
Phuc Thinh Do (Dong Nai Technology University, Vietnam) 477
- A Robust End-To-End Information Extraction System for Vietnamese Identity Cards
Hoan Tran (Hanoi University of Science and Technology, Hanoi, Vietnam) 483
- Application of Convolutional Neural Network for Gender and Age Group Recognition from Speech
Pham Tuan Dat (Maritime University, Vietnam), The Anh Le (Moscow Institute of Physics and Technology & Vietnam Maritime University, Russia) 489
- Student Postures and Gesture Recognition System for Adaptive Learning Improvement
Nguyen Quang Trung (Human Machine Interaction Laboratory, University of Engineering & Technology, VNU Ha Noi, Vietnam), Binh Tieu Hoang (Hanoi National University of Education, Vietnam), The Duy Bui (Human Machine Interaction Laboratory, Vietnam), Phuong Dung Nguyen Thi (Thuy Loi University, Vietnam) 494
- A Survey of Machine Learning Algorithms in EEG
Tien H.T Vo (University of Science, VNU-HCM, Vietnam), Tran L.N Dang (University of Science, VNU-HCM, Vietnam), Ngan Vuong Thuy Nguyen (University of Science, VNU-HCM, Vietnam), Tuan Van Huynh (University of Science, VNU-HCM, Vietnam) 500

Communication and Networking #5

- Robust Denoising of Low-Dose CT Images Using Convolutional Neural Networks
Thanh-Trung Nguyen (University of Engineering and Technology, VNU & Thainguyen University of Information and Communication Technology, Vietnam), Dinh Hoan

Trinh (Université de Bourgogne & ImViA, France), Nguyen Linh Trung (Vietnam National University, Hanoi, Vietnam), Luu Manh Ha (AVITECH & FET, University of Technology and Engineering, VNU, Hanoi, Vietnam & Erasmus MC, Rotterdam, The Netherlands)	506
• Smooth Viewport Bitrate Adaptation for 360 Video Streaming Duc Nguyen (KDDI Research Inc., Japan), Truong Cong Thang (The University of Aizu, Japan), Huong Le Dieu Hoang (Hanoi University of Science and Technology, Vietnam), Pham Nam (Hanoi University of Science and Technology & School of Electronics and Telecoms, Vietnam), Huong Thu Truong (Hanoi University of Science and Technology, Vietnam)	512
• A New Imaging Geometry Model for Determining Phase Distribution in Multi-receiver Synthetic Aperture Sonar Nguyen Dinh Tinh (Le Quy Don Technical University, Vietnam), Trinh Dang Khanh (Le Quy Don Technical University, Vietnam)	518
• Designing Electrical System Using Artificial Neural Networks for Load Balancing in Smart-Grid Phat Nguyen Huu (Hanoi University of Science and Technology, Vietnam), Duy Tran (Engineer, Vietnam)	522
• Hardware Trojan Detection Techniques Using Side-Channel Analysis Thi-Tam Hoang (University of Electro-Communications, Japan), Thai-Ha Tran (Le Quy Don Technical University, Vietnam), Van-Phuc Hoang (Le Quy Don Technical University, Vietnam), Xuan Nam Tran (Le Quy Don Technical University, Vietnam), Cong-Kha Pham (University of Electro-Communications (UEC), Japan)	528

Communication and Networking #6

• An Ensemble of Activation Functions in AutoEncoder Applied to IoT Anomaly Detection Ly Vu (Le Quy Don Technical University, Vietnam), Quang Uy Nguyen (Le Quy Don Technical University, Vietnam)	534
• An IoT Reconfiguration Framework Applied Ontology-based Modeling and Bayesian-based Reasoning for Context Management Tuan Nguyen-Anh (The University of Information Technology - VNU-HCM, Vietnam), Quan Le-Trung (University of Information Technology - VNUHCM, Vietnam)	540
• Cognitive Radio Architecture for WBAN in e-Health Applications: An Overview Tien Nhat Nguyen (Saigon University, Vietnam), Thien Thi Thanh Le (Eastern International University, Vietnam), Nhu Nguyen (Saigon University, Vietnam), Miroslav Voznak (VSB - Technical University of Ostrava, Czech Republic), Jaroslav Zdralek (VSB – Technical University of Ostrava, Czech Republic)	546
• Minimum Energy Trajectories for Local Area Networks of Drones in the Presence of Obstacles Rohan de Silva (CQUniversity Sydney, Australia), Sandaruvan Rajasinghage (CQUniversity, Australia)	552

Computational Intelligence #8

- **A Single Image Dehazing Method Based on Adaptive Gamma Correction**
.....
Nguyen Minh Hong (Le Quy Don Technical University, Vietnam), Nguyen Chi Thanh
(Le Quy Don Technical University, Vietnam) 558
- **Mapping Land Cover Types in Vientiane, Laos Using Multi-Temporal
Composite Landsat 8 Images**
.....
Sanya Praseuth (Laos National Assembly, Vietnam), Dung Tuan Pham (VNU University
of Engineering and Technology, Vietnam), Chuc Man Duc (University of Engineering
and Technology, VNU, Vietnam), Hung Bui (VNU University of Engineering and
Technology, Vietnam), Thanh Nguyen (VNU University of Engineering and
Technology, Vietnam) 563
- **A Spontaneous Visible and Thermal Facial Expression of Human Emotion
Database**
.....
Nam Nguyen Phuong (Ho Chi Minh University of Education, Vietnam), Khang Tran
(Ho Chi Minh city University of Education, Vietnam), Duy Nguyen (Ho Chi Minh city
University of Education, Vietnam), Hung Nguyen (Ho Chi Minh city University of
Education, Vietnam), Tam Cong Luong (Ho Chi Minh city University of Education,
Vietnam), Long Huynh (Ho Chi Minh University of Education, Vietnam), Huan Ho Kha
Viet (HCM University of Pedagogy, Vietnam), Nguyen Le Minh Vuong (Ho Chi Minh
University of Education, Vietnam), Kazunori Kotani (JAIST, Japan), Nha Thanh Tran
(Ho Chi Minh University of Education HCMC, Vietnam) 569
- **Skin Lesion Segmentation Based on Modification of SegNet Neural Networks**
.....
Quoc Cuong Ninh (Hanoi University of Science and Technology, Vietnam), Thi-Thao
Tran (Hanoi University of Science and Technology, Vietnam), Tien Thanh Tran (Hanoi
University of Science and Technology, Vietnam), Thi Anh Xuan Tran (Hanoi University
of Science and Technology, Vietnam), Van-Truong Pham (Hanoi University of Science
and Technology, Vietnam) 575
- **Developing a Domain Ontology for Natural Resources and Environment**
.....
Ngoc Vu Nguyen (Ministry of Natural Resources and Environment, Vietnam)

..... N/A