

Dr. ZUBAIR KHALID

Postal Address: Federal Urdu University of Arts Science and Technology, Islamabad.

E-mail Address: zubair.khalid@fuuast.edu.pk / engr.zktanoli@gmail.com

Mobile Number: 0321-9812353

PEC Number: COMP- 4529

EDUCATION

PhD Electrical Engineering **2017**

Faculty of Electrical Engineering Universiti Teknologi Malaysia (UTM), Malaysia

MS Electrical Engineering **2012** **CGPA 3.33**

University of Engineering and Technology (UET), TAXILA

BS Computer Engineering **2007** **CGPA 3.22**

COMSATS Institute of information technology (CIIT), ABBOTTABAD

FSC 2001-2003 Abbottabad Public School (A.P.S)

SSC 1999-2001 Abbottabad Public School (A.P.S)

RESEARCH PUBLICATIONS

Journal Publications:

- Umar, Zubair Khalid, Mohammed Ali, Mohammed Abazeed, Ali Alqahtani, Rahat Ullah, and Hashim Safdar. "A Review on Congestion Mitigation Techniques in Ultra-Dense Wireless Sensor Networks: State-of-the-Art Future Emerging Artificial Intelligence-Based Solutions." Applied Sciences 13, no. 22 (2023): 12384.
- Zubair Khalid, Norsheila Fisal, and Mohd Rozaini. "A survey of middleware for sensor and network virtualization." Sensors 14.12 (2014): 24046-24097.
- Z. Khalid, N. Fisal, R. Ullah, H. Safdar, W. Maqbool, S. Zubair, and A. S. Khan, "M2M Communication in Virtual Sensor Network for SHAAL," Jurnal Teknologi., vol. 1, pp. 99–105, 2013.

- Umar, Zubair Khalid, Mohammed Ali, Mohammed Abazeed, Ali Alqahtani, Rahat Ullah, and Hashim Safdar. "A Review on Congestion Mitigation Techniques in Ultra-Dense Wireless Sensor Networks: State-of-the-Art Future Emerging Artificial Intelligence-Based Solutions." *Applied Sciences* 13, no. 22 (2023): 12384.
- Rahat Ullah, Syed M. Bilal, Zubair Khalid, Hashim Safdar, "Soft Frequency Reuse-based Interference Mitigation in Irregular Geometry Heterogeneous Networks" *International Journal of Computer Science and Network Security*, 22(6), 2022
- Abdullah Umar, Rahat Ullah, Hashim Safdar, Zubair Khalid, "Non-Orthogonal Multiple Access for Future Emerging Ad-Hoc Networks" *International Journal of Computer Science and Network Security*, 22(6), 2022
- Hashim Safdar, Rahat Ullah, Zubair Khalid, "Game Theoretic based Distributed Dynamic Power Allocation in Irregular Geometry Multicellular Network", *International Journal of Computer Science and Network Security*, 22(7), 2022 (Accepted)
- H.Safdar, N. Fisal, R. Ullah, Z. Khalid, and W. Maqbool, "Resource Allocation for M2M Communication in Heterogeneous Network : Coalitional Game Theory Approach," *Jurnal Teknologi.*, vol. 1, pp. 83–88, 2014.
- W Maqbool, SK Syed Yusof, A Latiff, H Safdar, R Ullah, Z Khalid. "Link Capacity Based Channel Assignment (LCCA) for Cognitive Radio Networks," *J. Teknol.*, vol. 1, pp. 93–97, 2013.
- Ullah, Rahat and Fisal, Norsheila and Safdar, Hashim and Khalid, Zubair and Maqbool, Wajahat and Ullah "Stochastic geometry based dynamic fractional frequency reuse for ofdma systems" *Jurnal Teknologi.*, vol. 1, 2014
- S F Shaukat, Zubair Khalid, et.al "Comparison of a variety of cables for real time data transmission" *Information Technology Journal*, vol 6,pp 1282-1285, 2007
- Gulistan Raja, Zubair Khalid, "Hardware Implementation of H.264/AVC Deblocking Filter" *UET Peshawar Journal*
- Rahim, Mohd Rozaini Bin Abd, Rozeha A. Rashid, Norsheila Fisal, Zubair Khalid, and Abdul Hadi Fikri Abd Hamid. "TelG Mote: A Green Wireless Sensor Node Platform for Smart Home and Ambient Assisted Living." *Journal of Electronic Science and Techno* 14.3 (2016): 211-219
- Ullah, Rahat, Hanif Ullah, Zubair Khalid, and Hashim Safdar. "Irregular Geometry Based Sectorized FFR Scheme for ICI Mitigation in Multicellular Networks." *J. Commun.* 15, no. 11 (2020): 796-807.

Conference Publications:

- Zubair Khalid, Khalid, U., Sarijari, M.A., Safdar, H., Ullah, R., Qureshi, M. and Rehman, S.U et al. "Sensor virtualization Middleware design for Ambient Assisted Living based on the Priority packet processing." *Procedia Computer Science* Leuven, Belgium 151 (2019): 345-352.
- Z. Khalid, N. Fisal, S. Zubair, R. Ullah, H. Safdar and U. Khalid "Multi-Thread based Middleware for Sensor Network Virtualization", *The 5th IEEE National Symposium on Information Technology: Towards Smart World*. 2015, King Saud University, Riyadh, KSA.
- Z. Khalid, N. Fisal, H. Safdar, R. Ullah, and W. Maqbool, "System Design in Sensor Network Virtualization for SHAAL," *5th IEEE Int. Conf. Intell. Syst. Model. Simul. Syst.*, 2014.
- Z. Khalid, N. Fisal, H. Safdar, R. Ullah, and W. Maqbool, "Middleware Framework for Network Virtualization in SHAAL," *IEEE Symp. Comput. Ind. Appl.*, 2014.
- H. Safdar, N. Fisal, R. Ullah and Z. Khalid "Resource allocation for uplink M2M communication in multi-tier network," *Commun. (MICC), 2013 IEEE Malaysia Int. Conf.*, no. November, pp. 538–543, 2013.
- H. Safdar, N. Fisal, R. Ullah, W. Maqbool, F. Asraf, Z. Khalid, and a. S. Khan, "Resource allocation for uplink M2M communication: A game theory approach," *2013 IEEE Symp. Wirel. Technol. Appl.*, pp. 48–52, Sep. 2013.
- H. Safdar, N. Fisal, and R. Ullah, Z Khalid, "Distributed Resource Allocation For Spatially Distributed Irregular Cells," *IEEE Int. Symp. Telecommun. Technol. (ISTT 2014)*, Langkawi, Malaysia.
- R. Ullah, N. Fisal, H. Safdar, W. Maqbool, Z. Khalid, and a. S. Khan, "Voronoi cell geometry based dynamic Fractional Frequency Reuse for OFDMA cellular networks," *IEEE Int. Conf. Signal Image Process. Appl.*, pp. 435–440, Oct. 2013.
- R. Ullah, N. Fisal, H. Safdar and Z. Khalid "Interference management for irregular cell geometry heterogeneous networks," *Commun. (MICC), 2013 IEEE Malaysia Int. Conf.*, no. November, pp. 523– 527, 2013.
- R. Ullah, N. Fisal, H. Safdar and Z. Khalid "Fractional Frequency Reuse for Irregular Cell Geometry OFDMA Systems," *IEEE Int. Symp. Telecommun. Technol. (ISTT 2014)*, Langkawi, Malaysia.
- R. Ullah, N. Fisal, H. Safdar and Z. Khalid "Fractional Frequency Reuse for Irregular Geometry Based Heterogeneous Cellular Networks," *The 5 th IEEE National Symposium on Information Technology: Towards Smart World*. 2015, King Saud University, Riyadh, KSA.

- M. A. Munir, Misal, A. Hassan, H. Tariq and Z. Khalid, "IoT Based Automotive Driver Drowsiness Prediction System Using Heart Rate Variability and Galvanic Skin Response," 2020 International Conference on Engineering and Emerging Technologies (ICEET), 2020, pp. 1-6
- Rahim, M. R. B. A., Faisal, N., Rashid, R. A., & Khalid, Z. (2015, May). A Service Oriented middleware for Smart Home and Ambient Assisted Living. In Telematics and Future Generation Networks (TAFGEN), 2015 IEEE.1st International Conference on (pp. 49-53).

Book Chapters:

- Salihu, S. Z. Y. O., Norsheila Faisal, Bala A. Salihu, Mohammed B. Abazeed Hassan T. Abdul Azeez, Zubair Khalid, and Ahmad Suleiman. "Network Layer for Cognitive Radio Sensor Networks." Cognitive Radio Sensor Networks: Applications, Architectures, and Challenges, (2014): 196-231.
- Z. Khalid, N. Faisal, H. Safdar, R. Ullah "Middleware for Sensor Virtualization in IoT" **Submitted to IGI Global**

EXPERIENCE

Assistant Professor 2017 to date
Federal Urdu University of arts science and technology Islamabad

- Coordinator Post-Graduate Studies
- Member PEC accreditation Committee
- Coordinator OBE Implementation
- Coordinator Q-OBE Software Operations
- Convener Campus House Ceiling Committee
- Member HEC GYM Committee

Lecturer 2011 to 2017
Federal Urdu University of arts science and technology Islamabad

- Coordinator Graduate Studies

Lab Engineer 2008-2011
Federal Urdu University of arts science and technology Islamabad

- LAB - Coordinator

Lecturer (Visiting) 2008
COMWAVE Institute, Abbottabad

MIS OFFICER (NWFP) 2007-2008

ASKARI LEASING Peshawar

Internship 2007

National Radio Telecommunication Corporation (N.R.T.C), Haripur.

FUNDED RESEARCH PROJECTS

- **Kingdom of Saudi Arabia Ministry of Education King Khalid University
Deanship of Scientific Research**

Title: "Sensor Virtualization Middleware and Routing Protocol Design Implementation for Health Care Application based on Artificial Intelligence"

Status: In progress

- **HEC Startup Research Grant – Principal Investigator**

Title: "Middleware Design for Smart City based on Wireless Sensor Network Virtualization. Role"

Status: Completed

- **HEC Startup Research Grant – Co-Principal Investigator**

Title: "Optimal Humidity Control Exchange Layer for Better Efficiency".

Status: Completed

ACADEMIC RESEARCH PROJECT

PhD Thesis

- **Middleware for Wireless Sensor Network Virtualization** – In PhD research, sensor and network virtualization technologies have been used for smart home applications that form the foundation of the Internet of Things (IoT). The challenge of how to ensure multiple sensors data to be transmitted over multiple heterogeneous networks having different transmission rates and protocols seamlessly was taken up. WSN virtualization was used to facilitate the transmission of multiple sensors data over multiple networks.

MS Thesis

- **Hardware Implementation of Deblocking Filter for Reduction of Blocking Artifacts**– In the MS research, a filter of H.264/AVC was implemented on FPGA. The proposed architecture has the ability to compute the results of luminance and chrominance blocks in fewer cycles which speeds up the filtering process. Moreover, throughput is enhanced by the use of 16 distributed RAMs. The proposed architecture of the filter is first implemented in Matlab 7.0 which validates the results and coded using HDL verilog.

BS FYP

- **Comparison of a variety of cables for real time video transmission** – Research was carried out seeking the best cable which supports real time video transmission with minimum attenuation. A variety of physical, electrical and numerical techniques were utilized to characterize coaxial, twisted pair and twin lead cables mostly used for video transmission.

ACHIEVEMENTS

- Awarded HEC Grant of Rs 500,000 under Startup Research Grant.
- Awarded Fully Funded HEC scholarship under FDP for PhD studies in Malaysia.
- Awarded 3rd position in 3-MINT thesis competition held at FKE-UTM, Malaysia.
- Awarded with 5000 MYR for publication in Q1 journals.
- Awarded Merit scholarship in 2nd, 3rd, 5th, 6th, 7th and 8th semester for acquiring position in top 5 of the F003-BCE batch by COMSATS.

CERTIFICATES / TRAINING

- Cisco Certified Network Associate (CCNA) Training
- HEC Professional Competency Enhancement Program (PCEPT)
- Chip Designing Certificate at Skill Development Council
- FPGA workshop at National Center for Physics
- Game Theory in LTE-Advance Network by Dusit Niyato (NTU Singapore).
- Cisco Networking Academy Introduction to Internet of Things

ACADEMIC ACTIVITIES

- Reviewer of IEEE Access
- Reviewer of multiple IEEE Conferences
- Member Departmental Council, Mirpur University of Science and Technology
- Member Board of Studies Department Information Technology, University of Gujrat
- Evaluator of postgraduate Thesis, at the University of Gujrat
- Evaluator of postgraduate Thesis, at FAST Islamabad
- Evaluator of postgraduate Thesis at COMSATS Abbottabad
- Evaluator of FYP at COMSATS Islamabad

- Evaluator of FYP at Government College University Faisalabad.
- Workshop conducted on Image Processing Using MATLAB at NUML Islamabad
- Workshops conducted on OBE Implementation and Q-OBE Software

MS Students Supervision

- Mohsin Mehmood Qureshi (Degree Awarded)
Thesis Title: Real Time Multi Hop Protocol for Wireless Sensor Network
- Abdullah Umar (Degree Awarded)
Thesis Title: Intelligent Congestion Mitigation in IoT based Wireless Networks
- Muhammad Saqib (Degree Awarded)
Thesis Title: Intelligent Congestion Mitigation in IoT based Wireless Networks
- Muhammad Afzal (Degree Awarded)
Thesis Title: Processing Power Based Real Time Multi Hop Routing Protocol
- Hafiz Muhammad Shah Nawaz (Degree Awarded)
Thesis Title: Multibeam Array Antenna Design for High Data Rate
- Taqueer Ishtiaq (Proposal Defended)
Thesis Title: Dynamic request scheduling optimization in mobile Computing for IOT Application
- Syed Naveed (Proposal Defended)
Thesis Title: Real Time Multi Hop Routing Protocol
- Mubashir Mustafa (Proposal Defended)
Thesis Title: Deblocking filter architecture Design for H.265/ AVC