

2019 International Symposium on Electrical and Electronics Engineering (ISEE 2019)

**Ho Chi Minh, Vietnam
10 – 12 October 2019**



**IEEE Catalog Number: CFP19FSR-POD
ISBN: 978-1-7281-5354-4**

**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:	CFP19FSR-POD
ISBN (Print-On-Demand):	978-1-7281-5354-4
ISBN (Online):	978-1-7281-5353-7

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

Integrated Circuits and Systems

Asynchronous 2-Phase Level-Encoded Convention Logic (LCL)	1
<i>Linh Duc Tran, Thanh Chi Pham, Omid Kavehei and Glenn I. Matthews</i>	
A 12-Bit 33-mW and 96-MHz Discrete-Time Sigma Delta ADC in 130 nm CMOS Technology	7
<i>Bao Tran and Cuong Huynh</i>	
Low-loss 6-bit Sub-7 GHz Digital Step Attenuator	13
<i>Luan Nguyen, Vinh Nguyen, Kim Phan, Thanh Vu, Sanghun Lee and Cuong Huynh</i>	
A Ka-band GaN High Power Amplifier	19
<i>Kim Phan, Cong Ma, Sanghun Lee and Cuong Huynh</i>	

Electronic and Embedded Systems

Encoding Blocks for Digital Video of DVB-S2 Standard with Drone-based Communications	23
<i>Thuong Le-Tien, Khang Nguyen and Thinh Nguyen</i>	
Low-Cost, High-Efficiency Hardware Implementation of Smart Traffic Light System	28
<i>Thien Truong Nguyen-Ly, Linh Tran and Thinh V. Huynh</i>	
Hardware Architecture Design For Vehicle Detection.....	33
<i>Nguyen Trinh Vu Dang, Linh Nguyen Thi My, Thang Nguyen Quoc and Linh Tran Hoang</i>	
Manufacturing PACS, Online Medical Consultation System and Designing Security DICOM Web Viewer Software	37
<i>Tuan T. Nguyen, Ngoc C. Nguyen and Thuong T. Le</i>	
Facial Expression Recognition System on SoC FPGA	43
<i>Pham The Vinh and Truong Quang Vinh</i>	

Temperature dependent of Er-doped Yttrium Aluminum Garnet	47
<i>N.Norhashim, S.Kaveh and AK Cheetham</i>	
Optimized Hardware Design of Low Power and Low Cost Self Driving Multi-Purposes Robotised Platform.....	53
<i>Sachintha Balasooriya, Thanh Pham Chi and Ilya Kavalchuk</i>	
ElectroMyography Acquisition System Using Graphene-based e-Textiles	59
<i>Fatima Awan, Yilin He, Linh Le, Le-Lan Tran, Huy-Dung Han and Loan Pham Nguyen</i>	

Communication Engineering and Systems

Acoustic Scene Classification Using A Deeper Training Method for Convolution Neural Network.....	63
<i>Tan Doan, Hung Nguyen, Dat Thanh Ngo, Lam Pham and Ha Hoang Kha</i>	
Security Analysis for Cognitive Radio Network with Energy Scavenging Capable Relay over Nakagami- <i>m</i> Fading Channels.....	68
<i>Ngoc Pham-Thi-Dan, Khuong Ho-Van, Thiem Do-Dac, Son Vo-Que and Son Pham-Ngoc</i>	
Evaluation of Full-Mesh Networks for Smart Home Applications	73
<i>Vo Que Son and Nguyen Tho Anh Khoa</i>	
Crack detection based on Gaussian Mixture Model using image filtering.....	79
<i>Shujiro Ogawa, Kousuke Matsushima and Osamu Takahashi</i>	
A K-band Noninvasive Vital Signs Monitoring System in Automotive Applications	85
<i>Quang Thang Tran, That Long Ton, Ngoc Truong Minh Nguyen and Binh Duong Nguyen</i>	
Landslide Detection Method using Laser Beam.....	89
<i>Florentinus Budi Setiawan, Maria Wahyuni and Suyanto Edward Antonius</i>	
Energy Harvesting Cooperative Cognitive Networks: Relay Selection for Information Security	93
<i>Ngoc Pham-Thi-Dan, Khuong Ho-Van, Thiem Do-Dac, Son Vo-Que and Son Pham-Ngoc</i>	
Datasheet Model to Predict Bound Error via Supervised Machine Learning for Wireless Sensor Network Systems	97
<i>Qui Vo-Phu, Nga Tu-Ly and Thuong Le-Tien</i>	

Robust Line Hausdorff Distance for Face Recognition.....	103
<i>Chau Dang-Nguyen and Tuan Do-Hong</i>	
ESP-NOW Based Decentralized Low Cost Voice Communication Systems for Buildings	108
<i>Tu Ngoc Hoang, Su-Tran Van and B.D.Nguyen</i>	
Joint Optimization of Execution Latency and Energy Consumption for Mobile Edge Computing with Data Compression and Task Allocation.....	113
<i>Minh Hoang Ly, Thinh Quang Dinh and Ha Hoang Kha</i>	
Respiration detection using Inertial Measurement Unit	119
<i>Satoshi Itou, Shoshi Inoue and Kaei Washino</i>	
Map Matching using Line Segment Features for Self-Vehicle Localization in Road Environments.....	124
<i>Masayuki Chiwata and Kousuke Matsushima</i>	
Multiclass Breast Cancer Classification Using Convolutional Neural Network	130
<i>Phu T. Nguyen, Tuan T. Nguyen, Ngoc C. Nguyen and Thuong T. Le</i>	
Energy Efficiency Maximization with Per-Antenna Power Constraints for Heterogeneous Networks	135
<i>Viet Quoc Pham, Tien Ngoc Ha, Ha Hoang Kha and Pham Van Quyet</i>	
A Topology Control Algorithm in Wireless Sensor Networks for IoT-based Applications	141
<i>Tien N. Nguyen, Cuu V. Ho and Thien T. T. Le</i>	
User's Area (Zone) Estimation Method using BLE Beacons for IoT Service in Subway Station Environment	146
<i>Jinpyung Kim, Jeihoon Baek, Sanghun Lee and Chi-Hyung Ahn</i>	
Design of a Dual-band Rectenna for Small IoT Terminal.....	150
<i>Le Huy Trinh, Ha Vu Ngoc Anh, Viet Hoang Trinh, Dinh Duy Phan, Hong Nguyen Thi Khanh and Fabien Ferrero</i>	
Sum Rate Maximization for Full Duplex Multiuser MIMO Systems by Gradient Projection Approach	155
<i>Viet Quoc Pham, Tien Ngoc Ha, Ha Hoang Kha, and Vo Que Son</i>	

Control Engineering and Automation

Design and Implementation of Livestock Robot for Egg Picking and Classification in the Farm 161

Chia-Hui Wang, Bo-Xuan Xie and Chung-Liang Chang

Failure Detection System Design for Asymmetric Elevator Failures in the F-16 Aircraft 166

İlkay Gümuşboğa and Altug İftar

Hysteresis Identification of Piezoelectric Actuator Using Neural Network Trained By Jaya Algorithm 172

Nguyen Ngoc Son, Ho Pham Huy Anh, Cao Van Kien and Tran Minh Chinh

Robust Control of Two-Axis Gimbal System 177

Dinh-Huan Nguyen and Vinh-Hao Nguyen

Power and Energy Systems

A Simple Ripple Voltage Compensation Method in Hybrid AC-DC Microgrids 183

Dang-Minh Phan and Hong-Hee Lee

A New Design Method of LCL Filter for Single Phase Grid Connected Power Converter 189

Jongmin Jo, Zhenqian Liu and Hanju Cha

A Novel Asymmetric Half-Bridge Inverter for Capacitive Wireless Power Transfer 194

Truong Chanh Tin, Phuong-Ha La and Sung-Jin Choi

Decentralized Interleaving and Current Control for Multicellular Serial-Parallel Converters 199

Quoc Dung Phan, Guillaume Gateau, Minh Thien Nguyen, Marc Cousineau and Thao Pham Thi Ngoc

An Overview Introduction to Low-Head Hydropower in Vietnam: Visions towards a Greener Vietnam 2030 and Beyond 205

Nadipuram Prasad and Phuc Huu Nguyen

Analysis and Design of BLDC Motor Control in Regenerative Braking 211

Slamet Riyadi and Y. B. Dwi Setianto

One Leg Control Strategy in Single-Phase Five-Level Inverter 216

Leonardus Heru Pratomo

Analysis of Resonant Frequency of Transmission Line Based on Large Scale Offshore Wind Farm 221

Gihoon Kim, Jinhong Ahn and Sangheon Chae

Decoupling Control of Input-Paralleled System with Dual Active Bridge Converters 226

Choul-Woo Jung and Dong-Choon Lee

Auxiliary Power Unit for Railway Vehicles Using Three-Level LLC Converter with Pulse Width Modulation Control 232

Seung-Woo Baek, Hag-Wone Kim and Jeong-Won Kang

Development of Low Voltage DC/DC Converter for Electric Vehicle using SiC MOSFET 237

Yong-Su Noh, Byong Jo Hyon, Joon Sung Park, Jin-Hong Kim and Jun-Hyuk Choi

Development of PMSM Drive for Water Supply System 241

Jin-Hong Kim, Dongmyoung Joo, Yong-Su Noh, Byong Jo Hyon and Joon Sung Park

Design Considerations for Low Stray Impedance Printed-Circuit-Boards for Switching Converters 247

Seunghun Baek and Jaesuk Lee

Failure-rate Analysis Considering Operational Condition of Half-bridge Submodule in HVDC System 252

Dae-ho Heo, Feel-soon Kang and Sung-Geun Song

Inductance Identification of Synchronous Reluctance Motors Using Capacitor Discharge Method 257

Phuoc Hoa Truong, Damien Flieller, Ngac Ky Nguyen, Nguyen Bao Anh and Nguyen Duc Hung

Integration of OBC and LDC Using Adaptive DC Link Voltage 261

Dae-ho Heo, Yun-gi Kwak and Feel-soon Kang

Research for Fabrication of Lithium-ion Capacitor by Vertical Doping Method.....	265
<i>Tetsuroh Hisada, Shouji USUDA, Isao IYODA and Phuc Nguyen</i>	
Novel SCADA- Integrated FACTS Devices for Vietnam Grid	270
<i>Thirasara Galkeiya, Edouard Amouroux and Ilya Kavalchuk</i>	
Optimal Biped Walking Pattern Generator with Preset Hip-Shift Using JAYA Optimization Algorithm.....	275
<i>Tran Thien Huan and Ho Pham Huy Anh</i>	
Operation of Four-Level ANPC Inverter Based on Space-Vector Modulation for Common-Mode Voltage Reduction.....	281
<i>Jonathan Pribadi, Bumsu Park and Dong-Choon Lee</i>	
High-Reliability Single-Phase Six-Switch Dual-Output Current Source Inverter with Switching-Cell	286
<i>Duc-Tuan Do and Honnyong Cha</i>	
Fault-tolerant Control for 7-phase Non-sinusoidal Permanent Magnet Machines with One Opened Phase	292
<i>Keitaro Yanagihara, Duc Tan Vu, Ngac Ky Nguyen, Jinlin Gong, Eric Semail and Tiago Jose dos Santos Moraes</i>	
FS-PTC with Switching Table for Matrix Converter in Induction Motors Drive System.....	298
<i>Nguyen Hoang Viet, Vu Minh Hung and Nicolae PARASCHIV</i>	
Improved Model Predictive Control to Eliminate Common-mode Voltage and Balance the Neutral-point Potential for 3L-NPC Rectifier.....	304
<i>Nam Xuan Doan and Nho Van Nguyen</i>	
Impact Analysis of Jeju Island Power System Considering Predicted Power demand of EV	310
<i>Hyun Shin, Sang Heon Chae, Doheon Lee and Eel-Hwan Kim</i>	
Torque Error Compensation Algorithm for IPMSM Drives Using a Gopinath Style Stator Flux Linkage Observer.....	314
<i>Sungmin Choi, Seunghun Baek and Jae Suk Lee</i>	
Novel Configuration of an Inverter-based Three phase Induction Generator for Single-phase Load: Comparison to TSCAOI Setup	318
<i>Bunthern Kim, Maria Pietrzak-David and Pascal Maussion</i>	

Solar Buck Converter Voltage Controller design 323

Kyumin Lee, Kyu Il Hwang and Il Song Kim

Development and Implementation of Smart Street Lighting System based on
Lora Technology 328

*Ngo Thanh Tung, Le Minh Phuong, Nguyen Minh Huy, Nguyen Hoai Phong and Nguyen
Dinh Tuyen*