

# **2014 4th International Conference on Artificial Intelligence with Applications in Engineering and Technology (ICAIET 2014)**

**Kota Kinabalu, Malaysia  
3-5 December 2014**



IEEE Catalog Number: CFP1450Z-POD  
ISBN: 978-1-4799-7911-0

**Copyright © 2014 by the Institute of Electrical and Electronic 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 publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number: CFP1450Z-POD  
ISBN (Print-On-Demand): 978-1-4799-7911-0

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# **2014 4th International Conference on Artificial Intelligence with Applications in Engineering and Technology**

## **ICAIET 2014**

### **Table of Contents**

Welcome Message from the Chairs .....	xi
Conference Organization.....	xiii
International Program Committee.....	xiv
International Reviewers.....	xv
Sponsors, Patrons, Promoters and Supporters .....	xvi
Keynote Speakers.....	xvii

---

### **Track: 01. A. Neural Networks**

Two Novel Generic, Reconfigurable Neural Network FPGA Architectures .....	3
<i>Ayman Youssef, Karim Mohammed, and Amin Nasar</i>	
Modified Neural Network Activation Function .....	8
<i>Adamu I. Abubakar, Haruna Chiroma, Sameem Abdulkareem, Abdulsalam Ya'u Gital, Sanah Abdullahi Muaz, Jafaar Maitama, Muhammad Lamir Isah, and Tutut Herawan</i>	

### **Track: 02. B. Fuzzy Systems**

Intelligent Techniques for MPPT Control in Photovoltaic Systems: A Comprehensive Review .....	17
<i>Mohamed E. El Telbany, Ayman Youssef, and Abdelhalim Abdelnaby Zekry</i>	

## **Track: 03. C. Evolutionary Computation**

A Multi-Objective Evolutionary Approach to Optimize the Morphology of a Six Articulated-Wheeled Robot .....	25
<i>S.H. Lim and J. Teo</i>	
A Comparative Study of Three Artificial Intelligence Techniques: Genetic Algorithm, Neural Network, and Fuzzy Logic, on Scheduling Problem .....	31
<i>Abdullah Ansari and Azuraliza Abu Bakar</i>	
Simultaneous Evolutionary-Based Optimization of Controller and Morphology of Snake-Like Modular Robots .....	37
<i>Wei Shun Chee and Jason Teo</i>	
Classifying Piper Nigrum Using Artificial Bee Colony Algorithm .....	43
<i>Norfadzlan Yusup, Awang Iskandar, and Siti Hazemah Hassan</i>	
Automated Regression Test Suite Optimization Based on Heuristics .....	48
<i>Dhanyamraju S U M Prasad, Simy Chacko, Satya Sai Prakash Kanakadandi, and Gopi Krishna Durbhaka</i>	

## **Track: 08. H. Data and Semantic Mining**

Review of Frequent Itemsets Mining in High Dimensional Dataset .....	57
<i>Mohammad Arsyad Mohd Yakop, Sofianita Mutalib, and Shuzlina Abdul Rahman</i>	
Reviewing Personalizing Filtering Approaches in Web .....	63
<i>Nor Nadiah Yusof, Azlinah Mohamed, and Shuzlina Abdul-Rahman</i>	
Text Document Preprocessing and Dimension Reduction Techniques for Text Document Clustering .....	69
<i>Ammar Ismael Kadhim, Yu-N Cheah, and Nurul Hashimah Ahamed</i>	
Orphan Defects: Chance Finding? .....	74
<i>Dhanyamraju S U M Prasad and Satya Sai Prakash Kanakadandi</i>	
A Model for Securing Islamic Websites: Formal Specification Paradigm: IT Research Center for the Holy Quran and Its Sciences (NOOR), Taibah University, Madinah, Saudi Arabia .....	80
<i>Belal Abuhaija, Awad M. Awadelkarim, Nidal Shilbayeh, and Mohammad Alwakeel</i>	

## **Track: 10. J. Emergent technologies**

Present & Future Paradigms of Cyber Crime & Security Majors - Growth & Rising Trends .....	89
<i>Vinit Kumar Gunjan, Amit Kumar, and Allam Appa Rao</i>	

## **Track: 11. K. Intelligent Systems and Applications**

Utilization of Genetic Algorithm for Optimal EEG Channel Selection in Brain-Computer Interface Application .....	97
<i>Intan Helina Hasan, Abd Rahman Ramli, and Siti Anom Ahmad</i>	
Feature Selection and Classifier Parameter Estimation for EEG Signal Peak Detection Using Gravitational Search Algorithm .....	103
<i>Asrul Adam, Norrima Mokhtar, Marizan Mubin, Zuwairie Ibrahim, Mohd Zaidi Mohd Tumari, and Mohd Ibrahim Shapai</i>	
Energy Saving in Electric Heater of Carbon Fiber Stabilization Oven .....	109
<i>Khashayar Badii, Minoo Naebe, Gelayol Golkarnarenji, Navjeet Dhami, Stephen Atkiss, Derek Buckmaster, Bronwyn Fox, and Hamid Khayyam</i>	
Wearables, Social Networking and Veracity: The Building Blocks of a Verified Exercise Application .....	115
<i>Chiung Ching Ho and Mehdi Sharifi</i>	
A Review on Recent Traffic Congestion Relief Approaches .....	121
<i>Norulhidayah Isa, Marina Yusoff, and Azlinah Mohamed</i>	

## **Track: 15. O. e-Science and e-Systems**

Crowdsourcing: The Trend of Prior Studies .....	129
<i>Zazaleena Zakariah, Norjansalika Janom, Noor Habibah Arshad, Siti Salwa Salleh, and Syaripah Ruzaini Syed Aris</i>	

## **Track: 16. P. Robotics, Cybernetics, Engineering, Manufacturing and Control**

Automatic Mobile Robot Obstacles Avoidance in a Static Environment by Using a Hybrid Technique Based on Fuzzy Logic and Artificial Neural network .....	137
<i>Nohaidda Binti Sariff and Nur Hidayatul Nadiyah Bt Abd Wahab</i>	
SiFEB &#8211; A Simple, Interactive and Extensible Robot Playmate for Kids .....	143
<i>Hashini Senaratne, Pubudu Gunatilaka, Udith Gunaratna, Yasura Vithana, Chathura de Silva, and Piyum Fernando</i>	

## **Track: 17. Q. Methodologies, Tools and Operations Research**

Characterization Study of Using Acoustic Signals for Underwater Non-Destructive Testing .....	151
<i>Sien Yan Kong, Bih Lii Chua, Kenneth Tze Kin Teo, and Renee Ka Yin Chin</i>	
The NP-completeness of Eulerian Recurrent Length for 4-regular Eulerian Graphs .....	155
<i>Shuji Jimbo</i>	

## **Track: 18. R. Discrete Event and Real Time Systems**

Verifying Solutions to the Dining Philosophers Problem with Activity-Oriented Petri Nets .....	163
<i>Reggie Davidrajuh</i>	

## **Track: 19. S. Image, Speech and Signal Processing**

Optimal Combination of Color Components for Skin Detection .....	171
<i>Koh Klevan, Marsyita Hanafi, and Abdul Ramli</i>	
Partial Image Encryption Algorithm Using Pixel Position Manipulation Technique: The SMART Copyback System .....	177
<i>Parameshachari B D, Rajashe Karappa, K M Sunjiv Soyjaudah, and Sumithra Devi K A</i>	
The Design and Compilation of a Facial Spoof Database on Various Textures .....	182
<i>Sajida Parveen, Sharifah Mumtazah Syed Ahmad, Marsyita Hanafi, and Wan Azizun Wan Adnan</i>	
Facial Expression Recognition Using Neural Network Trained with Zernike Moments .....	187
<i>Mohammed Saaidia, Narima Zermi, and Messaoud Ramdani</i>	
Vehicle Tracking Using Particle Filter for Parking Management System .....	193
<i>Kenneth Tze Kin Teo, Renee Ka Yin Chin, N.S.V. Kameswara Rao, Farrah Wong, and Wei Leong Khong</i>	
Trajectory Clustering for Behavioral Pattern Learning in Transportation Surveillance .....	199
<i>Mei Yeen Choong, Renee Ka Yin Chin, Kiam Beng Yeo, and Kenneth Tze Kin Teo</i>	

## **Track: 19. SA. Natural Language Processing/Language Technologies**

A Word Sense Disambiguation Technique for Sinhala .....	207
<i>Janindu Arukgoda, Vidudaya Bandara, Samiththa Bashani, Vijayindu Gamage, and Daya Wimalasuriya</i>	
Natural Language Processing for Sentiment Analysis: An Exploratory Analysis on Tweets .....	212
<i>Wei Yen Chong, Bhawani Selvaretnam, and Lay-Ki Soon</i>	

## **Track: 20. T. Industry, Business, Management, Human Factors and Social Issues**

Electric Vehicle Penetration Model Considering Policy Subsidy and Fuel Price Uncertainty .....	221
<i>D. Yamashita, Y. Daisho, D. Satoya, H. Takamori, and R. Yokoyama</i>	
Microsourcing Job Provider Maturity Model .....	227
<i>Norjansalika Janom, Nor Hasmira Abu Bakar, Noor Habibah Arshad, Siti Salwa Salleh, Syaripah Ruzaini Syed Aris, and Nor'azam Mastuki</i>	
Proposed Usability Heuristics for Testing Gestural Interaction .....	233
<i>Ngip Khean Chuan, Ashok Sivaji, and Wan Fatimah Wan Ahmad</i>	

## **Track: 21. U. Energy, Power, Transport, Logistics, Harbour, Shipping and Marine Simulation**

Community Energy Management with Electric Vehicles for Effective Use of Solar Energy .....	241
<i>D. Satoya, D. Yamashita, and R. Yokoyama</i>	
Maximum Power Point Tracking of Partially Shaded Photovoltaic Arrays Using Particle Swarm Optimization .....	247
<i>Kenneth Tze Kin Teo, Pei Yi Lim, Bih Lii Chua, Hui Hwang Goh, and Min Keng Tan</i>	
Linear Model of Flicker Due to Vertical Wind Shear for a Turbine Mounted on a Green Building .....	253
<i>Datta. S. Chavan and P. B. Karandikar</i>	
Assessment of Flicker Due to Vertical Wind Shear in a Wind Turbine Mounted on a Hill with Linear Approach .....	259
<i>Datta. S. Chavan and P. B. Karandikar</i>	

## **Track: 23. W. Internet Modelling, Semantic Web and Ontologies**

3GPP Technologies: Load Balancing Algorithm and InterNetworking .....	267
<i>Belal Abuhaja</i>	

## **Track: 24. X. Mobile/Ad hoc wireless networks, mobicast, sensor placement, target tracking**

Adaptive Transceivers for Mobile Communications .....	275
<i>Teckchai Tiong</i>	
Power Adjustment Based Congestion Control in Vehicular Ad-hoc Networks .....	280
<i>Guofeng Lei, Fuqiang Liu, Ping Wang, Xinhong Wang, and Ning Wang</i>	

A Beacon Rate Control Scheme Based on Fuzzy Logic for Vehicular Ad-Hoc Networks .....	286
<i>Ning Wang, Guofeng Lei, Xinhong Wang, Ping Wang, and Fuqiang Liu</i>	
A Study on Radio Interference Estimation Method for Wireless Relay Network Link Scheduling .....	292
<i>Yoshiaki Taniguchi</i>	
An Adaptive Approach for RFID Based Data Dissemination in VANETs through ABC Algorithm Using Android Mobiles .....	298
<i>Lalitha R.V.S. and Jaya Suma G.</i>	

## **Track: 25. Y. Performance Engineering of Computer & Communication Systems**

Capacity Analysis of Full Rate Linear Dispersion Codes .....	307
<i>Mabruk Gheryani and Mohamed Elfuturi</i>	
OCDM Network Implementation of 1-D OOC and Passive Correlation Receiver .....	311
<i>Huda Saleh Abbas and Mark A Gregory</i>	

## **Track: 26. Z. Circuits, Sensors and Devices**

PC Based Blood Pressure Meter for E-health Application .....	319
<i>B. Mustapha, M. Z. Hassan, Z. Mohamad, I. Kamaruddin, and R. Yahya</i>	
Microcontroller Based Wireless Obstacle Detection System for the Elderly .....	325
<i>B. Mustapha, A. Zayegh, and R.K. Begg</i>	
<b>Author Index .....</b>	<b>330</b>