Details of Patents and Publications by Faculty

LIST of PUBLICATIONS 2015-16, 2016-17, 2018-19

Patents Granted to Dr. T.A. Shahul Hameed

Title of The Invention: Organic Light Emitting Structure Using A Novel Elastomer Composite Transparent Conducting Anode Replacing Transparent Conducting Oxides (Tcos):(Indian Patent: Application No.18/CHE/2011 A,INDIA Date of filing of Application :05/01/2011 (43) Publication Date : 14/01/2011) Granted on 7/8/2018.

FACULTY PUBLICATION LIST 2015-16		
SL NO	**Faculty**	**Publications**
1	Dr.K.Gopakumar	Gopakumar K. et.al., "Speech Encryption Based on Four-Dimensional Hyper chaotic System", International Conference on Data Mining & Advanced Computing (SAPIENCE) March 2016.
		Gopakumar K. et.al, "Non-Linear Analysis of Epileptic EEG", International Conference on Data Mining & Advanced Computing (SAPIENCE) March 2016.
		Gopakumar K. et.al., A Real Time Decision Support System using Head Nod and Shake, IEEE International Conference on Circuit, Power & Computing Technologies, March 2016.
2	Dr.Sheeba O.	Sheeba .O. et al., Performance Analysis of Patch Antenna using Slot Shaped Metasurface, 3rd International Conference on Communications, Electrical, Electronics & Computer Engineering (ICEEC 2015) ,Cochin, India
		Sheeba O and Ajitha SS, Detection of diabetic retinopathy from Fundus Camera images, International Journal of Engineering Trends and Technology, Vol 24, No.4 ; June 2015, ISSN: 2231-5381
		Sheeba .O. et.al., Performance Analysis of Polarization Reconfigurable Antenna using Metasurface,3rd International conference on Control, Communication & Computing, November 2015
3.	Dr. T. A. Shahul Hameed	Nabeel P.S, T.E Ayoob Khan, Dr. T. A. Shahul Hameed, Design of Low Power High Speed Flash ADC in 45nm CMOS, International Journal of VLSI System Design & Communication System, Vol 03, Isssue.05, July2015, ISSN:2322-0929
		Anju C.,Nisha Kuruvila, Ayoob Khan T E and Shahul Hameed T.A. 'Performance Analysis of Wavy FinFET and Optimization for Leakage Reduction' IEEE International Conference on Nano electronics and Information Systems, May 2016 (DOI 10.1109/iNIS.2016.43).

4	Prof.Sreekumari Amma P	SreekumariAmma P et al., Compact UWB MIMO antenna with WiMAX and WLAN rejection; 2015 IEEE MTT-S International microwave and RF Conference (ImaRC).Date:10-12 Dec 2015
		SreekumariAmma P et al., Compact Dual band Microstrip patch antenna for Wi Fi and WiMAX applications; ICCC NOV 2015
5	Prof.Abid Hussain M.	Abid Hussain et al., Performance Analysis of RoF Architectures for Integrated Broad band signals transmission 3rd International Conference on Communications, Electrical, Electronics and Computer Engineering, Cochin (ICEEC 2015) on 24-08-2015.
		Abid Hussain et al., Medical decision support system using Fuzzy cognitive mapping and fuzzy inference system, International Research journal on Engineering & Technology (IRJET), Volume: 02 Issue: 03 June-2015 pp.1881-1888 e-ISSN: 2395-0056
6	Prof.Nishanth N	Nishanth et.al. A Novel SYN Flood Detection Mechanism for Wireless Network", International Journal of Advanced Trends in Computer Science and Engineering (IJATCSE) (Special Issue), Vol. 4, Pages : 22-27(2015)
		Nishanth et.al. "Secure Routing in Mobile Ad-hoc Networks Using Evidence Theory" International Journal of Advanced Trends in Computer Science and Engineering (IJATCSE) (Special Issue), Vol. 4, Pages : 22-27(2015).
7	Prof.Ajitha S S	Sheeba O and Ajitha SS, Detection of diabetic retinopathy from Fundus Camera images, International Journal of Engineering Trends and Technology, Vol 24, No.4 ; June 2015, ISSN: 2231-5381

FACULTY PUBLICATION LIST 2016-17		
SL NO	Faculty	Publications
1	Dr.Unni C	Unni C et al.,"A High Precision Adaptive Equalisation Procedure For Digital Coherent Optical QPSK Receivers ", International conference on Signal and speech processing (ICSSP) 2016 held on Sep 2016 in Kollam, India. ISBN-13:978-93-5260-351-0,ISBN-10:93-5260-351-6.
		N Abraham, Ankit P, C Unni ,Modeling and simulation studies of 22nm multigate bulk FinFET structures with different dielectric materials , International journal of electronics engineering research, 2017, Vol 9, 255-266.
		N Abraham ,C Unni ,Nano structured ZnO with bio capping for nano fluid and natural dye based solar cell applications, Journal Of Material Science: Materials in Electronics, Springer, ISSN 09574522, 2017
2	Dr. K. Gopakumar	Jisu Elsa Jacob, VijithVijayakumar, Sreelatha, Thomas Iype, K. Gopakumar& Doris George, Diagnosis of epilepsy from interictal EEGs

		based on chaotic and wavelet Transformation, Analog Integrated Circuits and Signal Processing, Springer, 89(1), pp 131-138, 2016.
		V. S. Vijith ; Jisu Elsa Jacob ; Thomas Iype ; K Gopakumar ; Doris George Yohannan, Epileptic seizure detection using nonlinear analysis of EEG, Proceedings of IEEE International Conference on Inventive Computation Technologies (ICICT), DOI: 10.1109/ INVENTIVE .2016.7830193, pp. 1-6, Aug 2016.
		Athira Vijay, K. Gopakumar, A Locally Optimal Neyman –Pearson Detector Based Wide Band Spectrum Sensing Method For OFDM Based Cognitive Radio In Weakly Correlated Non Guassian Noise, Proceedings by McGraw Hill for the International Conference on Signal and Speech Processing, Sept 2016.
		Farsana F J, K.Gopakumar, A Novel Approach for Speech Encryption: Zaslavsky Map as Pseudo Random Number Generator, Procedia Computer Science, 93(2016), 816-823, DOI: 10.1016/ j.procs.2016. 07.302, Elsevier International Conference ICACC, Sept 2016.
		Ameena B, K. Gopakumar, Wideband spectrum sensing using Multi Stage Weiner Filter, Proceedings of IEEE Annual Conference on Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON), DOI: 10.1109/UEMCON.2016.7777871, Oct 2016.
		F. J. Farsana ; K. Gopakumar, Private key encryption of speech signal based on three dimensional chaotic map, Proceedings of IEEE International Conference on Communication and Signal Processing (ICCSP), DOI: 10.1109/ICCSP.2017.8286804, April 2017.
3	Prof.HeeraKarunaka ran	HeeraKarunakaran et al.," Symmetric 40gbps Next Generation OFDM WDM PON System ", International conference on Signal and speech processing (ICSSP) 2016-held on Sep in Kollam, India. ISBN-13:978-93-5260-351-0, ISBN-10:93-5260-351-6.
4	Dr.Sheeba O.	Mahesh Jayan, Sheeba O. A Novel Multiparameter Reconfigurable Pixel Antenna. International conference on Signal and Speech Processing (ICSSP'16) Sept 2016, Kollam. ISBN-13:978-93-5260-351-0,ISBN-10:93-5260-351-6.
		NissaSurling S.N.,AnjanaLakshmi,Dr.Sheeba O.(2016) Diagnosis of Epieptic Seizure Disorders by EEG Analysis, International conference on Signal and Speech Processing (ICSSP'16)Sept 2016, Kollam. ISBN-13:978-93-5260-351-0,ISBN-10:93-5260-351-6.
		Ullas R, Dr.Sheeba O. Performance Analysis of MultiBand Fractal Antennas. International conference on Signal and Speech Processing (ICSSP'16) Sept 2016, Kollam, ISBN-13:978-93-5260-351-0,ISBN-10:93-5260-351-6.
		K.G.Anjana Lakshmi, S.N.NissaSurling,Dr.Sheeba O. (2017) A novel approach for the removal of artifacts in EEG signals, International

		conference on Wireless Communication, Signal processing and Networking (WiSPNET),.IEEE Xplore (2018) INSPEC Accession No.: 17564151,DOI: 10.1109/WiSPNET.2017.8300232
5	Dr.Shahul Hameed T.A	Deepthi V K, Ayoob Khan T E, Shahul Hameed T A 'Device Variability in Nano Compound FinFETs', International Conference on Computing, Communication and Signal Processing (ICCCSP-2016), pp 397-402, July 2016.
		T. E. Ayoob Khan, Geethu Maria Abraham, Dr.Shahul Hameed T A, 'Effect of RDF in Trapezoidal Nano FinFETs' IEEE International Conference on Next Generation Intelligent Systems (ICNGIS-2016), September 2016.
		Sangeetha G S, T E Ayoob Khan, Dr.Shahul Hameed T A 'SiGe/Si Heterojunction TFET for Analog Signal Applications', IEEE International Conference on Next Generation Intelligent Systems (ICNGIS-2016), September 2016.
		Aparna M., Pranav Mohan, Devi P., Nitto TomyShaji N M and Shahul Hameed T.A."A Precursor to the hardware Implementation of Traffic Sign Recognition Using Support Vector Machine" International Conference on Signal and Speech Processing (ICSSP 2016), Sept 2016.
		Thasneem Salam, Ayub Khan, Nisha Kurivila and Shahul Hameed, 'A comparative performance analysis of CAMs using different model files in Spice', IEEE XploreDoi: 10.1109/ICNETS2.2017.8067927 (23-25 March 2017).
6	Dr. J. DhoulathBeegum	J. Dhoulath et.al. "Testing of Dhoulath's method to speed up diagnose by separating up crying sound of a baby from normal heartbeats 'an innovative time saving technique", January 2016, Science Direct, Perspectives in Science, Volume 8, Elsevier, September 2016, 10.1016/j.pisc.2016.01.012
		J Dhoulathet.al."Separation of power-line noise from tinnitus sound, to aid medical diagnoses", January 2016, Science Direct, Perspectives in Science, Volume8, Elsevier, September 2016. https://doi.org/10.1016/j.pisc.2016.01.002 2
		J .DhoulathBeegum ,Dr.Chithraprasad D , "Dhoulath's method" – An investigative probe into mortality rate to aid diagnoses, Science Direct , Elsevier, 2016.
7	Prof.Abid Hussain M.	Abid Hussain. et al., "Algorithm Of STBC Identification For MIMO-OFDM Using Second-Order Signal Cyclostationarity", International conference on Signal and speech processing (ICSSP)2016-held on Sep in Kollam, India. ISBN-13:978-93-5260-351-0,ISBN-10:93-5260-351-6.
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		on Signal and speech processing (ICSSP)2016-held on Sep in Kollam, India. ISBN-13:978-93-5260-351-0,ISBN-10:93-5260-351-6
8	Prof.Reshna S	Reshna S, International Conference on Wireless Communications, Signal Processing and Networking (WiSPNETDOI**:**10.1109/ WiSPNET.2017.8299784) technically sponsored by IEEE and IEEE ComSoc from March 22 to 24, 2017 at SSN College of Engineering, Chennai, "Spotting and Recognition of Hand Gesture for Indian Sign Language Recognition System with Skin Segmentation and SVM".
9	Prof.Nishanth N.	Nishant N et al.,"Detection of Dos Attack in Mobile Ad-Hoc Networks with Trust Management and Multi-Relay Selection", International conference on Signal and speech processing (ICSSP) 2016-held on Sep in Kollam, India.ISBN-13:978-93-5260-351-0, ISBN-10:93-5260-351-6.
		Nishanth N et al.,"Detection of Dos Attacks in MANET and Privacy Preserving by Clustering", International conference on Signal and speech processing (ICSSP) 2016-held on Sep in Kollam, India. ISBN-13:978-93-5260-351-0, ISBN-10:93-5260-351-6.
10	Prof.Sajeena A.	Sajeena A. et.al., Object-oriented shadow detection and removal from high-resolution urban RSI, in International conference on Speech and Signal Processing. ICSSP'16, held from 8-10th September 2016.
11	Dr.Anzar S M	Anzar S.M. et.al. ``Robust partial fingerprint recognition using wavelet SIFT descriptors", International Journal of Pattern Analysis and Applications @ Springer Journal, May 2017, Pages 1-17, Springer London, DOI 10.1007/s10044-017-0615-x
12	Prof.Kartik S Prakash	Kartik S Prakash, Sheela Tiwari, "Particle Swarm Optimization of Fuzzy Logic Based Approach for Dynamic Spectrum Access in Cognitive Radio Network", International Academic Conference on Electrical & Electronics Engineering (IACEEE), Bangalore, June 2016
		Kartik S Prakash, Sheela Tiwari, "Ant Colony Optimization of Fuzzy Logic Based Approach for Dynamic Spectrum Access in Cognitive Radio Network", International Conference on Future Technology in Engineering (ICFTE 2016), October 2016

FACULTY PUBLICATION LIST 2017-18		
SL NO	Faculty	Publications
1	Dr.Gopakumar K.	Jacob Jisu Elsa, K. Gopakumar, Ajith Cherian, Thomas Iype. "Diagnosis of encephalopathy based on energies of EEG sub bands using Discrete

		Wavelet Transform and Support Vector Machine", Neurology Research International, Article ID 1613456, Hindawi, 2018.
		Jacob, Jisu Elsa, Ajith Cherian, K Gopakumar, Thomas Iype, Doris George Yohannan and Divya K P. "Can chaotic analysis of electroencephalogram aid the diagnosis of encephalopathy?" Neurology research international Article ID 81928202018, Hindawi, 2018.
		AmrithaVijayan ; Bipil Mary Mathai ; KarthikValsalan ; RiyankaRaji Johnson ; Lani Rachel Mathew ; K. Gopakumar, Throat microphone speech recognition using mfcc, IEEE International Conference on Networks & Advances in Computational Technologies (NetACT), DOI: 10.1109/NETACT.2017.8076802, July 2017.
		R. P. Haripriya ; Lani Rachel Mathew ; K. Gopakumar, Performance evaluation of dwt based speech enhancement, IEEE International Conference on Networks & Advances in Computational Technologies (NetACT), DOI: 10.1109/NETACT.2017.8076812, July 2017.
		Reshma M Nair, Dr.Gopakumar K, Muhammed Roshin, "Implementation and testing of TCP protocol for Autosar TCP\IP Stack version 4.2" 2nd International Conference on Inventive Computation Technologies(ICICT 2017) IEEE Xplore Complaint-Part Number CFP17K52-ART,ISBN:978-1-5090-6697-1
		Feba K Achankunju, Dr.Gopakumar K, "Implementation and Testing of UDP and ICMP in AUTOSAR Version 4.2.2" 2nd International Conference on Inventive Computation Technologies (ICICT 2017) IEEE Xplore Complaint-Part Number CFP17K52-ART,ISBN: 978-1-5090-6697-1.
2	Dr.Shahul Hameed T.A.	SincyReji, Ayoob Khan T.E. and Shahul Hameed T.A., 'Stack Gate technology based FinFET to reduce leakage and corner effect' International Conference on Innovations in Information Embedded and Communication Systems, 17-18 March 2017.
		Anju C., NishaKuruvila, Ayoob Khan T.E. and Shahul Hameed 'Structural Optimization of Wavy FinFET for leakage reduction and performance enhancement', Advances in Science, Technology and Engineering Systems Journal Vol 2, No.3, 913-917 (30th June 2017).
		Sajin C.S., Ramrosh M.R., and Shahul Hameed T.A. `Design and simulation of current feedback operational amplifier in 180nm and 90nm cmos processes', ICTACT Journal on Microelectronics, July 2017, Volume: 03, Issue: 02 DOI: 10.21917/ijme.2017.0069.
		Arya V, Ayoob Khan T E, Dr.Shahul Hameed T A, "Si-Based Synaptic Devices for Spiking Neural Networks", *Kerala Technological Congress (KETCON-2018 Human Computer Interface),*pp 19-21, February 2018.
		Ayoob Khan T E, Shahna M, Shahul Hameed T A, "Performance Comparison of JL FinFETs with Variability in Fin Structure and Shape", International Journal of Engineering and Advanced Technology (IJEAT)

		ISSN: 2249 – 8958, Volume-7 Issue-4, April 2018.
		Design and simulation of current feedback operational amplifier in 180nm and 90nm CMOS processes,) ICTACT journal on microelectronics, July 2017, ISSN: 2395-1680 (Online volume: 03, issue: 02 DOI: 10.21917/ijme.2017.0069.
3	Dr.Sheeba O.	Donia Dominic, Sheeba O., A C-Band Perot Cavity Antenna using Fr4 substrate "IEEE proceedings, International Conference on Energy, Communication, Data analytics and soft computing (ICECDS 2017) issue 3 (235-240).
		Lakshmy G.S., Sheeba O., Design and Fabrication of Circular Micro strip Patch Antenna with E-shaped Slot for UWB Applications, in the proceeding of the 2nd International Conference on Electronics, Communication and Aerospace Technology ICECA 2018
		Malu Mohan, Sheeba O. "Design of Compact Size Wide band Antenna with Circular Polarization", in proceeding of the 2nd International Conference on Inventive Communication and Computational Technologies (ICICCT), April 2018.
4	Prof.SreekumariAmma	Sreegiri.S.S, SreekumariAmma P, "Tilted beam microstrip array antenna",2017 IEEE International Conference on Signal Processing, Informations, Communication and Energy Systems ,2017 .IEEE SPICES
5	Prof.Shabeer S.	Shabeer S. et.al., Hexagonal Search Based Compression Noise Estimation And Reduction In Video Proceedings of the 2nd International Conference on Inventive Communication and Computational Technologies (ICICCT 2018) IEEE Xplore Compliant - Part Number: CFP18BAC-ART; ISBN:978-1-5386-1974-2
6	Dr. J. DhoulathBeegum	DhoulathBeegum J et.al 'A non destructive method for crack artifacts using component separation,ICOVP- 13th International Conference on Vibration Problems,ICOVP at IIT Guwahati, 29th Novemer- 2nd December 2017
7	Prof.Reshna S	Reshna S, 2017 IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems (SPICES) from 08/08/2017 to 10/08/2017 at T K M College of Engineering, Kollam "Recognition of Indian Sign Language using Hand Gestures and Facial Expressions".
8	Prof.PreethaBasu	PreethaBasu, "High efficiency image coding using iterative image filtering" in IEEE international conference on inventive communication and computational technologies 20-21 April 2018.
9	Prof.Anu Assis	Anu Assis, "Effect Of Dielectrics On Mobility Of Pentacene OFET", International Journal of Engineering Research And Application", ISSN: 2248-9622, Vol.8, March 2018, pp04-08.
		Anu Assis, Shahul Hameed T.A., and P. Predeep, "Organic field effect transistors – Study of performance parameters for different dielectric layer

		thickness", American Institute of Physics Conference Proceedings 1849, 020034 (June, 2017); doi: 10.1063/1.4984181.
10	Prof.Nishanth N.	Maria Francis, Nishanth N,"A secure and Energy Efficient Routing Protocol for Wireless Sensor Networks" 2nd International Conference on Inventive Computation Technologies (ICICT 2017) IEEE Xplore Complaint-Part Number CFP17K52-ART, ISBN:978-1-5090-6697-1.
11	Prof.Sajeena A.	Sajeena A. et.al., Single Image Dehazing using contrast and Gradient Model, International conference on Inventive Computation Technologies (ICICT-2017), held on 24- 26th August 2017.
		Ananthu Raj, A Sajeena "Defects detection in PCB using Image processing for Industrial Applications" in ICICCT during 20-21 April 2018.
12	Dr. Nissan Kunju	Anusha C K, AjalBabu K, Nissan Kunju **"Improving myoelectric grasp recognition using empirical mode decomposition and differential evolution based approach"** International Conference on Electronics, Signal Processing and Communication Engineering (E-SPACE 2018), GEC Thrissur, India. January 2018, published as book chapter in Emerging trends in Engineering Science and Technology, for society, Energy and Environment.
		Nissan Kunju "Functional electrical stimulation of lower limb in spinal cord injury" J. Biol. Eng. Res. Rev.; Vol. 4 (suppl 1) pp 33, (June) 2017, E-ISSN: 2349-3232.
		KarthikaBabu, Nissan Kunju "Cross age face recognition using deep learning model based on center symmetric LPS" International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS)**,** 1-2 Aug. 2017, DOI: 10.1109/ICECDS.2017.8389779
		Anusha C K, AjalBabu K, Nissan Kunju **"Electromyographic Hand Movement Recognition Using Empirical Mode Decomposition And Differential Evolution Based Feature Selection"** International Conference on 'Recent Innovations in Electrical, Electronics and Communication Systems, RIEECS2017 to be held at Graphic Era University, Dehradun, India OCT 2017.
		Reju John, Nissan Kunju**.** Optimization of Grunwald-Letinikov's defined fractional filter used for image enhancement, IEEE International conference on inventive communication and computational technologies (ICICCT-2018),April 2018.DOI: 10.4172/2229-8711.1000230.
13	Prof.Sreegiri S S	Sreegiri.S.S, SreekumariAmma P, "Tilted beam microstrip array antenna",2017 IEEE International Conference on Signal Processing, Informations, Communication and Energy Systems ,2017 .IEEE SPICES

FACULTY PUBLICATION LIST 2018-19		
SL NO	**Faculty**	**Publications**
1	Dr.Gopakumar K.	J. E. Jacob, K. Gopakumar, T. Iype, and A. Cherian, "Automated Diagnosis of Encephalopathy Based on Empirical Mode EEG Decomposition", Neurophysiology, Springer, 50(4), pp. 278-285, 2018.
		Jisu Elsa Jacob, K Gopakumar, Ajith Cherian, Thomas Iype ,"Application of Fractal Dimension forEEG based diagnosis of Encephalopathy", Analog Integrated Circuits and Signal Processing, Springer(Accepted for publication).
		G.P. Aswathy G P ; K Gopakumar, Wideband Spectrum Sensing using Modulated Wideband Converter by Revised Orthogonal Matching Pursuit, Proceedings of IEEE International Conference on Control, Power, Communication and Computing Technologies ICCPCCT, DOI: 10.1109/ICCPCCT.2018.8574293, pp. 179 – 184, March 2018.
		P ArathiSankar ; K Gopakumar, Sparse Representation of Sensory Data and Detection of Dead nodes in WSNs, Proceedings of IEEE International Conference on Trends in Electronics and Informatics (ICOEI), DOI: 10.1109/ICOEI.2018.8553870, May 2018.
		G. P. Aswathy; K. Gopakumar, Niyas K Haneefa, Performance Comparison of Parallel Concatenated Gallager Codes with Different Types of Interleavers, Proceedings of IEEE International CET Conference on Control, Communication, and Computing (IC4), DOI: 10.1109/CETIC4.2018.8531011, pp. 210 – 215, July 2018.
		Farsana F J ; K. Gopakumar, Key Encapsulation Mechanism Based on RSA Public Key Distribution Algorithm in Modified Lorenz Hyperchaotic System, Proceedings of IEEE International CET Conference on Control, Communication, and Computing (IC4), DOI: 10.1109/CETIC4.2018.8530932, July 2018.
		Jisu Elsa Jacob ; K Gopakumar, A Review of Chaotic Analysis of EEG in Neurological Diseases, Proceedings of IEEE International CET Conference on Control, Communication, and Computing (IC4), DOI: 10.1109/CETIC4.2018.8530960, July 2018.
		Jisu Elsa Jacob and K. Gopakumar , "Automated diagnosis of encephalopathy using fractal dimensions of EEG sub-bands", Recent Advances in Intelligent Computational Systems (RAICS), IEEE 2018 (December 6-8 2018).
		G. P. Aswathy; K. Gopakumar,"Cognitive Radio Network with Wideband Spectrum Sensing and Reliable Data Transmission", Recent Advances in Intelligent Computational Systems (RAICS), IEEE 2018 (December 6-8

		2018).
2	Dr.Shahul Hameed T.A	Ayoob Khan T E, Sheena S, Dr.Shahul Hameed T A, "An Investigation on the Effect of LER on Threshold Voltage and On Current of SOI, Bulk and GAA FinFETs", International Conference on Emerging Trends and Innovations in Engineering and Technological Research (IEEE) ICETIETR 2018, July 2018.DOI:10.1109/ICETIETR.2018.8529135
		Ayoob Khan T E, SincyRegi, Dr.Shahul Hameed T A, "Leakage Suppression Approaches in Bulk FinFETs", Elsevier Materials Today Accepted for publication. https://authors.elsevier.com/tracking/article/details.do?aid=7247&jid=MA TPR&surname=Ayoob+Khan