2018 2nd International Conference on Electrical Engineering & Informatics

PROGRAM BOOK

"Toward the Most Efficient Way of Making and Dealing with Future Electrical Power System and Big Data Analysis"

16th – 17th October 2018

Nagoya Hill Hotel

Batam, Indonesia

Organized by

Department of Electrical Engineering
Faculty of Engineering
Universitas Riau, Indonesia

ICon EEI 2018 Sponsorships

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IEEE INDONESIA SECTION

IEEE COMMUNICATIONS SOCIETY Indonesia Chapter

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Welcome Message from the General Chair

In Honor of the celebration of the 10th Anniversary of the Department of Electrical Engineering, Faculty of Engineering, Universitas Riau (UNRI), Pekanbaru, Indonesia, it is my great pleasure to welcome you to Batam City for the 2018 2nd International Conference on Electrical Engineering and Informatics (ICon EEI 2018) on 16-17 October 2018.

ICon EEI 2018 is intended as an International Forum for those who wish to share their latest research results, innovative ideas, and experiences in the fields of Electrical Engineering and as well as Information Communication Technology (ICT). Nowadays, modern technology makes our lives easier. Yet this progress is affecting our climate as a result of the increased carbon dioxide (CO_2) emissions. Under the theme of "Toward the Most Efficient Way of Making and Dealing with Future Electrical Power System and Big Data Analysis", the conference is expected to provide opportunities to explore emerging green and intelligent technologies that can contribute to environmental sustainability.

In addition, the conference committee has invited three renowned Keynote speakers, namely: Prof. Dr. Ir. Mohd Wazir Mustafa of Universiti Teknologi Malaysia, Prof. Dr. Ir. Riri Fitri Sari, M.Sc., M.M of University of Indonesia and Assoc. Prof. Dr. Razali Ngah of Universiti Teknologi Malaysia.

This conference is technically co-sponsored by IEEE Indonesia Section and IEEE Communications Society Indonesia Chapter also organized by Department of Electrical Engineering UNRI.

As a General Chair, I would like to take this opportunity to express my deep appreciation to the organizing committee members for their hard work and contribution throughout this conference. I would also like to thank authors, reviewers, all speakers, and session chairs for their support to ICon EEI 2018.

I hope that participants will have a fruitful experience to enjoy the cultural heritage, natural beauty of Batam, and the taste of traditional Malayness cuisines, coupled with the friendliness of its people.

Finally, I would like to welcome you to Icon EEI 2018 and wish you all an enjoyable stay in Batam.

Sincerely

Dr. Iswadi Hasyim Rosma
General Chair of ICon EEI 2018

Welcome Message from the TPC Chair

On behalf of the Technical Program Committee (TPC), it is my pleasure to welcome you to the 2nd International Conference on Electrical Engineering and Informatics (ICon EEI 2018). As an annual International conference, ICon EEI provides excellent platform to share innovative ideas and experiences; exchange information; and explore collaboration among researchers, engineers, and scholars in the field of Electrical Engineering, Communication and Information Technology.

This year, the ICon EEI 2018 Technical Program Committee received 74 paper submissions from approximately 9 countries throughout the world which are Indonesia, Malaysia, Pakistan, India, United Kingdom, Nigeria, Algeria, Iran and Iraq. All the submitted papers were thoroughly and independently reviewed by at least three reviewers in accordance with standard blind review process. Based on the results of the rigorous review process, 42 papers have been selected. These papers have been grouped into 3 sessions which are Electrical Power System, Renewable Energy and High Voltage Engineering; Electronic, Control System and Telecommunication; and Informatics, Computer Science, Computer Engineering and Information Technology. Besides those regular track, ICon EEI 2018 has features world-class keynote/plenary speeches and distinguish-invited speaker that reflects the current research and development trends in green and intelligent technology to achieve environmental sustainability.

We are deeply indebted to all of our TPC members, as well as our volunteer reviewers, who have greatly contributed to the success of the ICon EEI 2018. Many thanks should be given to our keynote and invited speakers who will present their works in this conference. In addition, our sincere gratitude should be given to all authors who submitted their works to ICon EEI 2018 and hope you will enjoy a wonderful experience in this small traditional city of Indonesia.

Welcome to Batam, explore its great sand-beach, enjoy its traditional arts and cultures, taste the varieties of traditional Melayunisme cuisines, and bring them back with your memories of Batam and new collaboration opportunities.

With best regards,

Dr. Dewi Nasien
TPC Chair

Welcome Message from Dean

First of all, I delighted and honored to host this **The 2nd International Conference on Electrical Engineering and Informatics 2018** and to welcome you to Batam, Indonesia.

I wish to extend a warm welcome to fellow delegates from the various countries. I realize that you are fully dedicated to the sessions that you will follow but I do hope you will also take time to enjoy fascinating Batam, Indonesia with its tropical setting, beautiful beaches, friendly people and multi-cultural cuisine.

I recognize that these sessions are principally designed to a premier interdisciplinary platform for researchers, practitioners and academicians to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of **Electrical Engineering and Informatics**. They also provide an invaluable opportunity for conducting better research networking and fruitful contacts among countries.

The conference theme is "Towards How to Make and Face the Most Efficient with Future Electric Power Systems and Big Data Analysis" is timely and precise. Industry players seek opportunity to alleviate market innovation, product development and economic prosperity in the 4th Industrial Revolution phase. Therefore, for those who have dedicated their works in the electrical science and information, it is expected to provide advancements in this industrial technology.

In closing, I wish to express my gratitude to all delegates and observers for their full cooperation and contribution to **The 2nd International Conference on Electrical Engineering and Informatics 2018**. I take this opportunity to thank the joint organizers **ICon EEI** for organizing this meeting and for providing the necessary funding. I would also like to express my gratitude to the **ICon EEI** team members, secretariat and Organizing Committee for their diligence, work hard and passions. The various sponsors for lunches and dinners are also thanked for their kind hospitality.

I wish the participants a very fruitful and productive Meeting/Session and with that, I declare the **The 2nd International Conference on Electrical Engineering and Informatics 2018** opened.

Thank you.

Dr. Ir. Ari Sandhyavitri, M.Sc
Dean of the Engineering Faculty, Universitas Riau

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Program at a Glance

16th – 17th Ocober 2018 (Tuesday)

Venue : Nagoya Hill Hotel

Date	Time	Program		
16-Oct-18	07:30-08:20	Registration		
	08:20-08:50	Opening & Welcome Ceremony (Convention Hall)		
	08:50-09.00	Photo Session		
	09:00-09:50	Keynote Speech 1 (Convention Hall)		
		Prof. Dr. Ir. Mohd Wazir Mustafa		
	09:50-10:40	Keynote Speech 2 (Convention Hall)		
		Prof. Dr. Ir. Riri Fitri Sari, M.Sc, M.M		
	10:40-11:30	Keynote Speech 3 (Convention Hall)		
		Assoc. Prof. Dr. Razali Bin Ngah		
	11:30-12.00	Question & Answer		
	12:00-13:00	Lunch Break		
	13:00-17:00	**Parallel Sessions**		
		Convention Hall	**Bintan**	**Natuna**
	13:00-15:00	Track 3	Track 2	Track 1
	15:00-15:15	**COFFEE BREAK**		
	15:15-17:00	Track 3	Track 2 & 3	Track 1 & 3
	18:30-21:30	**Gala Dinner**		
17-Oct-18	07:00-18:00	Singapore day trip for those who have registered to travel agency		

Keynote Speech 1

The Utility and Grid of the Future Electrical Power System: Challenges, Needs, Trends and Key Issues

Prof. Dr. Ir. Mohd Wazir Mustafa

Universiti Teknologi Malaysia

Abstract

Digital economy, national security, and sustainable living are highly dependent on reliable, safe, abundant, affordable, and secure electricity. Electric power systems through-out many parts of the world face challenges brought on by new technology trends, environmental concerns, a multiplicity of consumer needs, and regulatory requirements. These factors have partially accelerated global demand for low carbon power system and stimulated new technology trends. The vision for future power system is to transition away from carbon-based fuels toward increased penetration of renewable DERs and use of energy storage and electric transportation. Far-reaching change is transforming the electric power sector in the form of: government and regulatory action to address climate change concerns; increasingly empowered and demanding customers; proliferation of distributed generation, including solar and wind; digitization of the grid and information and operational technologies integration; increased risk of cyber-attacks on grid systems and infrastructure and energy reform as markets open to new forms of competition. Future electric power system is also expected to improve cost efficiency, service quality, and safety, offer reliability and withstand external threats such as superstorms and cyber threats, as well as flexibility respond in real time to fluctuations in demand and supply during major weather or security events. On the other hand, managing and optimizing the system will become increasingly challenging due to the complexities in system balancing between the load and the integrated RES generation, as a result of increased levels of system variability and uncertainty.

ISI Journal

1. S.N. Syed Nasir, J.J. Jamian, M.W. Mustafa, (2018) "Minimization Of Harmonic Distortion Impact Due To Large-Scale Fast Charging Station Using Modified Lightning Search Algorithm And Pareto-Fuzzy Synergistic Approach", IEEJ Transactions on Electrical & Electronic Engineering, Institute of Electrical Engineers of Japan. Volume 13, Issue 6 June 2018, pp 815-822 **(ISI Indexed), IF 0.723 (Q4).**
2. S. N. Syed Nasir, J. J. Jamian, and M. W. Mustafa, (2018) "Minimizing Harmonic Distortion Impact at Distribution System with Considering Large-Scale EV Load Behaviour Using Modified Lightning Search Algorithm and Pareto-Fuzzy

Approach,"Complexity, vol. 2018, Article ID 6587493, 14 pages. **(ISI Indexed), IF**1.829 **(Q1).**

3. Abdirahman Mohamed Abdilahi, Mohd Wazir Mustafa (2017), '*Carbon capture power plants: Decoupled emission and generation output for economic dispatch*' International Journal of Greenhouse Gas Control, Volume 63, pp 12-19 **(ISI Indexed), IF: 3.741 (Q2).**
4. Mohammed, YS ; Mustafa, MW ; Bashir, N ; Ibrahem, IS,(2017) '*Existing and recommended renewable and sustainable energy development in Nigeria based on autonomous energy and microgrid technologies*', Renewable and Sustainable Energy Reviews,75, pp 820-838 **(ISI Indexed), IF: 8.05 (Q1).**
5. Abujarad, SY; Mustafa, MW ; Jamian, JJ, (2017) '*Recent approaches of unit commitment in the presence of intermittent renewable energy resources: A review*', Renewable and Sustainable Energy Reviews,70, pp 215-223 **(ISI Indexed), IF: 8.05 (Q1).**
6. Sultana, B, Mustafa, MW,(2017) '*Distribution system loss minimization with network reconfiguration and cost-benefit price based demand reduction modeling*', Journal of Engineering Research, 5 (1), pp 140-162 **(ISI Indexed), IF: 0.333 (Q4).**
7. I.Abubakar, S.N. Khalid, M.W. Mustafa, Hussain Shareef , M. Mustapha,(2017) '*Application of Load Monitoring in Appliances' Energy Management-A review*', Renewable and Sustainable Energy Reviews 67, pp 235-245, **(ISI Indexed), IF: 8.05 (Q1).**
8. Mirsaeidi, S, Said, DM Mustafa, MW , Habibuddin, MH, Ghaffari, K (2016) "*Fault location and isolation in micro-grids using a digital central protection unit"* Renewable & Sustainable Energy Reviews **(ISI Indexed), IF: 8.05 (Q1).**
9. Mirsaeidi, S, Said, DM Mustafa, MW, Habibuddin, MH, Ghaffari, K (2016) *"Microprocessor based protection for different type microgrid faults*." **Electronics World (ISI Indexed), IF: 0.026 (Q4).**
10. Z.J.Lim, M.W.Mustafa (2016) "*Evolved intelligent clustered bee colony for voltage stability prediction on power transmission system*." Soft Computing **(ISI Indexed), IF: 2.472 (Q2).**
11. Sajid Hussain Qazi, Mohd Wazir Mustafa (2016). "*Review on active filters and its performance with grid connected fixed and variable speed wind turbine generator*." Renewable & Sustainable Energy Reviews **(ISI Indexed), IF: 6.798 (Q1).**
12. Beenish Sultana, MW Mustafa, U Sultana, Abdul Rauf Bhatti (2016). "*Review on reliability improvement and power loss reduction in distribution system via network reconfiguration."* Renewable & Sustainable Energy Reviews. **(ISI Indexed), IF: 6.798 (Q1).**
13. S saeh, MW Mustafa, YS Mohammed, M Almaktar (2016). *"Static security classification and evaluation classifier design in electric power grid with presence of PV power plants*

using c-4.5." Renewable & Sustainable Energy Reviews. **(ISI Indexed), IF: 6.798 (Q1).**

14. Mohammad Reza Miveha, Mohd Fadli Rahmat, Ali Asghar Ghadimib, Mohd Wazir Mustafa (2016). "*Control techniques for three-phase four-leg voltage source inverters in autonomus microgrids: A review*." Renewable & Sustainable Energy Reviews. **(ISI Indexed), IF: 6.798 (Q1).**

Area of Interest

Smart Grid, Distributed Generation, Sustainable Energy, Regulated & Deregulated Power System, Renewable Energy, Power System Analysis, Power System Devices and Apparatus, Power Quality, Protection.

Project Leader/Project Member

i) Project Member, Non-Intrusive Load Monitoring and Management of Residential Electrical Appliances Using Steady-State Load Signatures. PY/2017/01321. Budget approved RM 40,500. (01/02/2018- 31/01/2020).

ii) Project Leader, Enhanced Power Quality Controller in An Autonomous Microgrid Using Whales Optimization Algorithm, PY/2017/00612, Budget approved RM 40,000. (01/07/2017 - 30/09/2018).

iii) Project Member, Passive Filter Size Optimization for Reducing the Harmonic Distortion Due to Electrical Vehicle Charging Station. PY/2016/06734. Budget approved RM 40,000. (01/10/2016- 31/07/2018).

iv) Project Leader, Flexibility Constrained Unit Commitment Problem for Enhanced Operation of Low Carbon Power Systems by an Enhanced Priority List Based Particle Swarm Optimization Technique. PY/2016/06747. Budget approved RM 40,000. (01/07/2016- 30/06/2018).

v) Project Leader, Enhancing Power System Oscillation Stability with Facts Devices using Fuzzy Logic and Bees Algorithm. Budget approved RM 50,000.00. (01/05/2015- 31/12/2016).

vi) Project Member, Flexible Feed in Tariff Scheme for Photovoltaic in Residential Area Based on Artificial Neural Network Projection. Budget approved RM 20,000.00. (01/05/2015- 31/07/2016).

vii) Project Leader, Coordinated and Robust Design of Power System Stabilizers using Bees Algorithm, Budget approved RM 88,000.00. (01/07/2014- 30/09/2016).

viii) Project Leader, A Self-Configuring Methodology Of Future Smart Power Grid (A Solution Towards Future Potential Challenges) Budget approved RM 80,688.79. (01/04/2014- 31/03/2016).

Keynote Speech 2

Preparing Engineers for the Internet of Things Network for Circular Economy and Sustainable Building Management

Prof. Dr. Ir. Riri Fitri Sari, MM MSc, DTM, SMIEEE

Universitas Indonesia

Abstract

The Internet of Things (IoT) in the disruption era has come towards its peak time which includes smart cities, smart buildings, smart homes, smart kitchens, smart appliances, security, smart home, smart health, smart factories, smart machines, smart supply chain, smart transportation, smart manufacturing, autonomous vehicles, smart consumer devices, etc. All infrastructure and its management will be based on the smart systems which have sensors and crowdsourcing as information sources.

At the university of Indonesia, we have been using NS-2 and NS3 as the de facto open source network simulator in which we can contribute to the development and performance evaluation of different protocols, and contribute new ideas by providing C and tcl codes. As the result of the open source approach we can experiment with different protocol such as congestion control mechanism, adhoc network, vanet, and other 802.11 series protocols. Students could quickly experience how to collaborate to upgrade our Internet Protocol to advancement, from Adhoc Network to Blockchain Architecture. Our latest work on the Lorawan, NB-IOT and Blockchain based in NS-3 have shown that the issue of infrastructure development will not only dictated by proprietary software approaches but also worldwide collaboration in which we can train the next information infrastructure engineers.

During all the 30 years of the development of Internet Protocol through Internet Engineering Task Force (IETF) and 3GPP we have witnessed that Internet engineer are collaborating all over the world towards the advancement of our information super highway. The trace can be found from the website of contributed code of ns-2 of Lawrence Berkeley laboratory in which engineers shows their simulator code, introduce their new ideas, writing the Internet Draft, while at the same time companies such as Huawei, ZTE, and Mediatech quickly turn that in to manufacturing products that lower the cost with improved quality.

We have witnessed how open source language such as Java, PHP, and C have flourished and support the development of open source operating system such as Linux and its derivation. Lately it becomes Android based devices which currently immensely used worldwide to support us in daily activity decision making processes based on connected information.

All of the advancement of computer and communication technology in Silicon Valleys of the US, China, Taiwan, Singapore, etc would not happen this fast without tools that could provide the current surrounding environment that should be extended. Therefore, lecturers and senior researchers plays an important role in making sure that the new students could go directly to the problem as soon as possible without reinventing the wheel, using problem based learning. The short time to the product development life cycle pushed all of us to collaborate to reach win-win consensus through standardization.

This talk will discuss some state of approaches in training the IoT Network engineers to solve the problem found to achieve balanced circular economy and sustainable building management. We will some example learned from different approaches used across the globe to overcome challenges such as resource constraint, scalability, heterogeneity, mobility and security for wireless monitoring system. We will also discuss the role of engineers to provide applications and communication mechanism for indoor and outdoor purposes for sustainability purposes.

Biography

Riri Fitri Sari received a Ph.D. from the School of Computing, University of Leeds, UK, with specialization in Multimedia Network in 2004. From 2006-2014, she was the IT Director of the University of Indonesia. In 2009, she has become a Full Professor of Computer Engineering at the Faculty of Engineering, University of Indonesia. She has written more than 60 journal papers, 130 conference articles,10 books. She has also worked in different teams and granted with 11 patents/copyrights, and supervised more than 20 doctoral students. She is a Senior member of the IEEE and a Professional Engineers from PII.

She has focused on Protocol Engineering, Multimedia Network, Vehicular Area Network, Internet of Things, and IT for Sustainability Development Goals. She was the recipient of the IEEE Region 10 WIE Most Inspiring Engineer Award 2012 in Kalkuta India. She is awarded as an Honorary Professor at the Kazakh National Agrarian University, Almaty Kazakhistan, in June 2017. She has been using the power of Information Technology and Social Media to develop the UI GreenMetric Rankings of World Universities which have been widely used in more than 516 universities in 75 countries as a voluntary standard for improving their sustainable and green campus programs. Under her leadership, the UI GreenMetric University Network has conducted workshops organized in more than 20 countries, making UI GreenMetric as a reference for infrastructure development of smart sustainable campus.

Recent Publication

1. M Salman, R Yugitama, Amiruddin, RF Sari KAMIES: Security Optimization of KASUMI Algorithm by Increasing Diffusion Level, Internasional Journal of Security and its Application 12(3), 29-46, 2018.
2. Y Shirota, T Hashimoto, RF Sari, Visualization of time series statistical data by shape analysis (GDP ratio changes among Asia countries), Journal of Physics: Conference Series 971 (1), 012013, 2018.

3. M Misbahuddin, AA Ratna, RF Sari, Dynamic Multi-hop Routing Protocol Based on Fuzzy-Firefly Algorithm for Data Similarity Aware Node Clustering in WSNs., International Journal of Computers, Communications & Control 13 (1), 2018

4. Ruki Harwahyu, Alfan Presekal, Riri Fitri Sari, Performance Evaluation with Optimized Configuration, International Journal of Future Generation Communication & Networking, Vol.11, No. 4(2018), pp51-68, http://dx.doi.org/10.14257/ijfgcn.2018.11.4.05, http://www.sersc.org/journals/IJFGCN/vol11_no4/5.pdf

5. Misbahuddin, M.; Ratna, A. A. Putri; Sari, R. F, International Journal of Computers, Communications & Control, Feb2018, Vol. 13 Issue 1, p99-116. 18p. Dynamic Multi-hop Routing Protocol Based on Fuzzy-Firefly Algorithm for Data Similarity Aware Node Clustering in WSNs., International Journal of Computers, Communications & Control. Feb 2018, Vol. 13 Issue 1, p99-116. 18p. (SJR Q2, H Indeks 19)

6. R. Harwahyu , R. Cheng, C. Wei, RF Sari., Optimization of Random Access Channel in NB-IoT, IEEE Internet of Things Journal, 5 (1), 391-402. Januari 2018. (SJR Q1, H Indeks 22)

7. RN Ode, D Perdana, RF Sari, Performance Evaluation of AODV, AODV-UU, and AODV with Malicious Attack Mode on Vehicular Ad-Hoc Network, Advanced Science Letters 23 (5), 3990-3994, 2017, (SJR Q4, H indeks 21, 2017/5/1)

8. I Sutandi, RF Sari, Performance Analysis of Different Push Notification Services Implementation on Vehicle Sharing Application, Advanced Science Letters 23 (4), 3644-3648, 2017, (SJR Q4, H indeks 21, 2017/4/1)

9. RF Sari, AF Rochim, E Tangkudung, A Tan, T Marciano, Location-Based Mobile Application Software Development: Review of Waze and Other Apps, Advanced Science Letters 23 (3), 2028-2032, 2017(SJR Q4, H indeks 21, 2017/3/1)

10. D Perdana, RG Cheng, RF Sari, Analytical Study of the Impact of the Mobility Node on the Multi-channel MAC Coordination Scheme of the IEEE 1609.4 Standard, KSII Transactions on Internet and Information Systems (TIIS) 11 (1), 61-77, (SJR Q3, H indeks 15 2017/1/1)

Recent Research Activities

- Principal Investigator, Hibah Kolaborasi Riset dan Publikasi Internasional (International Joint Research and Publications with Prof. Ray Guang-Cheng, NTUST, Taiwan, "Development of an Optimize New Technique Algorithm of Variable CCH Interval (VCI) with QoS Implementation using EDCA and Markov chain approach in IEEE 1609.4/802.11p standard, Kemendiknas, Feb 2014-2016.
- Principal Investigator, Hibah Cluster UI, "Location-based Distributed Data Mining for Vehicle Sharing in Green Transportation System," UI, Feb 2014-Dec 2014.
- Principal Investigator, Hibah PUPT, "Pengembangan Algoritma Terinspirasi Proses Alami untuk Optimasi Solusi Jaringan Sensor Nirkabel dan IoT," PUPT 2016, UI, 1173/UN2.R12/HKP.05.00/2016, 17 Feb 2016-10 Nov 2016.
- Principal Investigator, Hibah Cluster UI, "Location-based Distributed Data Mining for Vehicle Sharing in Green Transportation System," UI, Feb 2016-Dec 2016.

- Principal Investigator, Hibah PUPT, "Pengembangan Algoritma Terinspirasi Proses Alami untuk Optimasi Solusi Jaringan Sensor Nirkabel dan IoT," PUPT 2016, UI, No: 1173/UN2.R12/HKP.05.00/2016, 17 Feb 2016-10 Nov 2016.
- Principal Investigator, Hibah PUPT, "Dampak Masa Depan Media Web pada Ekosistem Sitasi Akademik (Future Impact of Media for Worldwide Academic Citation Ecosystem) " PUPT 2017, UI, Adian, 2756/UN2.R3.1/HKP05.00/2017, 4 April 2017-30 Nov 2017. 002/ADD/SP2H/LT/DRPM/VIII/2017.
- Principal Investigator, Insentif Riset Sistem Inovasi Tahun Skema Insinas Riset Pratama Individu,"Pengembangan Teknologi Utama untuk Layanan IoTpada Jaringan 5G/IMT-2020, Insinas 2017 UI, Ruki Harwahyu, Alfan Presekal, 3497/UN2.R3.1/HKP.05.00/2017, 13 Juli 2017-30 Nov 2017.
- Principal Investigator, TA Dok, "Indeks RA sebagai alternatif untuk mengukur dampak peneliti yang adil dan optimal berdasarkan metode Lotka dan Jain's Fairness Indeks", Adian Fatchur Rochim, 1661/UN2.R3.1/PPM.0001/2018.
- Principal Investigator, PDUPT, "Dampak Masa Depan Media Web pada Ekosistem Citasi Akademik", 419/UN2.R3.1/HKP05.00/2018.
- Principal Investigator, PTUPT, "Mekanisme Keamanan Berbasis Onetime Pad Teracak untuk Gateway Multiprotokol dalam Mendukung Kinerja dan Kompatibilitas teknologi dalam IoT", 505/UN2.R3.1/HKP05.00/2018.
- Principal Investigator, Hibah World Class Professor 2018.Principal Investigator, Hibah USAID Shera 2018.

Keynote Speech 3

D2D Challenges and Opportunities

Assoc. Prof. Dr. Razali Ngah

Universiti Teknologi Malaysia

Abstract

Device-to-Device (D2D) communication, which alludes to direct transmission between two devices without passing through the base station. It has been broadly anticipated to be an essential cornerstone to enhance system performance and bolster new amenities beyond 2020 in future fifth generation (5G) systems [1]. In 5G networks, it is anticipated that controlled D2D communication offers the open door for short distance communication, local management and permits the isolation of local activity from the global activity, for example locally data offloading. D2D communication evacuates the data traffic heap load on the backhaul and center systems and decreases the vital exertion for managing data traffic at the center system. Due to proximity services, D2D communication viewed as a promising remedy for enhancing communication accomplishment and system capacity of long term evolution-advanced (LTE-A) network. The potential enhancements in proximity services that can be provided by D2D are not entirely exploited yet. In the 5G network, such confinement does not exist any longer, and it is anticipated that D2D operation in the in-band cellular network will be locally incorporated as a component without any bounds in the 5G network. There are also many more challenges to implement D2D communication such as discovery (location and position) of the devices with ensured accuracy and efficiency, signaling techniques need to be amended with signaling overhead evaluation, network integration, and local support in future 5G systems.

Biography

Razali Ngah received the Ph.D. degree from the University of Northumbria, United Kingdom, in 2005. Since 1989, he has been with the Faculty of Electrical Engineering, Universiti Teknologi Malaysia (UTM), where he is currently a Associate Professor. He is also the Deputy Director of Wireless Communication Centre in UTM. His research interests include antennas and propagation for communications, device-to-device communication, UWB communication, radio over fiber and photonic networks.

Recent Publication

1. O. Hayat, R. Ngah and Yasser Zahedi, Device discovery for D2D communication in in-band cellular networks using sphere decoder like (SDL) algorithm, EURASIP Journal on Wireless Communications and Networking (2018) 2018:74, Q2 (IF: 1.951)

2. Bushra Naeema, Razali Ngah, and Siti Z. Mohd Hashim, Reduction of Ping-pong effect in Heterogeneous Networks Using Fuzzy Logic, Journal of Soft Computing (Springer), 2018, Q1 (IF: 2.472)

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9. Yasser Zahedi, Razali Ngah, Mastaneh Mokayef, Khalid Zahedi, "Stationarity Regions for Ultrawideband Channels", IEEE Antennas And Wireless Propagation Letters, Vol. 15, pp 139- 142, 2016. Q2 (IF: 1.579)

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Recent Research Activities

- Antenna design for 5G communication system
- D2D communication
- UWB coummunication

Parallel Session

Room : Natuna (3rd Floor)

No	Title	Authors	Time	Track
	Invited Talk 1 : High Voltage Plasma Generator from Dielectric Barrier Discharge	Dr. Eng Fri Murdiya	13:05-13:15	
1	Analysis of Peltier Characteristic and Cold Side Treatment for Thermoelectric Generator Module at Brick Kiln Furnace	Missyamsu Algusri	13:15-13:30	Track 1
2	Short Term Load Forecasting for Electrical Dispatcher of Baghdad City Based on SVM-PSO Method	Aqeel S. Jaber	13:30-13:45	Track 1
3	The Effect of Pressure and Gap Distance to AC Breakdown Behavior of SF_6/N_2 Gas Mixtures	Nur Farhani Ambo; Hidayat Zainuddin; Muhammad Saufi Kamarudin; Jamaludin Mohd Wari; Ayuamira Zahari	13:45-14:00	Track 1
4	Optimum Torque Control of Stand Alone Wind Turbine Generator System Fed Single Phase Boost Inverter	Muldi Yuhendri; Aslimeri MT; Mukhlidi Muskhir	14:00-14:15	Track 1
5	Comparison of MPPT Fuzzy Logic Controller Based on Perturb and Observe (P&O) and Incremental Conductance (Inc) Algorithm	Azmi Saleh	14:15-14:30	Track 1
6	Characteristics of Positive Lightning as Observed in Temperate and Tropic Regions: A Review	Nor Asrina Ramlee; Noor Azlinda Ahmad	14:30-14:45	Track 1
7	Design and Analysis of Variable-Reluctance Stepping Motor as Actuator Element of New Type Automatic Transfer Switch	Budhi Anto; Yangly Refli; Fri Murdiya; Eddy Hamdani; Suwitno Suwitno; Amir Hamzah	14:45-15:00	Track 1
COFFEE BREAK			**15.00-15.15**	
8	Application of Molecular Dynamics Study and Homo Lumo Calculation on the Ionized Air for High Voltage Engineering	Fri Murdiya; Neni Frimayanti; Marzieh Yaeghoobi	15:15-15:30	Track 1
9	Barrier Discharge in Magnetic Field: The Effect of Magnet Position Induced Discharge in The Gap	Fri Murdiya; Budhi Anto; Eddy Hamdani; Suwitno Suwitno; Edy Ervianto; Amun Amri	15:30-15:45	Track 1

10	Web Based Wind Energy Conversion System Monitoring	Amir Hamzah; Bayu Chaniago; Suwitno Suwitno; Iswadi Hasyim Rosma; Haji Gussyafri; Iwan Kurniawan	15:45-16:00	Track 1
11	The Implementation and Analysis of Dual Axis Sun Tracker System to Increase Energy Gain of Solar Photovoltaic	Iswadi Hasyim Rosma; Jamarrintan Asmawi; Syukri Darmawan; Barri Anand; Nurhalim Dani Ali; Budhi Anto	16:00-16:15	Track 1
12	Analysis of Single Axis Sun Tracker System to Increase Solar Photovoltaic Energy Production in the Tropics	Iswadi Hasyim Rosma; Ichsan Maulana Putra; Dian Yayan Sukma; Ery Safrianti; Azriyenni Azhari Zakri; Abubakar Abdulkarim	16:15-16:30	Track 1
13	Extract Fault Signal via DWT and Penetration of SVM for Fault Classification at Power System Transmission	Azriyenni Azhari Zakri; Syukri Darmawan; Iswadi Hasyim Rosma; Jafaru Usman; Boy Ihsan	16:30-16:45	Track 1

Room : Bintan (2nd Floor)

No	Title	Authors	Time	Track
	Invited Talk 2: Challenges on 5G MIMO Antenna Design	**Dr. Yusnita Rahayu**	13:05-13:15	
1	Measurement Design of Sensor Node for Landslide Disaster Early Warning System	Aghus Sofwan; Sumardi Sumardi; Muhammad Reynaldi	13:15-13:30	Track 2
2	Performance Analysis of a Dielectric Resonator Antenna with Different Feeding Technique for 5G Communication	Abinash Gaya; Mohd Haizal Jamaluddin; Muhammad Ramlee Kamarudin; Raghuraman Selvaraju; Irfan Ali	13:30-13:45	Track 2
3	FEXT Analysis and Its Mitigation Using Double-slit Complementary Split-Ring Resonators	Azhagumurugan R	13:45-14:00	Track 2
4	Android-based Touch Screen Projector Design Using a 3D Camera	Mochamad Susantok; Susi Rubiyati; Muhammad Saputra; Muhammad Diono	14:00-14:15	Track 2
5	Early Warning Systems Using Fire Sensors, Wireless and SMS Technology	Ari Sandhyavitri; Rahyul Amri	14:15-14:30	Track 2
6	New Design of High-Gain Beam-Steerable Dipole Antenna Array for 5G Smartphone Applications	Yusnita Rahayu; Hikmah Putra; Ahmad Romadan; Adit Kurniawan	14:30-14:45	Track 2
7	Microstrip Antenna Design H-Shaped Planar Array 4 Elements Using Circular Slot for Fixed WiMAX Network 3.5 GHz Frequency	Ery Safrianti; Yoga Yusfarino; Feranita Jalil; Linna Sari	14:45-15:00	Track 2
COFFEE BREAK			**15.00-15.15**	
8	A Survey on Medium Access Control (MAC) for Clustering Wireless Sensor Network	Anhar Anhar; Rajagopal Nilavalan; Febrizal Ujang	15:15-15:30	Track 2
9	A Single DD-MZM for Generating Vestigial Sideband Modulation Scheme in Radio over Fiber Systems	Febrizal Ujang; Gunawan Wibisono	15:30-15:45	Track 2

Room : Convention Hall (2nd Floor)

No	Title	Authors	Time	Track
1	Performance Evaluation of Automatic Dependant Surveillance Broadcast Data Distribution Using Named Data Networking	Muhammad Raka Perbawa; Riri Fitri Sari	13:00-13:15	Track 3
2	Design of Smart Open Parking Using Background Subtraction in the IoT Architecture	Aghus Sofwan; Eko Handoyo; Achmad Hidayatno; M Arfan; Maman Somantri; Monica Sari Hariyanto	13:15-13:30	Track 3
3	Using Bayesian Network to Determining the Recipient of Zakat (Case Study: BAZNAS Pekanbaru)	Rahmad Kurniawan; Akbarizan Akbarizan; Sri Murhayati; Nurcahaya Nurcahaya; Mohd Zakree Ahmad Nazri; Siti Norul Huda Sheikh Abdullah	13:30-13:45	Track 3
4	Intelligent Decision Support System Using Certainty Factor Method for Selection Student Career	Yenny Desnelita; Kasman Rukun; Syahril, Dewi Nasien; Gustientiedina; Vitriani	13:45-14:00	Track 3
5	Social Media Sentiment Analysis Using K-Means and Naïve Bayes Algorithm	Muhammad Ihsan Zul; Feoni Yulia; Dini Nurmalasari	14:00-14:15	Track 3
6	A Review of Firefly Algorithms for Path Planning, Vehicle Routing and Traveling Salesman Problems	T. Brenda Chandrawati; Riri Fitri Sari	14:15-14:30	Track 3
7	An Analysis of ID and Evaluation of Physics Learning Media of Three Dimensional Animation Using Blender Application	Muhammad Nasir; Rizo Prastowo; Riwayani Riwayani	14:30-14:45	Track 3
8	The Effect of Class Imbalance Against LVQ Classification	Rahmad Abdillah; Iis Afrianty; Suwanto Sanjaya	14:45-15:00	Track 3
COFFEE BREAK			**15.00-15.15**	
9	Determining of Adolescent Learning Styles by Comparing the Effectiveness Between Certainty Factor and Demster-Shafer	Wita Yulianti; Diki Arisandi; Auliya Syaf	15:15-15:30	Track 3
10	Virtual World Environment Design for Vidyanusa e-Learning System	Rahmat Rizal; Dewi Nasien; Linna Oktaviana Sari	15:30-15:45	Track 3
11	Building Domain Ontology from Semi-formal Modelling Language: BPMN	Amarilis Yanuarifiani, Yanuar Firdaus Arie Wibowo and Kusuma	15:45-16:00	Track 3

		Ayu Laksitowening		
12	Web-based Expert System to Diagnose Tropical Diseases Using Certainty Factor	Rahmad Kurniawan, Novi Yanti, Mohd Zakree Ahmad Nazri, Siti Norul Huda Sheikh Abdullah, Wilda Hunafa, Mardhiyah Kharismayanda	16:00-16:15	Track 3
13	New Feature Vector from Freeman Chain Code for Handwritten Roman Character Recognition	Dewi Nasien; Deni Yulianti; Omar Fakhrul Syakirin; M. Hasmil Adiya; Yenny Desnelita	16:15-16:30	Track 3
14	Off-line Handwritten Korean Letter Using Principle Component Analysis and Back Propagation Neural Network	Dewi Nasien; Feri Candra; Delsavonita Delsavonita; Deni Yulianti; M. Hasmil Adiya	16:30-16:45	Track 3