

# KHAIZURAN BIN ABDULLAH



- KULLIYAH OF ENGINEERING
- IIUM Gombak Campus
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## المؤهل العلمي

- Electrical Engineering
- Master of Engineering (Electrical)
- Electrical Engineering

## مسؤوليات التدريس

ADAPTIVE SIGNAL PROCESSING	2011/2012 2012/2013 2013/2014
COMMUNICATION ENGINEERING	2004/2005 2009/2010 2010/2011
COMMUNICATION ENGINEERING LAB IV	2012/2013 2013/2014
COMMUNICATIONS ENGINEERING I	2009/2010 2010/2011 2011/2012
COMMUNICATIONS ENGINEERING LAB I	2009/2010 2010/2011 2011/2012 2018/2019 2019/2020
COMMUNICATIONS LAB	2003/2004
DIGITAL SIGNAL PROCESSING	2009/2010
ELECTRIC CIRCUITS	2013/2014
ENGINEERING ETHICS FROM ISLAMIC PERSPECTIVE	2019/2020
ENGINEERING LAB I	2010/2011 2014/2015
FINAL YEAR PROJECT I	2018/2019 2019/2020
FUNDEMENTAL OF COMMUNICATION ENGINEERING	2011/2012 2014/2015
MOBILE COMMUNICATION	2014/2015 2015/2016
MOBILE COMMUNICATIONS	2011/2012 2012/2013 2013/2014 2014/2015 2015/2016 2017/2018 2018/2019 2019/2020 2020/2021
PROGRAMMING FOR ENGINEERS	2010/2011 2011/2012 2012/2013 2017/2018
PROJECT I	2018/2019

SELECTED TOPICS IN COMMUNICATION ENGINEERING	2018/2019
SEMINAR	2004/2005
SIGNALS AND SYSTEMS	2003/2004 2004/2005 2017/2018 2020/2021
WIRELESS COMMUNICATION SYSTEMS	2019/2020
WIRELESS TECHNOLOGY	2015/2016
Wireless Communications	2018/2019 2019/2020 2020/2021

## المشاريع البحثية

### In Progress

- 2020 - Present** Industry@University: 4IR Competence Centre
- 2019 - Present** Decision and Game Theory based Comprehensive Tactical Modelling of Node Misbehaviour for Threat Computing in MANET based IoT System
- 2018 - Present** Investigation of Techniques to Mitigate Interference in Multi-Tiers Heterogeneous Wireless Network
- 2018 - Present** An investigation of low cost and energy efficient 3D hybrid beamforming technique of 3D antenna array for 5G standards
- 2018 - Present** A hybrid-Discrete Wavelet Transform for New Diversity Technique in Millimeter Wave 5G System with Energy Harvesting
- 2017 - Present** The Design of Hybrid Precoding Technique for Multiuser mm-Wave MIMO System
- 2016 - Present** The Investigation and Application of Statistical Process Control in Controlling Perceptual Speech Quality
- 2016 - Present** Ingenious Technique to Diminish Peak Average Power Ratio (PAPR) Obstacle in the Future 5th Generation (5G) Wireless Systems
- 2011 - Present** IIUM STRATEGIC TECHNOLOGIES AND ENGINEERING UNIT (ISTEU)
- 2008 - Present** Intelligent Cyberspace Security

### Completed

- 2016 - 2020** An Investigation to Identify Possible Technological Challenges in the 5G Wireless Heterogeneous Network
- 2016 - 2019** The Investigation and Application of Statistical Process Control in Controlling Perceptual Speech Quality

- 2016 - 2019** RF Characterization Enhancement of Material for 3D Printing Application
- 2013 - 2016** Measurement of Landslide Properties Using FMCW Radar
- 2013 - 2016** 3-D Spherical Antenna Array
- 2013 - 2016** Novel Algorithm Error Control Codes for Interference Suppression in Orthogonal Frequency Division Multiplexing System
- 2012 - 2015** Estimation of Specific Attenuation Radar Reflectivity ( Y-Z ) Relation using Razaksat's Signal Readings and Multi-Parameter Weather Radar Measurements
- 2012 - 2016** Correction of Radar Reflectivity and Differential for Improved Estimation of rainfall Rate at S-Band Wavelength
- 2012 - 2015** Femtocell Interference Assessments in Orthogonal Frequency Division Multiplexing Access (OFDMA) System
- 2011 - 2013** RU 2011: Novel Mitigation Techniques for Narrowband Interference in Wavelet Based Orthogonal Frequency Division Multiplexing
- 2011 - 2015** Development of Spectrum Utilisation Database
- 2010 - 2013** Novel Algorithms on Speech and Audio Coding Based on Compressive Sensing Principle
- 2010 - 2013** Surveillance system using webcam for mobile phone users
- 2010 - 2012** Modeling and Development of Dual Function Wide-band EDFA
- 2010 - 2012** Position-based quality of service (QoS) multicast Routing Protocol for Mobile Ad-Hoc Networks
- 2009 - 2011** Wavelet based OFDM System with an Application of Image Processing

## المنشورات

### Article

- 2020** [Rain attenuation for 5G network in tropical region \(Malaysia\) for terrestrial link.](#) Progress In Electromagnetics Research Letters , 90 pp.99-104
- 2020** [Rain attenuation for 5G network in tropical region \(Malaysia\) for terrestrial link.](#) Progress In Electromagnetics Research Letters , 90 pp.99-104
- 2020** [Modification of distance factor in rain attenuation prediction for short-range millimeter-wave links.](#) IEEE Antennas and Wireless Propagation Letters , 19 (6) pp.1027-1031
- 2020** [Modification of distance factor in rain attenuation prediction for short-range millimeter-wave links.](#) IEEE Antennas and Wireless Propagation Letters , 19 (6) pp.1027-1031

- 2019** [Designing large-scale antenna array using sub-array.](#) Bulletin of Electrical Engineering and Informatics , 8 (3) pp.906-915
- 2019** [Diversity technique using discrete wavelet transform in OFDM system.](#) International Journal of Engineering and Advanced Technology , 8 (2) pp.284-287
- 2019** [Performance of BER with different diversity techniques for millimeter-wave communication system.](#) International Journal of Innovative Technology and Exploring Engineering , 8 (6S4) pp.1149-1152
- 2019** [SIC-MMSE method based wireless precoding technique for millimetre-wave MIMO system.](#) Indian Journal of Science and Technology , 12 (9) pp.1-11
- 2019** [Hybrid precoding design using MMSE baseband precoder for mm-wave multi-user MIMO systems.](#) International Journal of Recent Technology and Engineering ( IJRTE ) , 8 (2S11) pp.3486-3490
- 2019** [Designing large-scale antenna array using sub-array.](#) Bulletin of Electrical Engineering and Informatics , 8 (3) pp.906-915
- 2019** [SIC-MMSE method based wireless precoding technique for millimetre-wave MIMO system.](#) Indian Journal of Science and Technology , 12 (9) pp.1-11
- 2019** [A wireless precoding technique for millimetre-wave MIMO system based on SIC-MMSE.](#) Telkomnika (Telecommunication Computing Electronics and Control) , 18 (2) pp.2782-2789
- 2019** [Adaptive control of nonlinear system based on QFT application to 3-DOF flight control system.](#) Telkomnika (Telecommunication Computing Electronics and Control) , 17 (5) pp.2595-2606
- 2019** [Performance of BER with different diversity techniques for millimeter-wave communication system.](#) International Journal of Innovative Technology and Exploring Engineering , 8 (6S4) pp.1149-1152
- 2019** [Hybrid precoding design using MMSE baseband precoder for mm-wave multi-user MIMO systems.](#) International Journal of Recent Technology and Engineering ( IJRTE ) , 8 (2S11) pp.3486-3490
- 2019** [Diversity technique using discrete wavelet transform in OFDM system.](#) International Journal of Engineering and Advanced Technology , 8 (2) pp.284-287
- 2019** [A wireless precoding technique for millimetre-wave MIMO system based on SIC-MMSE.](#) Telkomnika (Telecommunication Computing Electronics and Control) , 18 (2) pp.2782-2789
- 2019** [Adaptive control of nonlinear system based on QFT application to 3-DOF flight control system.](#) Telkomnika (Telecommunication Computing Electronics and Control) , 17 (5) pp.2595-2606
- 2018** [Interference avoidance using dynamic frequency reuse for LTE-A system.](#) International Journal of Engineering & Technology , 7 (3.7) pp.1-3
- 2018** [Performance comparison of DFT, DCT and DWT based OFDM with wavelet family to minimize PAPR.](#) Journal of Fundamental and Applied Sciences , 10 (2 (Special issue)) pp.138-150

- 2018** [Performance comparison of DFT, DCT and DWT based OFDM with wavelet family to minimize PAPR.](#) Journal of Fundamental and Applied Sciences , 10 (2 (Special issue)) pp.138-150
- 2018** [Interference avoidance using dynamic frequency reuse for LTE-A system.](#) International Journal of Engineering & Technology , 7 (3.7) pp.1-3
- 2017** [Null positioning of dipole antenna array considering coupling effect.](#) International Journal on Communications Antenna and Propagation , 7 (5) pp.370-377
- 2017** [Dynamic frequency reuse: a method for interference mitigation in OFDMA Based LTE-A Networks.](#) International Journal of Future Generation Communication and Networking , 10 (4) pp.11-18
- 2017** [Hybrid MMSE precoding for Millimeter-Wave \(mmW\) Multi-user Massive MIMO systems.](#) International Journal of Future Generation Communication and Networking , 10 (5) pp.29-38
- 2017** [Null positioning of dipole antenna array considering coupling effect.](#) International Journal on Communications Antenna and Propagation , 7 (5) pp.370-377
- 2017** [Dynamic frequency reuse: a method for interference mitigation in OFDMA Based LTE-A Networks.](#) International Journal of Future Generation Communication and Networking , 10 (4) pp.11-18
- 2017** [Hybrid MMSE precoding for Millimeter-Wave \(mmW\) Multi-user Massive MIMO systems.](#) International Journal of Future Generation Communication and Networking , 10 (5) pp.29-38
- 2015** [GAMMA shaped monopole patch antenna for tablet PC.](#) ARPN Journal of Engineering and Applied Sciences , 10 (23) pp.17433-17437
- 2015** [Cognitive power adjustment for OFDM-based wireless communication system: an empirical study .](#) Lecture Notes on Software Engineering , 3 (1) pp.35-39
- 2015** [Performance evaluation of joint path and spectrum diversity based routing protocol in Cognitive Radio Ad Hoc Networks under critical conditions .](#) Research Journal of Applied Sciences, Engineering and Technology , 10 (6) pp.694-700
- 2015** [RACARP: a robustness aware routing protocol for cognitive radio ad hoc networks.](#) Journal of Theoretical and Applied Information Technology , 76 (2) pp.246-257
- 2015** [Gamma shaped monopole patch antenna for tablet PC.](#) ARPN Journal of Engineering and Applied Sciences , 10 (23) pp.17433-17350
- 2014** [Performance analysis of interference coordination techniques in heterogeneous network.](#) Research Journal of Applied Sciences, Engineering and Technology , 7 (8) pp.1536-1550
- 2014** [Effect of modulation technique in Mach-Zehnder Modulator \(MZM\) in optical OFDM system.](#) International Journal of Computer Networks and Wireless Communications (IJCNWC) , 4 (4) pp.257-263
- 2014** [A modified rain attenuation prediction model for tropical V-band satellite earth link.](#) International Journal of Satellite Communications and Networking , 32 (1) pp.1-11

- 2014** [FTCARP: a fault-tolerant routing protocol for Cognitive Radio Ad Hoc Networks.](#) KSII Transactions on Internet and Information Systems , 8 (2) pp.371-388
- 2014** [The use of convolutional code for narrowband interference suppression in OFDM-DVBT System.](#) ARPN Journal of Engineering and Applied Sciences , 9 (8) pp.1183-1189
- 2013** [Mobile multicast in hierarchical proxy mobile IPV6.](#) IOP Conference Series: Materials Science and Engineering , 5 pp.012078-1-5
- 2013** [The performance evaluation of AODV-based and DSR-based multi-radio routing protocols in cognitive radio Ad Hoc network.](#) Research Journal of Applied Sciences, Engineering and Technology , 6 (7) pp.1276-1282
- 2013** [Performance analysis of multi-radio routing protocol in cognitive radio ad hoc networks under different path failure rate.](#) IOP Conference Series: Materials Science and Engineering , 53 pp.012044-1
- 2013** [Rain fade estimations for the X-Band satellite communication link in the tropics.](#) International Journal of Computer and Communication Engineering , 2 (4) pp.408-412
- 2013** [A comprehensive study of routing protocols for cognitive radio networks.](#) Journal of Theoretical and Applied Information Technology , 47 (2) pp.1-16
- 2013** [Predicting radio frequency radiation from mobile communication base stations.](#) International Journal of Computer and Communication Engineering , 2 (4) pp.482-486
- 2012** [Development of low bit rate speech encoder based on vector quantization and compressive sensing.](#) Journal of Applied Sciences pp.1-11
- 2012** [Analyses of worst month rain fade for ku band\(26Ghz\) in the tropics.](#) Radiomatics Journal on Communications Engineering , 3 (2) pp.22-27
- 2009** [Performance analysis of an optimal circular 16-QAM for Wavelet Based OFDM Systems.](#) International Journal of Communications, Network and System Sciences , 2 (9) pp.836-844

#### **Conference or Workshop Item**

- 2020** [Performance of MIMO DWT for millimeter wave communication system.](#) In: **14th IEEE Malaysia International Conference on Communication, MICC 2019**
- 2020** [Performance of MIMO DWT for millimeter wave communication system.](#) In: **14th IEEE Malaysia International Conference on Communication, MICC 2019**
- 2019** [Enhancing cloud data security using hybrid of advanced encryption standard and Blowfish encryption algorithms.](#) In: **2nd East Indonesia Conference on Computer and Information Technology, EIConCIT 2018**
- 2019** [Performance of MIMO DWT for millimeter wave communication system.](#) In: **2019 IEEE 14th Malaysia International Conference on Communication (MICC), 2-4 December 2019**
- 2019** [Enhancing cloud data security using hybrid of advanced encryption standard and Blowfish encryption algorithms.](#) In: **2nd East Indonesia Conference on Computer and Information Technology, EIConCIT 2018**

- 2019 [Performance of MIMO DWT for millimeter wave communication system.](#) In: **2019 IEEE 14th Malaysia International Conference on Communication (MICC), 2-4 December 2019**
- 2018 [Scalability analysis for designing large-scale antenna array using sub-array.](#) In: **2018 7th International Conference on Computer and Communication Engineering (ICCCE)**
- 2018 [Specific rain attenuation analysis and modeling For 5G communication.](#) In: **7th International Conference on Computer and Communication Engineering (ICCCE) 2018**
- 2018 [Specific rain attenuation analysis and modeling For 5G communication.](#) In: **7th International Conference on Computer and Communication Engineering (ICCCE) 2018**
- 2018 [Rain attenuation for 5G network in tropical region \(Malaysia\) for terrestrial link.](#) In: **13th IEEE Malaysia International Conference on Communications, MICC 2017**
- 2018 [Rain attenuation for 5G network in tropical region \(Malaysia\) for terrestrial link.](#) In: **13th IEEE Malaysia International Conference on Communications, MICC 2017**
- 2018 [Scalability analysis for designing large-scale antenna array using sub-array.](#) In: **2018 7th International Conference on Computer and Communication Engineering (ICCCE)**
- 2017 [Interference avoidance using dynamic frequency reuse for LTE-A system.](#) In: **MDSG Conferences Penang 2017**
- 2017 [Hybrid precoding design using MMSE baseband precoder for mm-wave multi-user MIMO systems.](#) In: **Malaysia Doctorate Support Group Conference 2017 (MDSG Conferences 2017)**
- 2017 [Advanced inter-cell interference management technologies in 5G wireless Heterogeneous Networks \(HetNets\).](#) In: **14th Student Conference on Research and Development, IEEE (SCORED2016)**
- 2017 [Interference avoidance using dynamic frequency reuse for LTE-A system.](#) In: **MDSG Conferences Penang 2017**
- 2017 [Hybrid precoding design using MMSE baseband precoder for mm-wave multi-user MIMO systems.](#) In: **Malaysia Doctorate Support Group Conference 2017 (MDSG Conferences 2017)**
- 2017 [Inter cell interference mitigation technique in femtocell and macrocell in LTE system.](#) In: **14th Student Conference on Research and Development, IEEE (SCORED2016)**
- 2017 [Advanced inter-cell interference management technologies in 5G wireless Heterogeneous Networks \(HetNets\).](#) In: **14th Student Conference on Research and Development, IEEE (SCORED2016)**
- 2017 [Inter cell interference mitigation technique in femtocell and macrocell in LTE system.](#) In: **14th Student Conference on Research and Development, IEEE (SCORED2016)**

- 2017 [Optimum concentric circular array antenna with high gain and side lobe reduction at 5.8 GHz.](#) In: **6th International Conference on Mechatronics - ICOM'17**
- 2017 [Optimum concentric circular array antenna with high gain and side lobe reduction at 5.8 GHz.](#) In: **6th International Conference on Mechatronics - ICOM'17**
- 2016 [Wireless smart health monitoring system via mobile phone.](#) In: **6th International Conference on Computer and Communication Engineering (ICCCE 2016)**
- 2016 [Case study of rain attenuation At 26 GHz in tropical region \(Malaysia\) for terrestrial link.](#) In: **The 12th IEEE 12th Malaysia International Conference on Communications (MICC 2015)**
- 2016 [QoS downlink schedulers in LTE towards 5G network.](#) In: **12th IEEE Malaysia International Conference on Communication (MICC 2015)**
- 2016 [Frequency diversity improvement factor for rain fade at terrestrial link in tropical region.](#) In: **6th International Conference on Computer and Communication Engineering (ICCCE 2016)**
- 2016 [Frequency diversity improvement factor for rain fade at terrestrial link in tropical region.](#) In: **6th International Conference on Computer and Communication Engineering (ICCCE 2016)**
- 2016 [Wireless smart health monitoring system via mobile phone.](#) In: **6th International Conference on Computer and Communication Engineering (ICCCE 2016)**
- 2015 [U-slot rectangular patch antenna for dual band application.](#) In: **International Conference on Communication and Computer Engineering (ICOCOE 2014)**
- 2015 [Energy efficient modulation technique on 10Gb/s coherent detection optical OFDM.](#) In: **2015 Information and Communication Technology Convergence (ICTC 2015)**
- 2015 [QOS downlink schedulers in LTE towards 5G network.](#) In: **The 12th IEEE Malaysia International Conference on Communications (MICC 2015)**
- 2015 [Gamma shaped monopole patch antenna for tablet PC.](#) In: **The International Postgraduate Conference on Engineering Research (IPCER 2015)**
- 2015 [Frequency diversity improvement factor for rain fade mitigation in Malaysia.](#) In: **The IEEE International Women in Engineering (WIE) Conference on Electrical and Computer Engineering 2015 (WIECON-ECE 2015)**
- 2014 [E-D2CARP: a joint path and spectrum diversity based routing protocol with an optimized path selection for cognitive radio ad hoc networks.](#) In: **2nd IEEE International Symposium on Telecommunication Technologies (ISTT 2014)**
- 2014 [Rain attenuation prediction for higher frequencies in microwave communication using frequency scaling technique.](#) In: **5th International Conference on Computer and Communication Engineering**
- 2014 [Design of embedded parallel resonant circuit multiband microstrip patch antenna for tablet PC.](#) In: **5th International Conference on Computer and Communication Engineering (ICCCE 2014)**



- 2014 [Self-organizing joint sensing and power allocation scheme \(SJSPA\) to coordinate cross-tier interference for LTE-A heterogeneous networks.](#) In: **2014 2nd IEEE International Symposium on Telecommunication Technologies (ISTT2014)**
- 2014 [Analysis of the synthetic storm technique using rain height models to predict rain attenuation in tropical regions.](#) In: **5th International Conference on Computer and Communication Engineering (ICCCE 2014)**
- 2014 [Assessment of ITU-R predictions for ku-band rain attenuation in Malaysia.](#) In: **2014 IEEE International Symposium on Telecommunication Technologies (ISTT)**
- 2014 [An efficient modulation technique to mitigate nonlinearities in optical OFDM.](#) In: **Australasian Telecommunication Networks and Applications Conference (ATNAC), 2014**
- 2014 [BER performance of OFDM system with the effect of error control code.](#) In: **Australasian Telecommunication Networks and Applications Conference (ATNAC), 2014**
- 2013 [Rain analysis on Ka-Band for terrestrial link point to point communication in Malaysia.](#) In: **2013 IEEE 11th Malaysia International Conference on Communication (MICC 2013)**
- 2013 [Performance analysis of two component carrier selection algorithms in the downlink LTE-A.](#) In: **2013 IEEE 11th Malaysia International Conference on Communications**
- 2013 [Inter-cell interference coordination in heterogeneous network: a qualitative and quantitative analysis.](#) In: **11th Malaysia International Conference on Communications**
- 2013 [Impulsive noise mitigation in Haar DWT based OFDM systems.](#) In: **2013 IEEE 11th Malaysia International Conference on Communications**
- 2013 [Inter-cell interference coordination in LTE-A HetNets: a survey on self organizing approaches.](#) In: **2013 International Conference on Computing, Electrical and Electronics Engineering (ICCEEE)**
- 2013 [Lightweight inter-cluster synchronization scheme for femtocell network.](#) In: **2013 International Conference on Computing, Electrical and Electronics Engineering (ICCEEE)**
- 2012 [Pre-FFT and post-FFT adaptive antenna array for OFDM transmission over cognitive radio network.](#) In: **International Conference on Computer and Communication Engineering, ICCCE 2012**
- 2012 [Analyses of rain fade countermeasure technique time diversity at 26 GHz.](#) In: **2012 IEEE Asia-Pacific Conference Antennas and Propagation (APCAP)**
- 2012 [Performance evaluation of uncoordinated beamforming over cognitive radio network.](#) In: **2012 International Symposium on Telecommunication Technologies (ISTT 2012)**
- 2012 [A study of packet scheduling with mobile cellular channel impairments.](#) In: **International Conference on Computer and Communication Engineering, ICCCE 2012**

- 2012 [A study of packet scheduling with mobile cellular channel impairments.](#) In: **International Conference on Computer and Communication Engineering (ICCCE 2012)**
- 2012 [An investigation of packet scheduling algorithms for long term evolution-advanced.](#) In: **2012 IEEE Conference on Open Systems (ICOS)**
- 2011 [Effects of Impulsive Noise on Fourier Based OFDM and Wavelet Based OFDM.](#) In: **ICACSIS 2011**
- 2011 [Impulsive noise effects on DWT-OFDM versus FFT-OFDM.](#) In: **The 17th Asia Pacific Conference on Communications**
- 2010 [Rain fade characteristics analyses for V-band link in tropical region.](#) In: **2010 International Conference on Microwave and Millimeter Wave Technology (ICMMT)**
- 2010 [Design and optimization of linear array antenna based on the analysis of direction of arrival \(DOA\) estimation and beamforming algorithms.](#) In: **International Conference on Computer and Communication Engineering (ICCCE 2010)**
- 2010 [An optimal circular 16-QAM modulation technique for wavelet and fourier based OFDM.](#) In: **International Conference on Computer and Communication Engineering (ICCCE 2010)**
- 2008 [An interference cancellation algorithm for fourier-based and wavelet-based OFDM systems.](#) In: **International Conference on Advanced Technologies for Communications**
- 2007 [Performance of fourier-based and wavelet-based OFDM for DVB-T systems.](#) In: **Australasian Telecommunication Networks and Applications Conference (ATNAC)**

**Book  
Book Section**

- 2015 [A fault-tolerant multi-path multi-channel routing protocol for Cognitive Radio Ad Hoc Networks.](#) In: **Information science and applications** Springer Berlin Heidelberg . ISBN 978-3-662-46577-6 , pp.43-50
- 2015 [The use of convolutional code for narrowband interference suppression in OFDM-DVB-T system.](#) In: **Advanced Computer and Communication Engineering Technology** Springer . ISBN 978-3-319-07673-7 (P) 978-3-319-07674-4 (O) , pp.183-194
- 2015 [A robust on-demand routing protocol for cognitive radio ad hoc networks.](#) In: **Mobile and wireless technology 2015** Springer International Publishing . ISBN 978-3-662-47668-0 , pp.33-43
- 2011 [Wireless IP camera based on motion detection surveillance system.](#) In: **Topics in coding, cryptography and information security** IIUM Press . ISBN 9789674181697 , pp.217-222
- 2011 [Design of mobile phone jammer.](#) In: **Topics in coding, cryptography and information security** IIUM Press . ISBN 9789674181697 , pp.223-229
- 2011 [Cognitive radio vs intelligent antenna.](#) In: **Interfacing electronic for measurement, signal processing and wireless communication** IIUM Press . ISBN 9789674181710 , pp.123-133

- 2011** [Simulation of models and BER performances of DWT-OFDM versus FFT-OFDM](#). In: **Discrete wavelet transforms: algorithms and applications** InTech . ISBN 9789533074825 , pp.57-66
- 2011** [Cognitive radio vs intelligent antenna](#) . In: **Principle of Transducer devices and components** IIUM Press . ISBN 978-967-418-172-7 , pp.327-339
- 2011** [Low voltage powerline analysis and simulation results](#). In: **Electrical Automation Systems Towards Intelligent and Energy Efficiency Applications** IIUM Press . ISBN 9789674181703 , pp.125-132
- 2011** [Overview of smart antenna systems](#). In: **Antennas and propagation: Modeling, simulation & measurements** IIUM Press . ISBN 9789674181383 , pp.89-96
- 2011** [Direction of arrival algorithms for array antenna design](#). In: **Antennas and propagation: Modeling, simulation & measurements** IIUM Press . ISBN 9789674181383 , pp.97-107
- 2011** [Analysis of beamforming algorithms](#). In: **Antennas and propagation: Modeling, simulation & measurements** IIUM Press . ISBN 9789674181383 , pp.108-120
- 2011** [Design of linear array antenna for smart antenna application](#). In: **Antennas and propagation: Modeling, simulation & measurements** IIUM Press . ISBN 9789674181383 , pp.121-136