



Scientific Curriculum



Full Name	Sadik Kamel Gharghan
College / Department	Electrical Engineering Technical College/Department of Medical Instrumentation Techniques Engineering
Official Email	sadiq_gharghan@eetc.mtu.edu.iq or sadiq_gharghan@yahoo.com
Scientific title	Professor
Interested area	Energy-efficient techniques of WSNs, biomedical sensors, microcontroller applications, WSN localization based on AI techniques and optimization algorithms, indoor and outdoor pathloss modeling, wireless power transfer, remote sensing, soft computing algorithms

Certificate	PhD
General Specialty	Electrical engineering
Accurate Specialty	Communication engineering
The universities from which you graduated and year of graduation	<p>1- Doctor of Philosophy (Ph.D.) in Electrical and Electronic Engineering/Communication, Universiti Kebangsaan Malaysia (UKM), Malaysia, June 2016.</p> <p>2- Master of Science (MSc.) in Electrical Engineering/Communication, University of Technology, Baghdad –Iraq, June 2005.</p> <p>3- Bachelor of Science (B.Sc.) in Electronic and Communication Engineering, University of Technology, Baghdad –Iraq, June 1990.</p>

Patent and there issuers	<p>Energy Efficient Wireless Communication Methods and Systems to Monitor Biomechanical Parameters of Vehicle.</p> <p>http://www.myipo.gov.my/en/search-patent/ Malaysia/ under publication</p>
International conferences (titles of the conference, organizer and research titles)	<p>1- Gharghan, S. K., R. Nordin & M. Ismail 2015. Statistical validation of performance of ZigBee-based wireless sensor network for track cycling. <i>International Conference on Smart Sensors and Application (ICSSA)</i>, Kuala Lumpur, Malaysia, 26-28 May 2015. pp. 44-49.</p> <p>2- Gharghan, S. K., R. Nordin & M. Ismail 2014. Design Consideration of an Energy Efficient Wireless Sensor Network for High Performance Track Cycling. <i>IEEE International Conference on Information Science and Applications (ICISA)</i>, 6-9 May 2014, Seoul, South Korea. pp. 1-5.</p> <p>3- Gharghan, S. K., R. Nordin & M. Ismail 2014. Arduino-based Wireless Sensor Network for Track Cycling Performance Monitoring. <i>Conference on Movement, Health & Exercise (MoHE)</i> MoHE065, Kuantan, Pahang, Malaysia, 1-3 September 2014. pp. 48.</p>



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	<p>4- Gharghan, S. K., R. Nordin & M. Ismail 2013. Empirical investigation of pedal power calculation techniques for track cycling performance measurement. <i>IEEE Student Conference on Research and Development (SCORed)</i>, Putrajaya, Malaysia, 16-17 Dec. 2013. pp. 48-53.</p>
<p>Titles of published researches, publisher and publishing link</p>	<p>5- Jawad, H.; Nordin, R.; Gharghan, S.K.; Jawad, A.; Ismail, M.; Abu-AlShaeer, M. Power reduction with sleep/wake on redundant data (SWORD) in a wireless sensor network for energy-efficient precision agriculture. <i>Sensors</i> 2018, <i>18</i>, 3450. https://www.mdpi.com/1424-8220/18/10/3450</p> <p>6- Jawad, A.; Nordin, R.; Gharghan, S.K.; Jawad, H.; Ismail, M.; Abu-AlShaeer, M. Single-tube and multi-turn coil near-field wireless power transfer for low-power home appliances. <i>Energies</i> 2018, <i>11</i>, 1969. https://www.mdpi.com/1996-1073/11/8/1969</p> <p>7- Zubaidi, S.L.; Gharghan, S.K.; Dooley, J.; Alkhaddar, R.M.; Abdellatif, M. Short-term urban water demand prediction considering weather factors. <i>Water Resources Management</i> 2018, 1-16. https://link.springer.com/article/10.1007/s11269-018-2061-y</p> <p>8- Gharghan, S.K.; Nordin, R.; Jawad, A.M.; Jawad, H.M.; Ismail, M. Adaptive neural fuzzy inference system for accurate localization of wireless sensor network in outdoor and indoor cycling applications. <i>IEEE Access</i> 2018, <i>6</i>, 38475-38489. https://ieeexplore.ieee.org/abstract/document/8409281</p> <p>9- Fakhri, A.B.; Gharghan, S.K.; Mohammed, S.L. Path-loss modelling for WSN deployment in indoor and outdoor environments for medical applications. <i>International Journal of Engineering & Technology</i> 2018, <i>7</i>(3), 1666-1671. https://www.sciencepubco.com/index.php/ijet/article/view/15409</p> <p>10- Jawad, A.M.; Nordin, R.; Gharghan, S.K.; Jawad, H.M.; Ismail, M. Opportunities and challenges for near-field wireless power transfer: A review. <i>Energies</i> 2017, <i>10</i>, 1022. http://www.mdpi.com/1996-1073/10/7/1022</p> <p>11- Gharghan, S.K. Energy-efficient remote temperature monitoring system for patients based on GSM modem and microcontroller. <i>Journal of Communications</i> 2017, <i>12</i>, 433-442. http://www.jocm.us/index.php?m=content&c=index&a=show&catid=180&id=1130</p> <p>12- Gharghan, S.K.; Nordin, R.; Ismail, M. Development and validation of a track bicycle instrument for torque measurement using the zigbee wireless</p>



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	<p>sensor network. International Journal on Smart Sensing and Intelligent Systems 2017, 10, 124-145. http://s2is.org/Issues/v10/n1/</p> <p>13- Jawad, H.M.; Nordin, R.; Gharghan, S.K.; Jawad, A.M.; Ismail, M. Energy-efficient wireless sensor networks for precision agriculture: A review. <i>Sensors</i> 2017, 17, 1781. http://www.mdpi.com/1424-8220/17/8/1781/htm</p> <p>14- Gharghan, S.K.; Nordin, R.; Nor Fadzilah Abdullah; Kelechi Anabi Connected bicycles: Potential research opportunities in wireless sensor network. <i>In the Internet of Things: Foundation for Smart Cities, eHealth, and Ubiquitous Computing</i>. CRC Press: 2017, 273–294. http://www.crcnetbase.com/doi/pdfplus/10.1201/9781315156026-16</p> <p>15- Gharghan, S. K., R. Nordin, M. Ismail & J. Abd Ali 2016. Accurate Wireless Sensor Localization Technique based on Hybrid PSO-ANN Algorithm for Indoor and Outdoor Track Cycling. <i>IEEE Sensors Journal</i> 16(2): 529 - 541. http://ieeexplore.ieee.org/abstract/document/7283547/</p> <p>16- Gharghan, S. K., R. Nordin & M. Ismail 2016. A Wireless Sensor Network with Soft Computing Localization Techniques for Track Cycling Application. <i>Sensors</i> 16(8):1-23. http://www.mdpi.com/1424-8220/16/8/1043/html</p> <p>17- Gharghan, S. K., R. Nordin & M. Ismail 2016. Energy Efficiency of Ultra-Low-Power Bicycle Wireless Sensor Networks Based on a Combination of Power Reduction Techniques. <i>Journal of Sensors</i> 2016: 21 Pages. https://www.hindawi.com/journals/js/2016/7314207/abs/</p> <p>18- Gharghan, S. K., R. Nordin & M. Ismail 2015. An Ultra-Low Power Wireless Sensor Network for Bicycle Torque Performance Measurements. <i>Sensors</i> 15(2015): 11741-11768. http://www.mdpi.com/1424-8220/15/5/11741/htm</p> <p>19- Gharghan, S. K., R. Nordin & M. Ismail 2014. Energy-Efficient ZigBee-Based Wireless Sensor Network for Track Bicycle Performance Monitoring. <i>Sensors</i> 14(8): 15573-15592. http://www.mdpi.com/1424-8220/14/8/15573/htm</p>
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	<p>20- Gharghan, S. K., R. Nordin & M. Ismail 2014. A Survey on Energy Efficient Wireless Sensor Networks for Bicycle Performance Monitoring Application. <i>Journal of Sensors</i> 2014(2014): 16. https://www.hindawi.com/journals/js/2014/153604/abs/</p> <p>21- Gharghan, S. K., A. A. E. Noori & S. L. Mohammed 2013. Determination and Detection of Blind Zones in Vehicles Based on Microcontroller. <i>Journal of Engineering and Development</i> 17(1): 60-72. https://www.iasj.net/iasj?func=search&template=&uiLanguage=ar&query=Determination+and+Detection+of+Blind+Zones+in+Vehicles+Based+on+Microcontroller&x=0&y=0</p> <p>22- Gharghan, S. K. 2013. Detection of Failures in Alternator of Diesel Generator Based on the Microcontroller Technique. <i>Engineering and Technology Journal</i> 31(3 Part (A) Engineering): 525-540. https://www.iasj.net/iasj?func=search&template=&uiLanguage=ar&query=Detection+of+Failures+in+Alternator+of+Diesel+Generator+Based+on+the+Microcontroller+Technique&x=0&y=0</p> <p>23- Gharghan, S. K., A. A. E. Noori & S. L. Mohammed 2013. Performance of Direct Sequence Spread Spectrum System (DSSSS) in Presence of Single and Multi Tone Jamming. <i>Engineering and Technology Journal</i> 31(4 Part (A) Engineering): 677-691. https://www.iasj.net/iasj?func=search&template=&uiLanguage=ar&query=Performance+of+Direct+Sequence+Spread+Spectrum+System+%28DSSSS%29+in+Presence+of+Single+and+Multi+Tone&x=0&y=0</p> <p>24- Gharghan, S. K., A. A. E. Noori & S. L. Mohammed 2013. Performance Comparison of Two Codes in Direct Sequence Spread Spectrum (DSSS) System under the Effect of Jamming. <i>Journal of Engineering and Development</i> 17(5): 92-106. https://www.iasj.net/iasj?func=search&template=&uiLanguage=ar&query=Performance+Comparison+of+Two+Codes+in+Direct+Sequence+Spread+Spectrum+%28DSSS%29+System+under+the+Effect+of+Jamming&x=0&y=0</p> <p>25- Noori, A. A. E., S. K. Gharghan and M. F. Mashael 2013. Implementation of Signal Parameters Estimation via Rotational Invariance Technique by Using Graphic User Interface. <i>Al-Ma'mon College Journal</i> (22): 283-297.</p>
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	<p>https://www.iasj.net/iasj?func=search&template=&uiLanguage=ar&query=Implementation+of+Signal+Parameters+Estimation+via+Rotational+Invariance+Technique+by+Using+Graphic+User+Interface&x=0&y=0</p> <p>26- Ali Q. M., S. K. Gharghan, L. H. Hameed 2012. Design and Implementation a Suction Unit Device Based on Microcontroller Technique. <i>AL-TAQANI</i> 25(5):152-161.</p> <p>27- Gharghan, S. K. 2011. Performance Comparison of Various Short Codes in Direct Sequence Spread Spectrum (DS/SS) System. <i>AL-TAQANI</i> 24(8): E154-E167.</p> <p>https://www.iasj.net/iasj?func=search&template=&uiLanguage=ar&query=Performance+Comparison+of+Various+Short+Codes+in+Direct+Sequence+Spread+Spectrum+%28DS%2FSS%29+System&x=0&y=0</p> <p>28- Ali Abdul-Elah, N., S. K. Gharghan, and W. Ali Jaber Abdul 2011. Study of Signal Estimation Parameters via Rotational Invariance Technique by Using Ants Colony Optimization Algorithm. <i>Engineering and Technology Journal</i> 29(4): 736-749.</p> <p>https://www.iasj.net/iasj?func=search&template=&uiLanguage=ar&query=Study+of+Signal+Estimation+Parameters+via+Rotational+Invariance+Technique+by+Using+Ants+Colony+Optimization+Algorithm&x=0&y=0</p> <p>29- Gharghan, S. K. 2011. Multiuser on DS-CDMA in Presence of Three-Path Fading Channel. <i>AL-TAQANI</i> 24(2): 189-201.</p> <p>https://www.iasj.net/iasj?func=search&template=&uiLanguage=ar&query=Multiuser+on+DS-CDMA+in+Presence+of+Three-Path+Fading+Channel&x=0&y=0</p> <p>30- Gharghan, S. K. and A. Talib Mahmood 2011. Performance of Asymmetrical Digital Subscriber Line (ADSL) System in Presence of Impulse Noise. <i>AL-TAQANI</i> 24(2): 120-132.</p> <p>https://www.iasj.net/iasj?func=search&template=&uiLanguage=ar&query=Performance+of+Asymmetrical+Digital+Subscriber+Line+%28ADSL%29+System+in+Presence+of+Impulse+Noise&x=0&y=0</p> <p>31- Gharghan, S. K., S. L. Mohammed and M. Q. Abbas 2011. Design and Implementation of Protection Unit for the Diesel Generator Engines based on the Microcontroller. <i>12th Scientific Conference of Foundation of Technical Education, engineering research Vol.1</i>, Baghdad, 28-29 March 2011, pp. 210-218.</p>
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	<p>32- Abdul-Wahab, A. Talib Mahmood and S. K. Gharghan 2009. Design and Simulation of 9-11GHz High Power Amplifier Based on Microstrip and Power Combining Techniques. <i>Journal of Engineering and Development</i> 13(1): 33-46.</p> <p>https://www.iasj.net/iasj?func=search&template=&uiLanguage=ar&query=Design+and+Simulation+of+911GHz+High+Power+Amplifier+Based+on+Microstrip+and+Power+Combining+Techniques&x=0&y=0</p> <p>33- Gharghan, S. K. 2009. Design and Implementation of Automatic Voltage Regulator for STC-Series Synchronous Brushes Generators. <i>11th Scientific Conference of Foundation of Technical Education/ Technical Collage, engineering research Vol.2</i>, Baghdad, 23-24 March 2009, pp.533-543.</p> <p>34- Thamer M. J. and S. K. Gharghan 2009. Design and Simulation PN synchronization of base band Direct Sequence Spread Spectrum (DS/SS) system. <i>11th Scientific Conference of Foundation of Technical Education/ Technical Collage, engineering research Vol.2</i>, Baghdad, 23-24 March 2009, pp. 519-532.</p> <p>35- Gharghan, S. K. and S. L. Mohammed 2009. Multi-path Effect on Direct Sequence – Code Division Multiple Accesses (DS-CDMA). <i>3rd Scientific Conference of University of Wasit, Wasit-Iraq</i>, 9-10 December, pp. 541-551.</p>
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Number of teaching/training courses and titles of each one	<ol style="list-style-type: none"> 1- Design of network based on Opnet 2- Improving the capacities and competencies of Iraqi TVET leaders, teachers, and trainers 3- Qualification course in teaching methods 4- A training course in the use of computers 5- Training course in English language (medium level) 6- Mobile communication technician and engineering-Egypt 7- Principle of preparing and writing scientific research 8- Advance Research Methodology Course-Malaysia 9- Short course on MATLAB for Communications-Malaysia
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The materials you teach/taught in primary and postgraduate studies (year, place)	1-Measurements & medical Transducers (B. Tech.)/2006-2010/ Electrical Engineering Technical College 2-Medical Communication system (B. Tech.) /2004-2013/ Electrical Engineering Technical College 3-Advance Logic Design (B. Tech.)/2011-2013/ 2017-2018/Electrical Engineering Technical College 4- Computer interface (postgraduate/diploma-practical)/2010/ Electrical Engineering Technical College 5-Computer interface (postgraduate/M. Tech.)/2017/ Electrical Engineering Technical College 6-Advanced medical communication (postgraduate/ M. Tech.)/2017/ Electrical Engineering Technical College
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Projects supervised for postgraduate studies (name of project, name of student, year, name of program)	1- Energy-Efficient based Wireless Sensor Networks and Drone for Agricultural Applications	Haider Mahmood Jawad PhD student- continuous 2016
	2- Wireless Power Transfers based on Near-Field for Wireless Sensor Network and Portable Device Applications.	Aqeel Mahmood Jawad PhD student- continuous 2016
	3- Energy – efficient wireless sensor network for patient's vital signs monitoring system.	Ahmed Bashar M. Tech. Complete study (waiting Viva) 2017
	4- Design and implementation of wireless power transfer for medical implantable and worn devices	Mustafa Adil M. Tech. student-continuous 2017
	5- First Aid Based on Unmanned Aerial Vehicle and Wireless Body Area Sensor Network for Persons during Outdoor Daily Activities	Saif Saad M. Tech. student-continuous 2018

Titles and discussions of postgraduate studies (name of student, name of program, place, year)	1- Implementation of ubiquitous sensor network for various applications اسم الطالبة: زهراء ابراهيم صابر / الكلية التقنية الهندسية الكهربائية ٢٠١٦
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	<p>2- Echo Cancellation in Telecommunication system Using Variable Step Size Dynamic Selection Affine Projection Algorithm</p> <p>اسم الطالبة: سارة محمد مطر / الجامعة التكنولوجية ٢٠١٧</p>
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