Contents

Part I Keynote

SDN Based Wireless Heterogeneous Network Management ............... 3
Choong Seon Hong, S.M. Ahsan Kazmi, Seungil Moon
and Nguyen Van Mui

Hidden Attractors in Fundamental Problems and Engineering
Models: A Short Survey ........................................... 13
Nikolay V. Kuznetsov

Part II Telecommunication

Experimental Study on the Effects of External Interference
on Slot Scheduling Based MAC Protocols in Wireless
Sensor Networks ......................................................... 29
Chi Trung Ngo, Hoon Oh and Minh Thuy Pham

Performance Analysis of a Hybrid Efficient and Reliable MAC
Scheme for Vehicular Ad Hoc Networks in Safety Applications ...... 41
VanDung Nguyen, Oanh Tran Thi Kim and Choong Seon Hong

Wireless Information and Power Transfer for Full Duplex Relaying
Networks: Performance Analysis ..................................... 53
Tam Nguyen Kieu, Dinh-Thuan Do, Xinh Nguyen Xuan,
Tan Nguyen Nhat and Hung Ha Duy

A Multi-channel MAC Protocol with Power Control for Wireless
Ad Hoc Networks ....................................................... 63
Duc Ngoc Minh Dang, Quynh Tu Ngo, Hanh Ngoc Dang
and Choong Seon Hong

A Novel Compressed Sensing Approach to Speech
Signal Compression ..................................................... 75
Tan N. Nguyen, Phuong T. Tran and Miroslav Voznak
Optimization of Mobility Control in Mobile Wireless Networks for Energy Saving ........................................ 87
Phuong T. Tran

Utilizing the Neural Networks for Speech Quality Estimation Based on the Network Characteristics ................. 99
Jan Rozhon, Miroslav Voznak, Filip Rezac and Jiri Slachta

Bit Error Rate Performance of Clipped OFDM Signals Over Fading Channel ............................................. 111
Dang Le Khoa, Huynh Quoc Anh, Nguyen Huu Phuong
and Hiroshi Ochi

Part III Computer Science

Machine Learning Based Phishing Web Sites Detection .......... 123
Huu Hieu Nguyen and Duc Thai Nguyen

Simulation and Optimization of a Non-linear Dynamic Process Using Mathematica ..................................... 133
Tran Trong Dao, Vo Hoang Duy, Ivan Zelinka, Luu Minh Tung
and Pham Nhat Phuong

Personality Disorders Identification in Written Texts ............. 143
Petr Saloun, Adam Ondrejka, Martin Malčík and Ivan Zelinka

Part IV Power System

Compare Different Recent Methods and Propose Improved Method for Risk Assessment of Damages Due to Lightning .................. 157
Quyen Huy Anh, Le Quang Trung and Phan Chi Thach

An Improvement Forward Floating Search Algorithm for Feature Selection in Power System Transient Stability Classification .......... 167
Ngoc Au Nguyen, Huy Anh Quyen, Trong Nghia Le
and Thi Thanh Binh Phan

Technical Efficiency and Recommendations for Overcurrent Relay Protection Setting ..................................... 175
Tran Hoang Quang Minh

Tan Luong Van and Van Cuu Ho

The Solar Collector and Thermal Storage System Using High Temperature Oil ............................................. 197
Nguyen Dao, Nguyen Quang Dung and Nguyen Bon
<table>
<thead>
<tr>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solving Bi-Objective Short-Term Cascaded Hydrothermal Scheduling</td>
<td>213</td>
</tr>
<tr>
<td>Problem Using Modified Cuckoo Search Algorithm</td>
<td></td>
</tr>
<tr>
<td>Thang Trung Nguyen, Tuan Van Duong, Dieu Ngoc Vo and Bao Quoc Nguyen</td>
<td></td>
</tr>
<tr>
<td>A Backtracking Search Algorithm for Distribution Network</td>
<td>223</td>
</tr>
<tr>
<td>Reconfiguration Problem</td>
<td></td>
</tr>
<tr>
<td>Thuan Thanh Nguyen, Hiep Ngoc Pham, Anh Viet Truong, Tuan Anh Phung</td>
<td></td>
</tr>
<tr>
<td>and Thang Trung Nguyen</td>
<td></td>
</tr>
<tr>
<td>Part V Power Electronics</td>
<td></td>
</tr>
<tr>
<td>A Study on the Firing Angle at the Mode Conversion to Improve the</td>
<td>237</td>
</tr>
<tr>
<td>Output Characteristics of the Double Converter for Urban Rail</td>
<td></td>
</tr>
<tr>
<td>DC Power Supply</td>
<td></td>
</tr>
<tr>
<td>Sung Woo Han, Seung Sam Seo, Jin Han Lee, SeongGyu Kim, Min Kim and</td>
<td></td>
</tr>
<tr>
<td>Gi Sig Byun</td>
<td></td>
</tr>
<tr>
<td>A Synchronization Method for Three-Phase Grid-Connected Inverters</td>
<td>249</td>
</tr>
<tr>
<td>Using Levenberg-Marquardt Technique</td>
<td></td>
</tr>
<tr>
<td>Tran Quang Tho, Pham Huu Ly, Truong Viet Anh and Le Minh Phuong</td>
<td></td>
</tr>
<tr>
<td>Improved Control Strategy of Three-Phase Four-Wire Inverters</td>
<td>261</td>
</tr>
<tr>
<td>Using Sliding Mode Input-Output Feedback Linearization</td>
<td></td>
</tr>
<tr>
<td>Under Unbalanced and Nonlinear Load Conditions</td>
<td></td>
</tr>
<tr>
<td>Tan Luong Van, Le Minh Thien Huynh, Tran Thanh Trang</td>
<td></td>
</tr>
<tr>
<td>and Duc Chi Nguyen</td>
<td></td>
</tr>
<tr>
<td>Part VI Materials</td>
<td></td>
</tr>
<tr>
<td>The Structural Characteristics of ZnO Nanorods for Flexible Gas</td>
<td>275</td>
</tr>
<tr>
<td>Sensor Grown by Hydrothermal Method</td>
<td></td>
</tr>
<tr>
<td>JaeHeon Ock, JaeHyeon Oh, HyunMin Lee, SangHyun Kim and Nakwon Jang</td>
<td></td>
</tr>
<tr>
<td>SiO₂ Powder: A Novel Solution for Improving Spatial Color Uniformity of White LED Lamps</td>
<td>283</td>
</tr>
<tr>
<td>Nguyen Doan Quoc Anh, Yu-Nan Liu, Hsin-Yi Ma and Hsiao-Yi Lee</td>
<td></td>
</tr>
<tr>
<td>Optical Fiber-Coupled Compact Terahertz Transceiver Module</td>
<td>293</td>
</tr>
<tr>
<td>Hyeon Sang Bark, Young Bin Ji, Dong Woo Park, Sam Kyu Noh, Seung Jae</td>
<td></td>
</tr>
<tr>
<td>Oh and Tae-In Jeon</td>
<td></td>
</tr>
<tr>
<td>Study of a Novel Secondary Lens for LED Fishing Lamps</td>
<td>299</td>
</tr>
<tr>
<td>Thieu Quang Tri and Nguyen Doan Quoc Anh</td>
<td></td>
</tr>
</tbody>
</table>
Part VII Motor Control

Sliding Mode Observer for Induction Motor Control .............. 313
Chau Dong, Pavel Brandstetter, Huu Hau Vo and Vo Hoang Duy

MRAS Observers for Speed Estimation of Induction Motor with Direct Torque and Flux Control .................. 325
Hau Huu Vo, Pavel Brandstetter and Chau Si Thien Dong

Application of Servo Controller Design for Speed Control of AC Induction Motors Using Polynomial Differential Operator .................. 337
Dae Hwan Kim, Pandu Sandi Pratama, Phuc Thinh Doan, Sea June Oh, Van Tu Duong, Jung Hu Min, Young Seok Jung and Sang Bong Kim

Servo Controller Design for Speed Control of BLDC Motors Using Polynomial Differential Operator Method .................. 353
Trong Hai Nguyen, Jin Woo Lee, Hak Kyeong Kim, Thien Phuc Tran, Yeon Wook Choe, Viet Tuan Dinh and Sang Bong Kim

Optimal Tuning of PI Controller for Vector Control System Using Hybrid System Composed of GA and BA .................. 367
Dong Hwa Kim, Chau Dong, Cong Thinh Tran and Vo Hoang Duy

Part VIII Control System

Vehicle Side-Slip Angle and Lateral Force Estimator Based on Extended Kalman Filtering Algorithm .................. 377
Chih-Keng Chen and Anh-Tuan Le

Motion Control System Design for a Barge Type Vessel Moored by Ropes .............................................. 389
Anh-Minh D. Tran, Jung-In Yoon and Young-Bok Kim

A Novel Advanced Controller for Robust Stability of High Order Plants with Time-Delay and Uncertainty .................. 399
Ho Pham Huy Anh and Nguyen Ngoc Son

A Stable Lyapunov Approach of Advanced Sliding Mode Control for Swing up and Robust Balancing Implementation for the Pendubot System .................. 411
Cao Van Kien, Nguyen Ngoc Son and Ho Pham Huy Anh

Tuning PID Controllers for Unstable Systems with Dead Time Based on Dual-Input Describing Function Method .................. 427
Yeon Wook Choe
Cross-Coupling Synchronous Velocity Control for an Uncertain Model of Transformer Winding System Using Model Reference Adaptive Control Method ......................................................... 441
Van Tu Duong, Jae Hoon Jeong, Nam Soo Jeong, Min Saeng Shin, Tan Tien Nguyen, Gi Sig Byun and Sang Bong Kim

Comparing Convergence of PSO and SFLA Optimization Algorithms in Tuning Parameters of Fuzzy Logic Controller ........................................... 457
Duc-Hoang Nguyen and Manh-Dung Ngo

MIMO Robust Servo Controller Design Based on Internal Model Principle Using Polynomial Differential Operator ........................................ 469
Sang Bong Kim, Dae Hwan Kim, Pandu Sandi Pratama, Jin Wook Kim, Hak Kyeong Kim, Sea June Oh and Young Seok Jung

Design and Control Automatic Chess-Playing Robot Arm ................ 485
Nguyen Duy Anh, Luong Thanh Nhat and Tran Van Phan Nhan

Adaptive Controller Design for Mechanical Transmission Systems with Backlash .................................................. 497
Nguyen Duy Anh, Tran Ngoc Cong Thuong and Nguyen Tan Tien

Image Processing for Smoke Detection Based on Embedded System . . 509
Thao Phuong Thi Nguyen and Hoanh Nguyen

Second Order Sliding Mode Control Design for Active Magnetic Bearing System .................................................. 519
Van Van Huynh and Bach Dinh Hoang

Optimizing the CRI Method by Improving the Implication Step in MISO Fuzzy Expert Systems ........................................... 531
Thoai Phu Vo

Model Predictive Control Nonlinear System of Active Magnetic Bearings for a Flywheel Energy Storage System .......................................... 541
Yao-Wen Tsai, Phan Van Duc, Viet Anh Duong, Nguyen Cong Trang and Trung Dung Chu

Observer-Based Output Feedback Control Design for Mismatched Uncertain Systems ........................................... 553
Van Van Huynh and Minh Hoang Quang Tran

Single and Multi Chaos Enhanced Differential Evolution on the Selected PID Tuning Problem ......................................... 563
Roman Senkerik, Michal Pluhacek and Ivan Zelinka
A Study on the Dynamics of Marine Umbilical Cable for Underwater Vehicle ................................................ 575
The-Vu Mai, Hyeung-Sik Choi, Joon-Young Kim, Dae-Hyeung Ji, Hyun-Joong Son and Ngoc-Huy Tran

Adaptive Backstepping Control Design for Trajectory Tracking of Automatic Guided Vehicles ............................. 589
Pandu Sandi Pratama, Jae Hoon Jeong, Sang Kwun Jeong, Hak Kyeong Kim, Hwan Seong Kim, Tae Kyeong Yeu, Sup Hong and Sang Bong Kim

Obstacle Avoidance Control for Four Wheels Independent Steering Automatic Guided Vehicles ................................ 603
Pandu Sandi Pratama, Amruta Vinod Gulalkari, Jin Wook Kim, Chung Hwan Lee, Tae-Kyeong Yeu, Sup Hong, Hak Kyeong Kim and Sang Bong Kim

Steering and Diving Control of a Small-Sized AUV ................. 619
Ngoc-Huy Tran, Hyeung-Sik Choi, Ngoc-Duc Nguyen, Sung-Won Jo and Joon-Young Kim

Design and Implementation of Dynamic Positioning Control System for USV ..................................................... 633
Ngoc-Huy Tran, Hyeung-Sik Choi, Ji-Youn Oh and Sang-Ki Jeong

Study on Mechanical Structure Design for Innovative Multi-function Assistive Mobile Robot ................................. 645
Vo Hoang Duy, Tran Trong Dao, Nguyen Thanh Quang and Ngoc-Bich Le

Object Following Controller Design for Four Wheel Independent Steering Automatic Guided Vehicle .............................. 655
Amruta Vinod Gulalkari, Pandu Sandi Pratama, Jae Hoon Jeong, Hak Kyeong Kim and Sang Bong Kim

Walking Gait Planning Using Central Pattern Generators for Hexapod Walking Robot ......................................... 671
Dong Bo Sheng, Hung Nguyen Huy, Pandu Sandi Pratama, Hak Kyeong Kim, Vo Hoang Duy and Sang Bong Kim

Diameter-Adjustable Controller Design of Wheel Type Pipe Inspection Robot Using Fuzzy Logic Control Method .................. 685
Husam Hasan Aldulaimi, Trong Hai Nguyen, Pandu Sandi Pratama, Hui-Ryong Yoo, Dong Kyu Kim, Vo Hoang Duy and Sang Bong Kim
Development of RFECT System for In-line Inspection Robot for Unpiggable Natural Gas Pipeline ........................................... 697
Jae-Ha Park, Hui-Ryong Yoo, Dae-Kwang Kim, Dong-kyu Kim,
Sung-Ho Cho, Hak-Joon Kim and Sung-Jin Song

Research on Design and Simulation of an Automatic Car Painting System in Thaco-Kia Company ........................................... 709
Tri Cong Phung and Duy Anh Nguyen

On-line Training Solution to Modify the Inverse Kinematic Approximation of a Robot Manipulator ........................................ 721
Bach H. Dinh

A Research on Designing, Manufacturing and Controlling of a Motion Simulation System for Containers ................................. 731
Nguyen Duy Anh, Tran Ngoc Hoang and Kim Hwan Seong

Design and Control Humanoid Hand to Implement Hand Shaking Task Applied for Service Robot ........................................... 745
Tri Dung Nguyen, Tan Tien Nguyen and Thien Phuc Tran

Study on an Automatic Solution for Container Transporting at Tan Thuan Port ................................................................. 757
Minh Doan Vu Hoang, Tan Tung Phan and Tan Tien Nguyen

A Study on Moving Direction and Surge Velocity Control of a Carangiform Fish Robot Driven by Flexible Pectoral Fins .......... 769
Van Anh Pham, Khac Anh Hoang, Tan Tien Nguyen and Tuong Quan Vo

Precise Position Control of Shoes-Upper for Screen Printing Machine Using SCARA Robot .................................................. 779
Trong Hieu Bui, Anh Tuan Bui and Thanh Huy Phung

A Study on Controllers Design of a 3-Joint Carangiform Fish Robot in 3D Environment ....................................................... 791
Khac Anh Hoang, Van Anh Pham, Tan Tien Nguyen and Tuong Quan Vo

Decentralized Motion Control for Omnidirectional Mobile Platform—Tracking a Trajectory Using PD Fuzzy Controller .......... 803
Thanh Luan Bui

Part X  Mechanical Engineering

Data Processing Assessment of the Comfort of Passengers on Board for Small Passenger Boat ................................. 823
Nguyen Anh Tuan and Tat-Hien Le
Development of a New Clutch Featuring MR Fluid with Two Separated Mutual Coils ................................. 835
Quoc Hung Nguyen, Le Dai Hiep, Bui Quoc Duy and Seung-Bok Choi

Estimation of Static Hydrodynamic Coefficient in Waves Using Static Drift Test .............................................. 845

Part XI  Computational Mechanics

Calibrating a Fracture Criterion for a Numerical Simulation of Warm-Incremental Forming Process ......................... 857
Le Van Sy

Building Structure Parameter Identification Using the Frequency Domain Decomposition (FDD) Method ......................... 869
Phuoc Nguyen Van

Airfoil Selection for Fixed Wing of Small Unmanned Aerial Vehicles ......................................................... 881
Ngo Khanh Hieu and Huynh Thien Loc

Application of the Dung’s Microscopic Damage Model to Predict Ductile Fracture of the Deep Drawn Aluminum Alloy Sheets ........... 891
Hao H. Nguyen, Trung N. Nguyen and Hoa C. Vu

Implementation and Application of Dung’s Model to Analyze Ductile Fracture of Metallic Material ................................. 903
Hao H. Nguyen, Trung N. Nguyen and Hoa C. Vu

Author Index ........................................... 915
AETA 2015: Recent Advances in Electrical Engineering and Related Sciences
Duy, V.H.; Dao, T.T.; Zelinka, I.; Choi, H.-S.; Chadli, M. (Eds.)
2016, XIV, 917 p. 584 illus., 174 illus. in color., Hardcover
ISBN: 978-3-319-27245-0