

CURRICULUM VITAE

Mahmood Qureshi, PhD

PERSONAL INFORMATION

Assistant Professor
COMSATS University Islamabad
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ACADEMIC POSITIONS

01/2014 – Present	Assistant Prof., Dept. of Electrical & Computer Engineering, COMSATS University Islamabad, Pakistan
05/2015 – 10/2015	Research Scholar, Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, USA
07/2006 – 12/2013	Lecturer Department of Electrical Engineering, COMSATS IIT, Islamabad, Pakistan
03/2007 – 02/2009	Analyst Engineer Korean Research Power Electric Institute (KEPRI, Korea) ✓ Developed the Simulated Environment for Substation Automated System

EDUCATION

09/2011 – 07/2017	PhD (Computer Engineering) Thesis: <i>Image Reconstruction Techniques for Accelerated MRI</i> Under MIPRG Research Group, CUI Islamabad, www.miprg.com COMSATS Institute of Information Technology, Islamabad, Pakistan (Research Work is done in Case Western Reserve University, Cleveland OH, USA)
03/2007 – 02/2009	MS Computer Engineering and Software, Dept. of Computer and Software Myongji University, Yongin, South Korea
03/2002 – 02/2006	BS(Computer Engineering), Department of Electrical Engineering COMSATS Institute of Information Technology, Abbottabad, Pakistan

GRANTS AND FUNDING

03/2019	Travel Grant: Rs. 0.4 Million from Higher Education Commission to present the Research Article at ICCDA2019. The 3rd International Conference on Compute and Data Analysis
10/2018-10/2019	Start-up Research Grant of Rs. 0.6 Million from Higher Education Commission to establish a research facility at COMSATS University Islamabad. Project Title: <i>Real-Time Fast Image Reconstruction of pMRI algorithms by GPU based parallel computation.</i> (Role: Main Principal Investigator)
03/2016-08/2016	Rs. 0.2 Million from National Institute of Electronics Title: <i>Feature extraction of Retina Scan</i> (Role: Main Principal Investigator)
10/2015	Travel Grant: Rs.0.2 Million from COMSATS University Islamabad to Chair the Plenary Session at European Society for Magnetic Resonance in Medicine and Biology (ESMRMB2015), Edinburgh, UK

HONOURS AND AWARDS

06/2015-05/2018	Research Productivity Award for consecutive three years in a row with Prize money for participating and contributing to Research
2013	PIEAS Spotlight Award for successfully conducting a training workshop on Data Acquisition
2015	Nominated for Prime Minister Laptop Scheme
05/2015 – 10/2015	International Research Support Initiative Program (IRSIP) Scholarship from Higher Education Commission (HEC) for Case Western Reserve University, Cleveland OH, USA

09/2011 – 09/2015	Fully funded PhD Scholarship from COMSATS Institute of Information Technology, Islamabad, Pakistan
03/2007 – 02/2008	Fully funded MS Scholarship from Higher Education Commission (HEC) for South Korea
03/2007 – 08/2008	Graduate Scholarship from Myongji University, South Korea for maintaining GPA 4.0/4.5
03/2006 – 02/2006	Fully funded Scholarship from Ministry of Science and Technology (MoST) Pakistan
03/2001 – 06/2001	First Position in Diploma (25 Basic Computer Courses) Best Boy of the Batch

INVITED TALKS

03/2015	“Workshop on Data Acquisition at PIEAS (Pakistan Institute of Engineering and Applied Sciences)
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SCIENTIFIC PUBLICATIONS

ARTICLE SUBMITTED

1. M. Arshad, M. Qureshi, O. Inam, H. Omer *Transfer Learning in Deep Neural Network Based Under-sampled MR Image Reconstruction* submitted in Journal of Medical Imaging Analysis

JOURNAL ARTICLES [I.F (35.166)]

16. Omair Inam, **Mahmood Qureshi**, Zoia Laraib, Hamza Akram, Hammad Omer “GPU accelerated Cartesian GRAPPA reconstruction using CUDA”, in Journal of Magnetic Resonance in Volume 337, April 2022, <https://doi.org/10.1016/j.jmr.2022.107175> [I.F (2.734)]
15. Madiha Arshad, **Mahmood Qureshi**, Omair Inam, Hammad Omer “*Transfer learning in deep neural network based under-sampled MR image reconstruction*”, in Journal of Magnetic Resonance Imaging in 2021, vol(76) pp96-107 <https://doi.org/10.1016/j.mri.2020.09.018> [I.F (5.119)]
14. **Mahmood Qureshi**, Omair Inam, Sohaib Ayyaz Qazi, Hammad Omer “Tangent vector-based gradient method with -regularization: Iterative half thresholding algorithm for CS-MRI”, in Journal of Magnetic Resonance in December 2021, <https://doi.org/10.1016/j.jmr.2021.107080> [I.F (2.734)]
13. Madiha Arshad, **Mahmood Qureshi**, Omair Inam, Hammad Omer “*Transfer learning in deep neural network-based receiver coil sensitivity map estimation*”, in Journal of Magnetic Resonance Materials in Physics Biology and Medicine in March 2021, <https://doi.org/10.1007/s10334-021-00919-y> [I.F (2.533)]
12. Zain Ali, Wasay Farooq, Wali Ullah Khan, **Mahmood Qureshi**, Guftaar Ahmad Sardar Sidhu “*Artificial intelligence techniques for rate maximization in interference channels*” in Journal of Physical Communication in February 2021, <https://doi.org/10.1016/j.phycom.2021.101294> [I.F (2.3)]
11. Madiha Arshad, Mahmood Qureshi, Omair Inam, Hammad Omer “*Transfer learning in deep neural network based under-sampled MR image reconstruction*” in Journal of Magnetic Resonance Imaging in February 2021, <https://doi.org/10.1016/j.mri.2020.09.018> [I.F (5.119)]
10. Omair Inam, Abdul Basit, **Mahmood Qureshi**, Hammad Omer “*FPGA-based hardware accelerator for SENSE (a parallel MR image reconstruction method)*” in Journal of Computers in Biology and Medicine in January 2020, <https://doi.org/10.1016/j.combiomed.2019.103598> [I.F (6.698)]
9. Omair Inam, **Mahmood Qureshi**, Hammad Omer, “*De-noising Multi-coil Magnetic Resonance Imaging Using Patch-Based Adaptive Filtering in Wavelet Domain*” in Journal of Applied Magnetic Resonance in November 2019 volume 50, Issue 11, pp. 1325-1343, <https://doi.org/10.1007/s00723-019-01153-5> (IF:0.9)
8. Omair Inam, **Mahmood Qureshi**, Shahzad A. Malik, and Hammad Omer, *Iterative Schemes to Solve Low-Dimensional Calibration Equations in Parallel MR Image Reconstruction with GRAPPA*, BioMed Research International, vol. 2017, Article ID 3872783, 16 pages, 2017. doi:10.1155/2017/3872783 ISSN: 2314-6133 [I.F (3.246)]
7. O. Inam, **M. Qureshi**, S. A. Malik, and H. Omer, *GPU-Accelerated Self-Calibrating GRAPPA Operator Gridding for Rapid Reconstruction of Non-Cartesian MRI Data*, Applied Magnetic Resonance, vol. 48, pp. 1055-1074, 2017. ISSN: 0937-9347 [I.F (0.9)]

6. **Mahmood Qureshi**, Muhammad Kaleem, Hammad Omer, *Journey through k-space: an interactive educational tool*. Journal of Biomedical Research, 2017, Volume 28, Issue 4 [I.F (0.22)]
5. **Mahmood Qureshi**, Muhammad Junaid, Asadullah Najam, Daniyal Bashir, Irfan Ullah, Muhammad Kaleem, Hammad Omer, *Image reconstruction using compressed sensing for individual and collective coil methods*. Journal of Biomedical Research, Special Issue (Computational Life Sciences and Smarter Technological Advancement), 2016, S287-S292 [I.F (0.22)]
4. Muhammad Kaleem, **Mahmood Qureshi**, Hammad Omer. *An Adaptive Algorithm for Compressively Sampled MR Image Reconstruction Using Projections onto l_p -ball*. Applied Magnetic Resonance, 2016, Volume 47, Issue 4, pp.415-428 <https://doi.org/10.1007/s00723-016-0761-0> [I.F (0.9)]
3. Muhammad Kaleem, **Mahmood Qureshi**, Hammad Omer. *Compressively Sampled MR image Reconstruction Using POCS with g-Factor as Regularization Parameter*. Applied Magnetic Resonance, 2016, Volume 47, Issue 1, pp.13-22 <https://doi.org/10.1007/s00723-015-0725-9> [I.F (0.9)]
2. Hammad Omer, **Mahmood Qureshi** and Robert J. Dickinson. *Regularization-based SENSE reconstruction and choice of regularization parameter*. Concepts in Magnetic Resonance Part A Volume 44, Issue 2, pp.67-73, <https://doi.org/10.1002/cmr.a.21328> March 2015 [I.F (0.643)]
1. Umar Adeel, K.S.Alimgeer, Omair Inam, Ayesha Hameed, **Mahmood Qureshi**, Mehmood Ashraf, *Autonomous Dual Wheel Self Balancing Robot Based on Microcontroller*, J. Basic. Appl. Sci. Res., Volume 3, Issue 1, pp.843-848, 2013

JOURNAL ABSTRACT

17. M. Arshad, **M. Qureshi**, I. Khattak, H. Omer “*Radial MR image reconstruction through deep learning*” in Journal of Magnetic Resonance Materials in Physics Biology and Medicine Oct 2019, (Vol 32, Suppl-1) DOI: 10.1007/s10334-019-00755-1 (IF: 2.836)
16. Basit, O. Inam, **M. Qureshi**, H. Omer “*FPGA based SENSE coprocessor for high speed cardiac MR image reconstruction*” in Journal of Magnetic Resonance Materials in Physics Biology and Medicine Oct 2019, (Vol 32, Suppl-1) DOI: 10.1007/s10334-019-00755-1 (IF: 2.836)
15. H. Akram, Z. Laraib, O. Inam, **M. Qureshi**, H. Omer “*GPU Accelerated GRAPPA Reconstruction for Real-time Cardiac MRI*” in Journal of Magnetic Resonance Materials in Physics Biology and Medicine Oct 2019, (Vol 32, Suppl-1) DOI: 10.1007/s10334-019-00756-0 (IF: 2.836)
14. O. Inam, A. Akber, F. Naeem, M. M. Ashraf, **M. Qureshi**, “*FPGA based Accelerated Pre-Scan Method for Sensitivity Estimation of Receiver Coils using High Level Synthesis*” in Journal of Magnetic Resonance Materials in Physics Biology and Medicine Oct 2019, (Vol 32, Suppl-1) DOI: 10.1007/s10334-019-00756-0 (IF: 2.836)
13. T. Khan¹, O. Inam, Z. Abid, H. Omer, **M. Qureshi**, “*Efficient sparse image reconstruction using $l_{1/2}$ -regularization for cardiac MRI*” in Journal of Magnetic Resonance Materials in Physics Biology and Medicine Oct 2019, (Vol 32, Suppl-1) DOI: 10.1007/s10334-019-00755-1 (IF: 2.836)
12. O. Inam, H. Jarral, H. Omer, **M. Qureshi**, “*Adaptive noise reduction in parallel magnetic resonance imaging using SVD based filtering in wavelet domain*” in Journal of Magnetic Resonance Materials in Physics Biology and Medicine Oct 2019, (Vol 32, Suppl-1) DOI: 10.1007/s10334-019-00755-1 (IF: 2.836)
11. O. Inam, **M. Qureshi**, H. Omer. *Estimation of GRAPPA Weight Sets using Low Dimensional Data Representation* Magn Reson Mater Phy (2017) 30(Suppl 1): 175. <https://doi.org/10.1007/s10334-017-0633-0> ISSN: 0968-5243 [I.F (1.718)]
10. **M. Qureshi**, O. Inam, H. Omer. *Compressively sampled $l_{1/2}$ -regularization for Image Reconstruction in MRI*. Magn Reson Mater Phy (2017) 30(Suppl 1): 348. <https://doi.org/10.1007/s10334-017-0633-0> ISSN: 0968-5243 [I.F (1.718)]
9. **M. Qureshi**, O. Inam, H. Omer. *GPU accelerated Slice-GRAPPA implementation*. Magn Reson Mater Phy (2017) 30(Suppl 1): 464. <https://doi.org/10.1007/s10334-017-0634-z> ISSN: 0968-5243 [I.F (1.718)]
8. O. Inam, **M. Qureshi**, H. Omer. *Gridding for Non-Cartesian MRI data using Graphics Processing Units*. Magn Reson Mater Phy (2017) 30(Suppl 1): 644. <https://doi.org/10.1007/s10334-017-0635-y> ISSN: 0968-5243 [I.F (1.718)]
7. M.H.N. Mughal, O. Inam, **M. Qureshi**, F. Ghazali, H. Omer. *FPGA based Architecture for GRAPPA reconstruction*. Magn Reson Mater Phy (2017) 30(Suppl 1): 647. <https://doi.org/10.1007/s10334-017-0635-y> ISSN: 0968-5243 [I.F (1.718)]

6. M.Kaleem, U. Zia, Sarwar, **M. Qureshi**, H. Omer *Sparse image reconstruction using tangent-vector based gradient projection method*, Magnetic Resonance Materials in Physics, Biology and Medicine (MAGMA), Volume 29, Issue 1 Supplement, pp.110, September 2016 DOI: 10.1007/s10334-016-0568-x
5. Nasir, **M. Qureshi**, H. Omer *Automated segmentation of left ventricle contours for the measurement of cardiac ejection fraction using MRI*, Magnetic Resonance Materials in Physics, Biology and Medicine (MAGMA), Volume 29, Issue 1 Supplement, pp.436, September 2016 DOI: 10.1007/s10334-016-0571-2
4. **M. Qureshi**, J.Muhammad, H. Omer. *MR Image reconstruction in CS using multiple sparsifying transforms*, Magnetic Resonance Materials in Physics, Biology and Medicine (MAGMA), Volume 28, Issue 1, pp.322, 2015 DOI: 10.1007/s10334-015-0489-0
3. J.Muhammad, A. Najam, D. Bashir, W.T. Abbasi, **M. Qureshi** , H. Omer. *Fast imaging using compressed sensing from arbitrary k-space trajectories for individual and collective coil methods*, Magnetic Resonance Materials in Physics, Biology and Medicine (MAGMA), Volume 28, Issue 1, pp.322, 2015 DOI: 10.1007/s10334-015-0488-1
2. **M. Qureshi**, Z. Bukhari, M. Kaleem, H. Omer, *g-Factor map as regularization parameter for Compressed Sensing*, Magnetic Resonance Materials in Physics, Biology and Medicine (MAGMA), Volume 28, Issue 1, pp.434, 2015 DOI: 10.1007/s10334-015-0490-7
1. R. Shahid, **M. Qureshi**, H. Omer, *Journey through k-space*, Magnetic Resonance Materials in Physics, Biology and Medicine (MAGMA), Volume 28, Issue 1, pp.514, 2015 DOI: 10.1007/s10334-015-0490-7

INTERNATIONAL CONFERENCE

11. Madiha Arshad, **Mahmood Qureshi**, Hammad Omer “*Deep Learning based Accelerated MR Image Reconstruction via Transfer Learning*” in ISMRM 28th Annual Meeting & Exhibition, 18-23 April 2020, Sydney, Australia
10. Madiha Arshad, **Mahmood Qureshi**, Omair Inam, Hammad Omer “*PCA and U-Net based Channel Compression for Fast MR Image Reconstruction*” International Conference on ISMRM 29th annual meeting & Exhibition An Online Experience, May 15-20 May 2021
9. Madiha Arshad, **Mahmood Qureshi**, Omair Inam, Hammad Omer “*A Deep k-means Based Tissue Extraction from Reconstructed Human Brain MR Image*” International Conference on ISMRM 29th annual meeting & Exhibition An Online Experience, May 15-20 May 2021
8. Zoya Laraib, Hamza Akram, Omair Inam, **Mahmood Qureshi**, Hammad Omer “*Parallel Magnetic Resonance Image Reconstruction on GPUs*” International Conference on GPUs Technology Conference (GTC 2019), Silicon Valley, California, USA, 22-26 March 2019
7. **Mahmood Qureshi**, Omair Inam, *An Adaptive SVD based De-Noiseing Filtering Scheme for parallel MRI* ICCDA 2019, The 3rd International Conference on Compute and Data Analysis, Maui, Hawaii, USA, 14-17 March 2019
6. Omair Inam, Zoya Laraib, Hamza Qureshi, **Mahmood Qureshi**, Hammad Omer, *High performance GPU enabled GRAPPA reconstruction using CUDA* ISMRM 27th annual meeting & Exhibition Montreal, QC, Canada, May 11-16 May 2019
5. Omair Inam, Hamza Akram, Zoia Laraib, **Mahmood Qureshi**, Hammad Omer, *Accelerating Parallel Magnetic Resonance Image Reconstruction on Graphics Processing Units using CUDA* 2019 IEEE 2nd International Conference on Information and Computer Technologies, Maui, Hawaii, USA, 14-17 March 2019
4. Junaid Muhammad, **Mahmood Qureshi**, Hammad Omer , *Compressed Sensing (CS) image reconstruction using TV and wavelet constraints*, 2015 Meibioeng’15 International conference, University of Leeds, UK, 7–8 September, 2015
3. Maham Tariq, Sehrish Aslam, Vardah Iqbal, **Mahmood Qureshi**, Hammad Omer. *Conjugate Gradient SENSE using Spiral and Radial Trajectory in MRI* 2014 BC-ISMIRM 20th annual Scientific Meeting, Edinburgh, Scotland, September 4-5, 2014
2. **Mahmood Qureshi**, Ali Raza, D.Kumar, Sang-sig kim, Un-sig song, Min woo park, Hyuk soo Jang, Hyo sik jang. *A Communication Architecture for Inter-Substation Communication*, 2008 IEEE 8th International Conference on Computer and Information Technology Workshops pp. 577-582, Sydney, Australia, July 2008
1. **Mahmood Qureshi**, Ali Raza, Dileep Kumar, Sang-Sig Kim, Un-Sig Song, Min-Woo Park, Hyuk-Soo Jang, Hyo-Sik Yang, Byung-Seok Park, *A survey of communication network paradigms for substation automation,* "Power Line Communications and Its Applications, 2-4 April 2008, ISPLC 2008. IEEE International Symposium on pp.310-315

BOOK CHAPTER

1. **Mahmood Qureshi** "Applications of Modern High Performance Networks", eISBN: 978-1-60805-077-2, 2009, Chapter 1, *Single Path and Multi-Path Routing Survey for Mobile Ad-Hoc Networks* pp.1-29, <http://www.bentham.org/ebooks/9781608050772/contents.htm>

PROFESSIONAL AFFILIATIONS

2015 – Present	Member, European Society for Magnetic Resonance in Medicine and Biology(ESMRMB)
2009 – Present	CISCO Certified Instructor
2013 – Present	Member, International Society for Magnetic Resonance (ISMRM)
2006 – Present	Member, Pakistan Engineering Council (PEC)
2008 - Certification	CCAI (CISCO Certified Academic Instructor) for CCNA(Discovery/Exploration), CCNA Security, Wireless, Security(Networks), IT Essentials

PROFESSIONAL SERVICE ACTIVITIES

2019 - 2023	External Project Evaluator at Pakistan Science Foundation . My role involves evaluating the feasibility of projects to determine whether the organization should provide funding. In the later stages, I reassess whether the completed project meets all the requirements.
October 2015	Chairperson in Plenary Session, European Society for Magnetic Resonance in Medicine and Biology (ESMRMB), Edinburgh, UK
2009 - Present	CISCO certified CCNA Instructor
2009 - 2011	Member of Technical Evaluation Committee for Lab Equipment

TEACHING ACTIVITY

CSC573	Business Management Information System (Theory) , Undergraduate Core Course 60+ Students, Management Sciences, 100% percent teaching responsibility (Spring 2024)(In-progress)
CSC373	Management Information System (Theory+Lab) , Undergraduate Core Course 152 Students, Management Sciences, 100% percent teaching responsibility (Fall 2022, Spring 2023, Fall 2023)
CSC291	Software Engineering Concepts (Theory) , Undergraduate Core Course 64 Students, Computer Engineering, 100% percent teaching responsibility (Spring 2023, Spring 24)
CSC322	Operating System (Lab) , Undergraduate Core Course 60+ Students, Computer Engineering, 100% percent teaching responsibility (Fall 2022)
EEE440	Computer Architecture , Undergraduate Core Course 95 Students, BCS, Computer Science, 100% percent teaching responsibility (Spring 2022)
CSC322	Operating System (Theory + Lab) , Undergraduate Core Course 102 Students, Computer Engineering, 100% percent teaching responsibility (Fall 2021, Fall 2022)
CSC103	Programming Fundamentals (Theory + Lab) , Undergraduate Core Course 36 Students, Computer Engineering, 100% percent teaching responsibility (Spring 2021)
CSC241	Object Oriented Programming (Theory + Lab) , Undergraduate Core Course 172 Students, Computer Engineering, 100% percent teaching responsibility (Spring 2020, Fall 2021, Fall 2022, Fall 2023)
EC1721	System on Chip (SoC) (Theory) , Graduate Core Course 10+ Students, Computer Engineering, 100% percent teaching responsibility (Fall 2019)
CSC211	Data Structure & Algorithms (Theory + Lab) , Undergraduate Core Course 70+ Students, Computer Engineering, 100% percent teaching responsibility (Fall 2019)
CEN221	Computer Architecture & Organization (Theory) , Undergraduate Core Course 44 Students, Computer Science (BSCS), 100% Teaching Responsibility (Fall2019, Spring 2020) at Bahria University, Islamabad
EEE440	Computer Architecture , Undergraduate Core Course 320+ Students, Computer Science Software Engineering and Computer Engineering Students (BCS, BSE, BCE), 90% Teaching Responsibility, (Spring2019, Fall2018, Spring2018, Fall2017)
EEE241	Digital Logic Design (Theory + Lab) , Undergraduate Core Course 480+ Students, Computer Engineering Students(BCE), 90% Teaching Responsibility, (Spring2017, Fall2013, Spring2013, Spring2011,, Fall2010, Spring2010)

EEE343	Computer Organization , Undergraduate Core Course 320+ Students, Telecom Engineering Students(BTE), 90% Teaching Responsibility, (Fall2017, Fall2014, Spring2014, Fall 2009)
CEN321	Microprocessor & Interfacing (Theory) , Undergraduate Core Course 174 Students, Computer Science Students(BCS), 100% Teaching Responsibility, (Spring2018, Fall2018, Fall2019, Spring 2020) at Bahria University, Islamabad
CSC320	Operating System , Undergraduate Core Course 40 Students, Computer Science Students(BCS), 100% Teaching Responsibility, (Fall2017) at Bahria University, Islamabad
CSC323	Computer Organization and Assembly Language (Theory) , Undergraduate Core Course 167 Students, Computer Science Students(BCS), 100% Teaching Responsibility, (Spring 2016, Fall2016) at Bahria University, Islamabad
PHY133	Applied Physics(Theory) , Undergraduate Core Course 40+ Students, Electrical Engineering Students at NAMAL University, 100% Teaching Responsibility, (Spring 2012, Fall 2012)
EE251	Digital Logic Design (Theory) , Undergraduate Core Course 40+ Students, Electrical Engineering Students at NAMAL University, 100% Teaching Responsibility, (Spring2012, Fall 2012)
EEE443	Advanced Computer Architecture (Theory) , Undergraduate Core Course 80+ Students, Computer Engineering Students (BCE), 100% Teaching Responsibility, (Spring2010)
EEE341	Advanced Digital Logic Design (Theory + Lab) , Undergraduate Core Course 80+ Students, Computer Engineering Students (BCE), 100% Teaching Responsibility, (Spring2009)

THESIS SUPERVISION

PhD THESIS

Fall 2019 *MR Image Reconstruction using Deep Learning Techniques (Co-Supervised)*

GRADUATE THESIS

Fall2022 GNU Radio Companion Porting on Heterogeneous Multicore Embedded System (Supervised)
 Fall2022 Design and Implementation of RISC-V based Secure Processor (Supervised)
 Fall2020 *FPGA Implementation of Fingerprint Recognition (Co-Supervised)*
 Fall 2016 *Left Ventricle Ejection Fraction Calculation using pMRI (Co-Supervised)*
 Fall 2014 *Compressed Sensing in MRI Image Reconstruction (Co-Supervised)*
 Fall 2014 *An Interactive GUI (Graphical User Interface) Platform for Medical Image Reconstruction using MATLAB (Co-Supervised)*
 Fall 2014 *Conjugate gradient sensing using radial and spiral trajectory in MRI (Co-Supervised)*
 Fall 2014 *Minimizing MR data acquisition time by under sampling k-space trajectories (Co-Supervised)*
 Fall 2014 *Accelerating MRI data acquisition using Compressed Sensing (Co-Supervised)*
 Fall 2014 *MRI image Reconstruction using non-Cartesian data (Co-Supervised)*

UNDERGRADUATE THESIS

Spring2023 Scene Image Text Removal Using Artificial Intelligence (AI)
 Spring2023 Nested U-Net Architecture for Medical Image Segmentation
 Spring2023 AI-Based Low Light Image Enhancement

Fall2022 Hand Gesture Detection using CNN

Spring2022 Fused Deposition Modelling Using 3D Printer
 Spring2022 Stocks Prediction using Artificial Intelligence
 Spring2022 Online Diagnosis of Cardiac Diseases Through Deep Learning
 Spring2022 AI Based Brain Controlled Wheel Chair

Fall2021 Internet of Things and Artificial Intelligence based Energy System

Spring2019 Implementation of Sensitivity Maps Estimation on FPGA using HLS (**Won 1st Prize**)
 Spring2019 Implementation of Gauss Jordan Method for Parallel Magnetic Resonance Imaging (pMRI) Using FPGA

Fall2019 Implementation of Parallel Magnetic Resonance Imaging techniques on FPGA using HLS

Spring 2018 *Smart Mirror using Raspberry Pi (Won 1st Prize)*
 Spring 2018 *Augmented Reality System for Smart Classroom (Won 2nd Prize)*

Spring 2017	<i>Cardiac Assessment Tools for pMRI (Won 2nd Prize)</i>
Fall 2016	<i>RFID based assets management System for Hospitals</i>
Spring 2016	<i>RFID based Classroom Management System</i>
Spring 2012	<i>Home Automation and Security System</i>
Spring 2012	<i>Implementation of Home based Energy efficient system using Solar Cells</i>
Fall 2012	<i>Design and Implementation of Helicopter based Video System</i>
Spring 2011	<i>Design and Implementation of Intelligent Traveler Information System</i>
Fall 2011	<i>Design and Implementation of Wall Climbing Eye Robot (Won 2nd Prize)</i>
Fall 2011	<i>Design and Implementation Adaptive Traffic Control System</i>
Spring 2010	<i>Design and Implementation of Intelligent Parking System</i>
Spring 2010	<i>GSM Based Intercellular based Intelligent Networks</i>
Fall 2010	<i>GSM Based Vehicular Tracking System</i>
Fall 2010	<i>GSM and GPS Based Vehicular Monitoring System</i>
Spring 2009	<i>GSM Based Automatic Energy Meter Reading System</i>
Spring 2009	<i>GSM and GPS based Automatic Robot Control</i>
Fall 2009	<i>Digital Electronic Folder (Won 2nd Prize)</i>
Fall 2009	<i>Performance Analysis of Routing Protocols Ad-hoc networks on OPNET</i>

AD HOC REVIEWER

2019-Present	Journal: IEEE Access
2016-Present	Journal: Current Medical Imaging Reviews (ISI Index Journal)
2014-Present	IEEE based International Conference Frontier of Information Technology (Member Technical Review Committee)
2017-Present	IEEE based International Conference (C-CODE) Communication, Computing and Digital Systems (Member Technical Review Committee)

SERVICE ACTIVITIES AT COMSATS University Islamabad

2017 – Present	Member of Graduate Thesis Review Committee at Dept. of ECE
2017 – Present	Class Advisor of Computer Engineering Students in the Dept. of ECE
2010 – 2013	Organized Mini Open House for Prospective Graduate Students in ECE
2009 – 2012	Class Counselor for Bachelor of Computer Engineering Students
2010 – 2011	Member of Quality Assurance Committee (QAC) in Dept. of Electrical Engineering
2010 – 2011	Member of the Organizing Committee of CEPEX2011 (2 days national events)

REFERENCES

Dr. Nicole Sieberlich Co-Director of the Michigan Institute for Imaging Technology and Translation, University of Michigan, MI, USA
email: nse@med.umich.edu

Prof. Dr. Mark Griswold Professor, Department of Radiology, School of Medicine,
 Professor, Department of Biomedical Engineering, Case School of Engineering, Case Western Reserve University, Cleveland, OH, USA
email: mark.griswold@case.edu

Dr. Syed Waqar Nabi Lecturer in Computing Science, Education & Practice Section, Glasgow Systems Research
Section, University of Glasgow, UK
Email: syed.nabi@glasgow.ac.uk

Dr. Hammad Omer Associate Professor in Dept. of Electrical & Computer Engineering, Head MIPRG Lab,
COMSATS University Islamabad, Pakistan
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Last Updated February 14, 2024

Career Profile

I attained my PhD in Computer Engineering from COMSATS University Islamabad (CUI), Pakistan, in 2017. Prior to that, I successfully completed my MS in Computer Engineering and Software from Myongji University, South Korea, in 2008, and obtained a BS in Computer Engineering from CIIT in 2006. Currently, I hold the esteemed position of Assistant Professor within the Electrical and Computer Engineering department at CUI. My responsibilities encompass a diverse range of tasks, including conducting engaging and insightful lectures at both the graduate and undergraduate levels, engaging in cutting-edge research, overseeing the supervision of MS and PhD theses, guiding undergraduate projects, and fulfilling other departmental assignments with utmost dedication.

Throughout my tenure at CUI, I have had the privilege of imparting knowledge and expertise in various courses, both at the graduate and undergraduate levels, for an impressive span of 16 years. Since 2017, my teaching repertoire has encompassed an array of significant subjects, including *Computer Architecture (EEE440)*, *Data Structure & Algorithms (CSC211)*, *Algorithms & Data Structure (CSC112)*, *Design of System on a Chip (ECI725)*, *Object-Oriented Programming (CSC241)*, *Programming Fundamentals (CSC103)*, *Applied Physics (PHY133)*, *Operating Systems (CSC322)*, *Digital Logic Design (EEE241)*, *Management Information Systems (CSC373)*, *Business Management Information System (CSC573)*, and *Software Engineering Concepts (CSC291)*. This diverse range of courses has allowed me to engage with students from different academic backgrounds and foster a dynamic learning environment that encourages critical thinking and academic excellence.

In addition to my role at CUI, I have contributed as a visiting faculty member at Bahria University, Islamabad campus, where I taught *Microprocessor & Interfacing (CEN321)*, *Operating System (CSC320)*, *Computer Architecture & Organization (CEN221)*, and *Computer Organization & Assembly Language (CSC232)* to students in the Department of Computer Science.

Furthermore, I extended my expertise to NAMAL University, Mianwali, where I served as a visiting faculty member in the Electrical Engineering department. This engagement was particularly significant as NAMAL University was in its initial setup phase. Alongside teaching *Applied Physics (PHY133)* and *Digital Logic Design (EE251)*, I played a pivotal role in curriculum design and took on various academic and administrative duties, contributing to the establishment and smooth running of the program and courses at NAMAL University.

These experiences have enriched my teaching portfolio, allowing me to engage with students from diverse academic backgrounds and contribute to the development of academic programs at both Bahria University and NAMAL University.

Having maintained a remarkable track record in teaching, I am proud to share that my consolidated student feedback, averaging over 8 semesters, stands at an impressive 76.54%. This feedback serves as a testament to my commitment to delivering quality education and fostering an environment conducive to student growth and development.

Additionally, I have had the privilege of supervising and co-supervising three master's theses and one PhD thesis, further contributing to the academic advancement of aspiring researchers. Guiding these students through their research journeys has been immensely fulfilling, and I am delighted to witness their intellectual growth and accomplishments. Furthermore, I have actively taken on the role of supervising various projects at the undergraduate level, providing students with invaluable hands-on learning experiences and honing their practical skills.

My research interests encompass a wide range of topics within the field of medical imaging, particularly focusing on Magnetic Resonance Imaging (MRI) and cardiac MRI. I am particularly passionate about exploring parallel MRI (pMRI) algorithms, both Cartesian and non-Cartesian based, and signal processing techniques to enhance imaging quality. Additionally, I am keen on leveraging the

power of parallel processing and CUDA language to efficiently implement these algorithms. Another aspect of my research involves investigating the role of regularization parameters in gradient methods and exploring the integration of artificial intelligence in pMRI, including transfer learning techniques in deep neural networks. Furthermore, I am actively engaged in exploring FPGA-based architectures for pMRI algorithms and developing innovative noise cancellation techniques. Additionally, I am committed to optimizing compressed sensing algorithms to address various pMRI challenges effectively. I have collaborated with the radiological imaging department of Islamabad Diagnostic Center which is the first diagnostic facility providing entire spectrum of imaging & lab services under one roof in Islamabad, by enhancing and implementing the cardiac MRI procedures for imaging purposes.

During my research career, I have actively worked on diverse research projects. Upon completing my PhD, I sought to further advance my research goals by applying for a start-up research grant from the Higher Education Commission (HEC). I was pleased to secure a funding amount of 0.478 million PKR, which enabled me to initiate my ambitious project titled "*Real-Time Fast Image Reconstruction of pMRI algorithms by GPU based parallel computation.*" This project aims to leverage the power of GPU-based parallel computation to achieve real-time and efficient image reconstruction in the context of parallel MRI algorithms.

As a visiting scholar at the esteemed Department of Biomedical Engineering, The Case Western Reserve University (CWRU), Cleveland, OH, USA, I had the privilege of working on the groundbreaking project "*Free breathing Cardiac MRI using GRAPPA.*" Under the guidance of the renowned Prof. Dr. Mark Griswold and Dr. Nicole Seiberlich, trailblazers in GRAPPA algorithms and their widespread implementation in MRI scanners worldwide, I embarked on this study with great enthusiasm. The primary aim of this research was to develop a method for obtaining cardiac MRI images without requiring patients to hold their breath, thereby not only reducing the scan time but also lowering the overall cost of cardiac MRI procedures. The skills and expertise honed during this project were later instrumental in fostering collaborations with the IDC (Islamabad Diagnostic Centre) and pursuing further advancements in the field of medical imaging.

In addition to my other research endeavors, I have actively participated in the National Research Program for Universities (NRPU) program initiated by HEC. I took on the role of Principal Investigator (PI) for the project titled "*Machine Learning based quantification of ejection fraction by automated cardiovascular MRI.*" This collaborative project involved Dr. Tahir Naveed, an Associate Professor from the Punjab Institute of Cardiology in Lahore, Pakistan, as the sectorial collaborator. The main objective of this project was to develop a cutting-edge machine learning approach for the automated quantification of ejection fraction in cardiovascular MRI, a crucial parameter in assessing cardiac health.

Moreover, I also submitted another NRPU project, this time as a Co-Principal Investigator (Co-PI), titled "*Artificial Intelligence (AI) based non-intrusive load monitoring for IoT-based energy management system.*" In this project, we aimed to leverage the power of artificial intelligence to create a non-intrusive load monitoring system that would be seamlessly integrated into IoT-based energy management systems. The goal was to enhance energy efficiency and optimize power consumption through smart AI-driven techniques.

Throughout my academic journey, I have made remarkable contributions to the field of magnetic resonance imaging, as evidenced by my extensive publication record. I have authored/co-authored 32 impactful journal publications, collectively accumulating an impressive cumulative impact factor of 71.68. Among these articles, 30 have been featured in top journals within the magnetic resonance imaging community, including renowned publications such as *Magnetic Resonance*, *Magnetic Resonance Materials in Physics Biology and Medicine*, *Magnetic Resonance Imaging*, *Computers in*

Biology and Medicine, BioMed Research International, Journal of Applied Magnetic Resonance, Biomedical Research, and Concepts in Magnetic Resonance Part A: Bridging Education and Research.

Furthermore, I have demonstrated my expertise and standing in the field through my active participation in prestigious conferences. I have authored/co-authored 11 conference publications in the flagship conference of the *International Society for Magnetic Resonance in Medicine (ISMRM)*, where competition is fierce, and acceptance rates are low. I am pleased to share that five of my conference papers were accepted in ISMRM, which is a testament to the quality and significance of my research. Additionally, one of my papers was accepted in the esteemed GTC of 2019 conference, organized by NVIDIA, a leading manufacturer of GPUs, further highlighting the relevance and impact of my work. Moreover, I have published four conference papers in reputable IEEE conferences, further solidifying my presence in the academic community. Moreover, my contributions were recognized as I was invited to participate in a Plenary Session at the European Society for Magnetic Resonance in Medicine and Biology (ESMRMB) conference in Edinburgh, UK, in 2015. This distinguished role enabled me to contribute to and facilitate discussions on cutting-edge research and advancements in the field of magnetic resonance imaging and medicine.

My contributions to the field have not gone unnoticed, as evident from a substantial citation count of 155 according to Google Scholar. My research expertise has also led me to serve as a valuable reviewer for esteemed journals like *IEEE Access* and *Applied Magnetic Resonance Imaging*, where I actively contribute to maintaining the high standards of published research.

In addition to my academic and research achievements, I have actively engaged in administrative tasks within the department. As a course lead, I have successfully managed Computer Fundamentals, Operating Systems, and Software Engineering Concepts. I have also served on the supervisory committee for MS and PhD theses, contributed to the Departmental Media Management Committee, and acted as the Class Advisor for Computer Engineering students, fostering a conducive learning environment, and promoting their overall well-being and academic success.

In summary, my academic journey reflects a passion for teaching, a dedication to impactful research, and a commitment to administrative responsibilities. I continue to strive for excellence in advancing knowledge in magnetic resonance imaging and related fields, fostering a conducive learning environment, and contributing to the overall growth of students and researchers.