

Lecture Notes in Electrical Engineering 315

Hamzah Asyrani Sulaiman

Mohd Azlishah Othman

Mohd Fairuz Iskandar Othman

Yahaya Abd Rahim

Naim Che Pee

Editors

Advanced Computer and Communication Engineering Technology

Proceedings of the 1st International
Conference on Communication and
Computer Engineering



Springer

Hamzah Asyrani Sulaiman
Mohd Azlishah Othman
Mohd Fairuz Iskandar Othman
Yahaya Abd Rahim, Naim Che Pee
Editors

Advanced Computer and Communication Engineering Technology

Proceedings of the 1st International
Conference on Communication
and Computer Engineering

Editors

Hamzah Asyrani Sulaiman
Mohd Azlishah Othman
Mohd Fairuz Iskandar Othman
Yahaya Abd Rahim
Naim Che Pee
Universiti Teknikal Malaysia Melaka
Melaka
Malaysia

ISSN 1876-1100

ISBN 978-3-319-07673-7

DOI 10.1007/978-3-319-07674-4

ISSN 1876-1119 (electronic)

ISBN 978-3-319-07674-4 (eBook)

Library of Congress Control Number: 2014947654

Springer Cham Heidelberg New York Dordrecht London

© Springer International Publishing Switzerland 2015

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law. The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

The first International Conference on Communication and Computer Engineering (ICOCOE 2014) was held in the historical city of Malacca, Malaysia, between May 20 and 21, 2014. The conference focuses on industrial and manufacturing theory and applications of electronics, communications, computing, and information technology. The objectives of the conference were to provide an avenue for researchers to present high-quality research and be involved in professional interactions for the advancement of science, technology, and fellowship. More than 300 participants from 15 countries registered for the conference. ICOCOE 2014 provided a platform for them to present their latest invention and advanced technology and research, share their expertise, establish new contacts, and discuss a range of communication and computer engineering topics for the betterment and future advancement of these fields.

ICOCOE 2014 is the first ever event handled by Prime Systems, an educational consulting sector provider. It was successful in getting overwhelming response from public and private sectors, local and foreign universities, research institutions, stakeholders, and various industries from all over the region. Nearly 200 papers were received with only around 102 papers accepted. Associate Professor Dr. Muhammad Ramlee from Universiti Teknologi Malaysia gave a keynote address on RF and microwave communication system in advanced systems while Prof. Eryk Dutkiewicz from Macquarie University presented his latest work on wireless communications. Several technical sessions were arranged for the conference.

This book contains a selection of revised manuscripts presented at ICOCOE 2014 within the two main conference themes, which are communications and computer engineering research areas. This book covers various aspects of advanced computer and communication engineering, specifically on industrial and manufacturing theory and applications of electronics, communications, computing, and information technology. The development of latest technologies has been

highlighted, aimed at various computer and communication-related professionals such as telecommunication engineers, computer engineers and scientists, researchers, academicians, and students. Furthermore, several applications involving cutting edge communication and computer systems are also discussed.

The editors wish to acknowledge Prime Systems for successfully organizing and sponsoring this conference.

Hamzah Asyrani Sulaiman
Mohd Azlishah Othman
Mohd Fairuz Iskandar Othman
Yahaya Abd Rahim
Naim Che Pee

General Committee and Advisors

General Committee and Advisor/Editorial Board

Mohd Azlishah Bin Othman	Universiti Teknikal Malaysia Melaka, Malaysia
Ahmad Naim Bin Che Pee	Universiti Teknikal Malaysia Melaka, Malaysia
Hamzah Asyrani Bin Sulaiman	Universiti Teknikal Malaysia Melaka, Malaysia
Yahaya Bin Abdul Rahim	Universiti Teknikal Malaysia Melaka, Malaysia
Mohd Fairuz Iskandar Bin Othman	Universiti Teknikal Malaysia Melaka, Malaysia

International Advisor/Technical Program Committee

Prof. Hj. Kamaruzaman Jusoff
Dr. Abdel Rahman Mohammad Said Al-Tawaha
Prof. Dr. R.J. Godwin
Prof. Dr. Erik Valdemar Cuevas Jimenez
Prof. Dr. Arun Kumar Gupta
Prof. Robert Morelos-Zaragoza

Running Committee

Chairman

Alishamuddin Enjom

Co-Chairman

Shahrizan Jamaludin

Secretary

Nurulhuda Abu Talib

Treasurer

Zamani Marjom

Technical Program Chair

Siti Zawiyah Iskandar

Contents

Part I Communication

1	RWA: Comparison of Genetic Algorithms and Simulated Annealing in Dynamic Traffic	3
	Arturo Rodriguez, Antonio Gutierrez, Luis Rivera and Leonardo Ramirez	
2	Route Optimization in Proxy Mobile IPv6 Test-Bed via RSSI APPs	15
	Nur Haliza Binti Abdul Wahab, L.A. Latif, S.H.S. Ariffin, N. Fisal and N. Effiyana Ghazali	
3	Polytetrafluoroethylene Glass Microfiber Reinforced Slotted Patch Antenna for Satellite Band Applications	29
	M. Samsuzzaman, T. Islam and M.R.I. Faruque	
4	2.4 GHz Circularly Polarized Microstrip Antenna for RFID Application	37
	Rudy Yuwono and Ronanobelta Syakura	
5	On Understanding Centrality in Directed Citation Graph	43
	Ismael A. Jannoud and Mohammad Z. Masoud	
6	Channel Capacity of Indoor MIMO Systems in the Presence of Spatial Diversity	53
	M. Senon, M.N. Husain, A.R. Othman, M.Z.A. Aziz, K.A.A. Rashid, M.M. Saad, M.T. Ahmad and J.S. Hamidon	

7	Design of Multi-band Antenna for Wireless MIMO Communication Systems	63
	M.M. Saad, M.N. Husain, M.Z.A. Aziz, A.R. Othman, K.A.A. Rashid and M. Senon	
8	Design of Linear Polarization Antenna for Wireless MIMO Application	73
	K.A.A. Rashid, M.N. Husain, A.R. Othman, M.Z.A. Aziz, M.M. Saad, M. Senon, M.T. Ahmad and J.S. Hamidon	
9	The Effect of IV Characteristics on Optical Control of SDR Si IMPATT Diode	85
	T.S.M. Arshad, M.A. Othman, M.N. Hussain and Y.A. Rahim	
10	Variable Intrinsic Region in CMOS PIN Photodiode for I-V Characteristic Analysis.	95
	M.A. Othman, N.Y.M. Yasin, T.S.M. Arshad, Z.A.F.M. Napijah, M.M. Ismail, H.A. Sulaiman, M.H. Misran, M.A. Meor Said and R.A. Ramlee	
11	Variable Depletion Region in CMOS PN Photodiode for I-V Characteristic Analysis.	103
	M.A. Othman, T.S.M. Arshad, Z.A.F.M. Napijah, M.M. Ismail, N.Y.M. Yasin, H.A. Sulaiman, M.H. Misran, M.A. Meor Said and R.A. Ramlee	
12	U-Slot Rectangular Patch Antenna for Dual Band Application.	111
	Mohammad Shawkat Habib, I.M. Rafiqul, Khaizuran Abdullah and M. Jamil Jakpar	
13	Analysis of Synthetic Storm Technique Based on Ku-Band Satellite Beacon Measurements in Malaysia.	121
	Ali K. Lwas, I.M. Rafiqul, Mohamed Hadi Habaebi, Ahmad F. Ismail, Mandeep Singh, Jalel Chebil, Al-Hareth Zyoud and Hassan Dao	
14	The Evolution of Double Weight Codes Family in Spectral Amplitude Coding OCDMA	129
	N. Din Kerat, S.A. Aljunid, A.R. Arief and P. Ehkan	

15	Performance Evaluation of LTE Scheduling Techniques for Heterogeneous Traffic and Different Mobility Scenarios	141
	Lukmanhakim Sukeran, Mohamed Hadi Habaebi, Al-Hareth Zyoud, Musse Mohamud Ahmad, Shihab Hameed, Amelia Wong and I.M. Rafiqul	
16	Design for Energy-Aware IP Over WDM Networks with Hibernation Mode and Group-Node Techniques	151
	M.N.M. Warip, Ivan Andonovic, Ivan Glesk, R. Badlishah Ahmad, P. Ehkan, Mohamed Elshaikh Elobaid Said Ahmed, Shamsul Jamel Elias and Fazrul Faiz Zakaria	
17	Content Based Image Retrieval Using Color Layout Descriptor and Generic Fourier Descriptor	163
	Muhammad Imran, Rathiah Hashim and Noor Elaiza	
18	Pilot Based Pre FFT Signal to Noise Ratio Estimation for OFDM Systems in Rayleigh-Fading Channel	171
	A.M. Khan, Varun Jeoti and M. Azman Zakariya	
19	The Use of Convolutional Code for Narrowband Interference Suppression in OFDM-DVB-T System.	183
	Aizura Abdullah, Muhammad Sobrun Jamil Jamal, Khaizuran Abdullah, Ahmad Fadzil Ismail and Ani Liza Asnawi	
20	Two-Elements Crescent Shaped Printed Antenna for Wireless Applications	195
	Wan Noor Najwa Wan Marzudi, Zuhairiah Zainal Abidin, Ma Yue and Raed A. Abd-Alhameed	
21	Wideband Linearly Polarized Printed Monopole Antenna for C-Band.	205
	Touhidul Alam, Mohammad Rashed Iqbal Faruque and Mohammad Tariqul Islam	
22	A Novel Anti-collision Protocol for Optimization of Remote Sensing in Dense Reader Network.	213
	Faiza Nawaz and Varun Jeoti	

23	Double Square Loop Frequency Selective Surface (FSS) for GSM Shielding	223
	Nur Khalida Binti Abdul Khalid and Fauziahanim Binti Che Seman	
24	Analysis of the Active Region of Archimedean Spiral Antenna	231
	Abdirahman Mohamoud Shire and Fauziahanim Che Seman	
25	Optimization of BER Performance in the MIMO-OFDMA System for Mobile WiMAX System Using Different Equalization Algorithm	241
	Azlina Idris, Norhayati Abdullah, Nor Azlizan Hussein and D.M. Ali	
26	Performance Analysis of Polling Delay in Transparent and Non-transparent Multi-hop Relay WiMAX Network	251
	Mohd Daud A. Hassan, Habibah Hashim and D.M. Ali	
27	Blind Source Computer Device Identification from Recorded Calls	263
	Mehdi Jahanirad, Ainuddin Wahid Abdul Wahab and Nor Badrul Anuar	
28	Visibility for Network Security Enhancement in Internet Protocol Over Ethernet Networks	277
	W.K. Alzubaidi, Longzheng Cai, Shaymaa A. Alyawer and Erika Siebert-Cole	
29	Comparative Analysis of Different Single Cell Metamaterial	289
	Pankaj Rameshchandra Katiyar and Wan Nor Liza Binti Wan Mahadi	
30	Distributed Video Coding with Frame Estimation at Decoder	299
	Kin Honn Chiam and Mohd Fadzli Mohd Salleh	
31	Performance Analysis of an OCDMA System Based on SPD Detection Utilizing Different Type of Optical Filters for Access Networks	309
	Sarah G. Abdulqader, Hilal A. Fadhil, S.A. Aljunid and Anuar Mat Safar	

32	Deployment of Optimized Algorithm for MPEG-4 Data Over Wireless Multimedia Sensor Network	321
	Norlezhah Hashim, Sharifah Hafizah Syed Ariffin, Farizah Yunus, Fakrulradzi Idris and Norsheila Fisal	
33	Partially Compensated Power Control Technique for LTE-A Macro-Femto Networks	331
	Sawsan Ali Saad, Mahamod Ismail and Rosdiadee Nordin	
34	Design and Development of the Visible Light Communication System.	343
	Anuar Musa, Mazlaini Yahya, Nazaruddin Omar, Mohd Kamarulzamin Salleh and Noor Aisyah Mohd Akib	
35	The Embroidered Antenna on Bending Performances for UWB Application	349
	M.S. Shakhirul, A. Sahadah, M. Jusoh, A.H. Ismail and Hasliza A. Rahim	
36	The Embroidered Wearable Antenna for UWB Application.	357
	M.S. Shakhirul, A. Sahadah, M. Jusoh, A.H. Ismail, C.M. Nor and F.S. Munirah	
37	Bowtie Shaped Substrate Integrated Waveguide Bandpass Filter	365
	Z. Baharudin, M.Z.U. Rehman, M.A. Zakariya, M.H.M. Khir, M.T. Khan and J.J. Adz	
38	Logical Topology Design with Low Power Consumption and Reconfiguration Overhead in IP-over-WDM Networks	375
	Bingbing Li and Young-Chon Kim	

Part II Computer

39	Systematic Analysis on Mobile Botnet Detection Techniques Using Genetic Algorithm.	389
	M.Z.A. Rahman and Madiah Mohd Saudi	

40	An Empirical Study of the Evolution of PHP MVC Framework.	399
	Rashidah F. Olanrewaju, Thouhedul Islam and N. Ali	
41	Evolutionary Approach of General System Theory Applied on Web Applications Analysis	411
	Aneta Bartuskova, Ondrej Krejcar and Kamil Kuca	
42	A Novel Distributed Image Steganography Method Based on Block-DCT	423
	Rosemary Koikara, Dip Jyoti Deka, Mitali Gogoi and Rig Das	
43	An Improved History-Based Test Prioritization Technique Using Code Coverage	437
	Avinash Gupta, Nayneesh Mishra, Aprna Tripathi, Manu Vardhan and Dharmender Singh Kushwaha	
44	Local Pricewatch Information Solicitation and Sharing Model Using Mobile Crowdsourcing	449
	Hazleen Aris	
45	Enhancement of Nurse Scheduling Steps Using Particle Swarm Optimization.	459
	Norhayati Mohd Rasip, A.S.H. Basari, Nuzulha Khilwani Ibrahim and Burairah Hussin	
46	Hardware Implementation of MFCC-Based Feature Extraction for Speaker Recognition.	471
	P. Ehkan, F.F. Zakaria, M.N.M. Warip, Z. Sauli and M. Elshaikh	
47	Parallel ASIP Based Design of Turbo Decoder.	481
	F.F. Zakaria, P. Ehkan, M.N.M. Warip and M. Elshaikh	
48	A Comparative Study of Web Application Testing and Mobile Application Testing	491
	Maryam Ahmed and Rosziati Ibrahim	
49	Multi-objective Functions in Grid Scheduling	501
	Zafril Rizal M. Azmi, M.A. Ameendeen and Imran EdzereiQ Kamarudin	

50	Experimental Analysis on Available Bandwidth Estimation Tools for Wireless Mesh Network	525
	Imran Edzereiq Kamarudin, M.A. Aamedeen and Zafril Rizal M. Azmi	
51	A Survey of Petri Net Tools	537
	Weng Jie Thong and M.A. Aamedeen	
52	Towards a Exceptional Distributed Database Model for Multi DBMS	553
	Mohammad Hasan Ali and Mohd Azlishah Othman	
53	Semantic Search Engine Using Natural Language Processing	561
	Sudhakar Pandiarajan, V.M. Yazhmozhi and P. Praveen kumar	
54	Integration of Mobile Based Learning Model Through Augmented Reality Book by Incorporating Students Attention Elements	573
	Zarwina Yusoff, Halina Mohamed Dahlan and Norris Syed Abdullah	
55	Law Reckoner for Indian Judiciary: An Android Application for Retrieving Law Information Using Data Mining Methods	585
	S. Poonkuzhali, R. Kishore Kumar and Ciddarth Viswanathan	
56	Enhancing the Efficiency of Software Reliability by Detection and Elimination of Software Failures Through Univariate Outlier Mining	595
	S. Poonkuzhali, R. Kishore Kumar and R. Kumar	
57	A Survey on the Application of Robotic Teacher in Malaysia.	605
	Noraïdah Blar and Fairul Azni Jafar	
58	A Novel Method for Distributed Image Steganography	615
	Bismita Choudhury, Rig Das and Themrichon Tuithung	
59	An Efficient Beam Scanning Algorithm for Hidden Node Collision Avoidance in Wireless Sensor Networks	627
	Moorthy Sujatha and Raghuvel Subramaniam Bhuvaneshwaran	

60	Evaluation of Stereo Matching Algorithms and Dynamic Programming for 3D Triangulation	641
	Teo Chee Huat and N.A. Manap	
61	Image Enhancement Filter Evaluation on Corrosion Visual Inspection	651
	Syahril Anuar Idris and Fairul Azni Jafar	
62	A Framework for Sharing Communication Media in Supporting Creative Task in Collaborative Workspace	661
	Norzilah Musa, Siti Z.Z. Abidin and Nasiroh Omar	
63	Joint Torque Estimation Model of sEMG Signal for Arm Rehabilitation Device Using Artificial Neural Network Techniques	671
	M.H. Jali, T.A. Izzuddin, Z.H. Bohari, H. Sarkawi, M.F. Sulaima, M.F. Baharom and W.M. Bukhari	
64	Enhancement of RSA Key Generation Using Identity.	683
	Norhidayah Muhammad, Jasni Mohamad Zain, M.Y.M. Saman and Mohd Fadhil Ramle	
65	Rules Mining Based on Clustering of Inbound Tourists in Thailand.	693
	Wirot Yotsawat and Anongnart Srivihok	
66	Designing a New Model for Worm Response Using Security Metrics	707
	Madiah Mohd Saudi and Bachok M. Taib	
67	Neural Network Training Algorithm for Carbon Dioxide Emissions Forecast: A Performance Comparison	717
	Herrini Mohd Pauzi and Lazim Abdullah	
68	Theorem Prover Based Static Analyzer: Comparison Analysis Between ESC/Java2 and KeY	727
	Aneesa Saeed and S.H.A. Hamid	
69	Designing a New Model for Trojan Horse Detection Using Sequential Minimal Optimization	739
	Madiah Mohd Saudi, Areej Mustafa Abuzaid, Bachok M. Taib and Zul Hilmi Abdullah	

70	An Access Control Framework in an Ad Hoc Network Infrastructure	747
	Tanya Koohpayeh Araghi, Mazdak Zamani, A.A. Manaf and Sagheb Kohpayeh Araghi	
71	Enhancement of Medical Image Compression by Using Threshold Predicting Wavelet-Based Algorithm	755
	N.S.A.M. Taujuddin and Rosziati Ibrahim	
72	Detection and Revocation of Misbehaving Vehicles from VANET	767
	Atanu Mondal and Sulata Mitra	
73	A Novel Steganalysis Method Based on Histogram Analysis	779
	Bismita Choudhury, Rig Das and Arup Baruah	
74	Pattern Recognition Techniques: Studies on Appropriate Classifications	791
	Sasan Karamizadeh, Shahidan M. Abdullah, Mazdak Zamani and Atabak Kherikhah	
75	Environmental Noise Analysis for Robust Automatic Speech Recognition	801
	N. Sai Bala Kishore, M. Rao Venkata and M. Nagamani	
76	Performance Comparison of Selected Classification Algorithms Based on Fuzzy Soft Set for Medical Data	813
	Saima Anwar Lashari and Rosziati Ibrahim	
77	A Hybrid Selection Method Based on HCELFs and SVM for the Diagnosis of Oral Cancer Staging	821
	Fatihah Mohd, Zainab Abu Bakar, Noor Maizura Mohamad Noor, Zainul Ahmad Rajion and Norkhafizah Saddki	
78	A Linear Assignment Method of Simple Additive Weighting System in Linear Programming Approach Under Interval Type-2 Fuzzy Set Concepts for MCDM Problem	833
	Nurnadiah Zamri and Lazim Abdullah	

79	Hybridization Denoising Method for Digital Image in Low-Light Condition	843
	Suhaila Sari, Sharifah Zahidah Hasan Al Fakkri, Hazli Roslan and Zarina Tukiran	
80	The Improved Models of Internet Pricing Scheme of Multi Service Multi Link Networks with Various Capacity Links . . .	851
	Fitri Maya Puspita, Kamaruzzaman Seman and Bachok M. Taib	
81	Improving the Models of Internet Charging in Single Link Multiple Class QoS Networks	863
	Irmeilyana Saidi Ahmad, Indrawati, Fitri Maya Puspita and Lisma Herdayana	
82	A New Aggregating Phase for Interval Type-2 Fuzzy TOPSIS Using the ELECTRE I Method	873
	Nurnadiah Zamri and Lazim Abdullah	
83	The Role of Green IT and IT for Green Within Green Supply Chain Management: A Preliminary Finding from ISO14001 Companies in Malaysia	883
	K.S. Savita, P.D.D. Dominic and Kalai Anand Ratnam	
84	Integrating e-Learning with Radio Frequency Identification (RFID) for Learning Disabilities: A Preliminary Study	895
	Wan Fatin Fatimah Yahya, Noor Maizura Mohamad Noor, Mohd Pouzi Hamzah, Mohamad Nor Hassan, Nur Fadila Akma Mamat and Mohd Arizal Shamsil Mat Rifin	
85	Palmprint Identification Using Invariant Moments Algorithm Based on Wavelet Transform	905
	Inass Shahadha Hussein and M.J. Nordin	
86	Auto Mobile Ad Hoc Mechanism in Delay Tolerant Network	915
	Muhammad Affandy Azman, Sharifah Hafizah Syed Ariffin, Norsheila Fisal, Mazlan Abbas, Mohd Husaini Mohd Fauzi and Sharifah K. Syed-Yusof	
87	An Exploratory Study on Blind Users' Mental Model in Computer Accessibility	925
	Manoranjitham Muniandy and Suziah Sulaiman	