Nazeer Muhammad, Ph.D.

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🏛 https://paf-iast.edu.pk/personnel/dr-nazeer-muhammad/
🆔 https://orcid.org/0000-0002-4056-9854
🔵 https://scholar.google.com.pk/citations?user=Cs-MSpwAAAAJ&hl=en
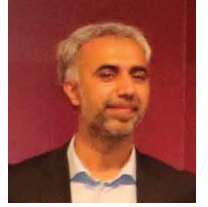
Research & Teaching Profile

Mathematical Modelling in Imaging for denoising, classification, segmentation, object detection, image compression, dehazing, image restoration, image and video captioning, explainable AI, real-time object analysis, fined grain detection, augmented reality, neural network architecture, and Deep-learning approaches with TensorFlow optimization.

Post Ph.D. Teaching Experience: **9+ years** | Citations: **2400+** | h-index: **29** | i10-index: **62** | IF : **180+** | SRJ-Quartiles Publications: Q-1= **25**, Q-2= **31**, Q-3= **10**, Q-4= **2** | Journals ISI = **70+** | Conference proceedings = **10+** | Book chapter = **1** | Patent Granted: **02** | Patent filed: **01** | Thesis supervised: **19** | Project awarded as PI : **02** ($4,278 and $115,702)

Current Position

2020···	🔖	**Assistant Professor,** School of Computing, Pak-Austria Fachhochschule Institute of Applied Sciences and Technology, Haripur, 22711, Pakistan
Teaching	📑	**Courses Taught**
FA 2024	📑	Discrete Structure, 80 Students - UG, 54 Hrs
SP 2024	📑	Advanced Digital Image Processing, 27 Students - Grad, 51 Hrs
	📑	Linear Algebra, 27 Students - UG, 54 Hrs
SP 2023	📑	Calculus and Analytical Geometry , 95 Students - UG, 54 Hrs
FA 2023	📑	Linear Algebra, 78 Students - UG, 51 Hours
	📑	Calculus and Analytical Geometry, 84 Students - UG, 51 Hrs
FA 2021	📑	Computer Vision and Pattern Identification, 24 Students - Grad, 51 Hrs
	📑	Artificial Intelligence, 87 Students - UG, 51 Hrs
FA 2020	📑	Advanced Deep Learning, 24 Students - Grad, 51 Hrs
Research	🎓	**Student Theses Supervision**
SP 2024	🎓	Maria Sadiq: Object Deep Features Extraction for Fine Grained Object
	🎓	Sidra Bibi: Object Accelerating Motion Observation using Deep Deblurring Mechanism
	🎓	Noufal: NeuroAI-Brain Tumor Detection and Prognosis with Deep Learning
	🎓	Ammara Irfan: Enhanced Unsupervised Image Segmentation through Differentiable Feature Clustering
FA 2023	🎓	Atif Basir: Optimal Solar Energy Forecasting by Artificial Neural Network
SP 2022	🎓	Shahid Nawaz Khan: Fast Encoding Techniques for Multi-View High Efficiency Video Coding (MV-HEVC)
Tasks	☰	**Administrative Assignments**
2024···	☰	Convener of Industrial Liaison Officers and represents the School of Computing's faculty at PAF-IAST
	☰	Undergraduate & Graduate Research projects and theses Supervision
2023···	☰	Coordinator, Resource Allocation & Departmental Activities in Mathematics
2022···	☰	Lead Member, Adjunct Faculty Evaluation Committee
2021···	☰	Member, Graduate Thesis Evaluation Committee
	☰	Convener, Course Codes Assignment for Mathematical & Machine Learning

Current Position (continued)

	Member, University Committee for OBE System Implementation
2022···	Member, Mathematical Houses, ECOSF (Consortium of 10 Countries)
2022–2023	Advisor, Society for Industrial Robotics (Event Organization for Mathematics)
2020–2023	Member, Advance Study and Research Board (ASRB), PAF-IAST
2020···	Overseer, Department Accreditation Activities with NCEAC (Computing Body)
	Teach undergraduate and graduate courses in mathematics & Machine Learning
	Member, Curriculum Development Committee (Undergraduate & Postgraduate)

Previous Positions

2015 – 2020	**Assistant Professor.** Department of Mathematics, COMSATS University Islamabad.

Teaching	**Courses Taught**
FA 2019	Linear Algebra (Fall 2019), 40 Students - UG, 48 Hours
	Calculus and Analytical Geometry (Fall 2019), 38 Students - UG, 48 Hrs
FA 2018	Calculus and Analytical Geometry (Fall 2018), 56 Students - UG, 48 Hrs
FA 2017	Mathematical Machine Learning (FA 2017), 16 Students - Grad, 48 Hrs
SP 2017	Linear Algebra (Spring 2017), 50 Students - UG, 48 Hrs
SP 2016	Probabilistic Graphic Models (SP 2016), 15 Students - Grad, 48 Hrs
SP 2015	Discrete Structure (SP 2015), 40 Students - UG, 48 Hrs

Research	**Student Theses Supervision**
FA 2019	Hassan Ghani: Steganalysis Using Catalyst Kernals and Transfer Learning in CNN Domain
	Saqib Hussain Tahir: Segmentation of the Lungs and Their Lesions in Computed Tomography Images
	Shoaib khan: Brain Tumor Detection Using Neural Network Gradients Orientation in Scale-Invariant Wavelet
FA 2018	Sana Munir Khan: Segmentation of Defective Lung Region Using Integral Transforms in Radon Domain Using the Sigmoid Function
	Rubab: Automatic Detection of Aloe Vera Disease by Using the Tensor Flow Approach
FA 2017	Hira Khan: Haze Line Image Dehazing Using Radiance Transformation in Wavelet Domain
	Isra Naz: Robust Discrimination of Leukocytes Protuberant Types with Early Diagnosis of Leukemia
	Zulqarnain: Novel Fault Tolerant Routing Scheme for Networking Operation on Chip using 2D Mesh Topology
	Atta Ullah Qazi: Implementation Of Auto Focusing In IR Imaging
	Ziaullah Khan: Automatic Detection and Classification of Infected Regions of Plant Diseases
	Muhammad Kashif Akram: An Adaptive and Dynamic Fault Tolerant Routing Algorithm for NoC
FA 2016	Hajra Faraz Khan: Area efficient implementation of low complexity error correcting codes
	Sarwat Aamina: Copy-Move Forgery Detection in Digital Images Using Passive Approach
FA 2015	Alamdar Hussain: Performance Analysis of various adaptive PID controllers for Noisy systems

Tasks	**Administrative Assignments**
2015–2020	Taught & Supervised undergraduate and graduate students
2015–2019	Supervised postgraduate student research
2017–2020	Conducted and published independent and collaborative research
2015–2019	Developed course materials and assessments

Previous Positions (continued)

2016–2020	☰	Convener, Uniform Management System
2018–2020	☰	Member, Department Assessment Review committee
2010 – 2015	🔖	**Ph.D. Researcher.** Department of Applied Mthematics, Hanyang University, South Korea.
2005 – 2010	🔖	**Research Associate.** Higher Education Commission, Islamabad, Pakistan.

Training

2021	✒	**Fachhoschule Teaching and Management Training,** FH|JOANNEUM, Graz, Austria

- **Result**: 30-ECTS Completed for University of Applied Sciences

Education

2010–2015	🔖	**Ph.D. in Applied Mathematics,** Department of Applied Mathematics **Hanyang University**, South Korea.
Ranking	🏛	**University World ranking**: 164 by QS in 2024
Thesis	🎓	**Title**: "On study of noise reduction and data hiding methods in image processing"
Result	◎	**Grade A**
Focus	📖	**Mathematical Modelling in Imaging,** this Ph.D. research was a joint work of Korean National Research Foundation (NRF) and the Higher Education Commission, Pakistan. We developed Sub-band replacement and fusion processor to deal noise effected and encrypted image data. The framework was successfully merged with a larger project of Korean NRF defense system.
Visits	🚩	**Ph.D. research purpose visits,** Ph.D. based research work visit and collaboration is performed at Imperial College London and University of Manchester.
Courses	📘	**Core Courses Completed during Ph.D.**

- Object Tracking and Information Fusion

- Intelligent Image Recognition

- Pattern Recognition Application

- Mathematical Modeling and Computation

- Statistical Computing

- Mathematical Modeling and Computation

- System Identification

Defense	⋰	**Dissertation Defense Committee**

- Prof. Seong Wook Kim – Ph.D from University of Mssouri-Columbia **(Chairman of Defense Committee)**

- Prof. Sung Soo Kim – Ph.D from KAIST **(Examiner & Referee Member)**

- Prof. Hyun Sook Oh – Ph.D. from Purdue University **(Examiner & Referee Member)**

- Prof. Hyunsuk Yang - Ph.D from Berkley University **(Examiner & Referee Member)**

- Prof. Kim, Dai-Gyoung – Ph.D. from Purdue University **(Ph.D. Advisor)**

Education (continued)

2003–2005	🔖	**Masters of Science in Mathematics.** University of Sargodha, Pakistan,Result: First Division
Focus	📖	This work comprises Direct and Inverse Source Problem, Numerical Analysis, Operation Research, Mechanics, and Mathematical Modelling
Courses	📕	Operation Research, Methods for ODEs & PDEs, Numerical Solution of PDEs, Mechanics, Advanced Numerical Analysis, Differential Equations, Numerical Linear Algebra
2000–2004	🔖	**Bachelor of Science in Mathematics.** University of Peshawar, Pakistan, Result: First Division
Focus	📖	The mathematical theory for Fourier Series expansion, basic engineering mathematics, probability and statistics.
Courses	📕	Calculus and analytical geometry, Linear Algebra, Numerical Computation, and Differential Equation

Awards, Fellowships & Grants

2023   🏆   **Innovative Seed Fund (ISF) Award,** Innovative Seed Fund (ISF) Award by Asian Development Bank

- Invaluable contributions in making the Innovative Seed Fund (ISF) Call 2022-23 shortlisted startups by Asian Development Bank about a worth of of $ 35,000, on pitching the idea "Right Aptitude and Skills Test using Artificial Intelligence".

2022   🏆   **DOST-approved PhD supervisor,** Approved DOST-approved PhD supervisor by KPK, Pakistan

- Awarded an approved Directorate of Science and Technology (DOST)-PhD supervisor by KPK, Pakistan to supervise the state of art science and technology projects.

2021   🏆   **Fachhochule Teaching and Management Training Award,** Fellowship Award for Fachhochule Teaching and Management Training

- On the basis of intensive teaching practices, a Fellowship for Fachhochule Teaching and Management for University of Applied Science is awarded by FH|JOANNEUM, Graz, Austria.

2019   🏆   **Approved PhD Supervisor Award by HEC,** Approved PhD Supervisor Award by HEC, Pakistan

- Awarded an approved PhD Supervisor by HEC, Pakistan and supervised more than 20 graduate student theses.

2018   🏆   **National Research Program for Universities Grants Award,** National Research Program for Universities (NRPU) grant awarded by Higher Education Commission (HEC) of Pakistan as Principal Investigator

- Grant is awarded on highly competitive based for National Research Program for Universities (NRPU) about a worth of of $ 115,702, entitled on "Salient Features Retrieval Proposal using Denoising and Enhancement of Brain Modalities in Hologram Domain".

2017   🏆   **Faculty Honorarium Award,** Faculty Honorarium Award by COMSATS University Islamabad

- On the basis of exceptional teaching, research, and administrative contributions, COMSATS University Islamabad honored him with the Best Faculty Honorarium Award in the Department of Mathematics for the year 2017.

2016   🏆   **Computational, Complexities, Innovations, and Solutions Award,** Computational, Complexities, Innovations, and Solutions award by CIIT

- awarded for providing the Computational, Complexities, Innovations, and Solutions award at COMSATS Institute of Information Technlogy, Abbotabad.

       🏆   **Startup Research Grant Project award,** Grant is awarded for the Start-up

- Grant is awarded for the Start-up by HEC, Pakistan about a worth of $ 4,278 on title of the work, "Reversible Integers Wavelet Transform for Blind Image Hiding Method".

Awards, Fellowships & Grants (continued)

🏆 **Faculty Tenure Track Award,** Faculty Tenure Track Award for COMSATS University Islamabad by HEC, Pakistan

- Appointed as Assistant Professor in the Department of Mathematics at COMSATS University Islamabad, Pakistan under Tenure Track System award and completed mid term probation with remarkable comment of **outstanding** from the Department Chairman, Dean, and Rector.

2015   🏆 **Research Productivity Award,** Research Productivity Award Award by CIIT

- On the basis of excellent academic and research performance, Dr. Muhammad was awarded a COMSATS Institute of Information Technology.

2012   🏆 **Academic Excellence and Honor Award,** Academic Excellence and Honor Award: Scholarship Granted by Hanyang University, South Korea

- Excellent and Honor Scholarship for tuition fee waiver during His PhD studies at Hanyang University, South Korea.

2010   🏆 **HEC Overseas Scholarship,** Overseas Scholarship for MS/MPhil Leading to PhD in Selected fields: PHASE-II, Batch-II for Hanyang University, South Korea

- This is highly competitive award and Dr. Muhammad able to achieve one of its screening criteria by attaining the 97 percentiles in the Graduate Admission Test. It covers both a monthly stipend and airfare about an $51,200.

Essential contributions to the organization

2024···   🔊 **Convener of Industrial Liaison Officer in School of Computing,**

- Play a significant role of Convener of Industrial Liaison Officer and representing all Faculty members in School of Computing at PAF-IAST. This role in matters related to the placement of the students to various national and international industries to complete the 500 Hours internship.

2022···   🔊 **Faculty advisor for the Society of Industrial Robotic,**

- Primary role is to guide, support, and inspire the students at School of Computing at PAF-IAST as they explore and develop their interests in industrial robotics.

2023···   🔊 **Advisory member of Mathematics Science Foundation (ECOSF),**

- Nominated as member of advisory board for Economic Cooperation Organization Science Foundation (ECOSF) which aimed to promote mathematical inclusivity within the organization of ECOSF (consortium of 10 countries).

2012···   🔊 **Research contribution at International scientific venues,**

- Presented the research work at the IEEE International Conference on Imaging Systems and Techniques in Manchester, UK, and at the World Congress on Engineering held at Imperial College London, UK and many well known Universities/Institutes, nationally and internationally.

2010···   🔊 **Role as volunteer for learning and sharing the knowledge,**

- Eeager to learn and share the knowledge beyond the boundaries in mathematics which is an international language as well play a role of volunteer, e.g., demonstrated a teacher role at primary level at Yakdae Elementary School, South Korea.

Conference, Workshops, and Seminar Committee Representation

2024   ⬡ **Chaired a Artificial intelligence Conference and Expo,** Chaired a 3rd Session for Artificial intelligence Conference and Expo held in May, 2024, Haripur, Pakistan

Conference, Workshops, and Seminar Committee Representation (continued)

⬡ **Graduate Thesis and Ph.D viva voice examiner,** Played a role of Graduate Thesis examiner and member graduate examination committee at PAF-IAST and Ph.D viva voice examiner at University of Engineering and Technology, Taxila

2023 ⬡ **Moderator to Mathematics and Emerging Science ECOSF,** serve as a moderator to Mathematics and Emerging Sciences seminar, organised by ECOSF, an International Lecture series

⬡ **Member Programm Committee DEXA,** Played a role in program committee on Database and Experts Systems Applications - DEXA 2023, i.e. 33rd International Conference on AI System Engineering: Math, Modelling and Software (AISys 2023) held at Penang, Malaysia

2022 ⬡ **Member Programm Committee DEXA,** Played a role in program committee on Database and Experts Systems Applications - DEXA 2022, i.e. 33rd International Conference on AI System Engineering: Math, Modelling and Software (AISys 2022) held at Vienna, Austria

⬡ **Project Evaluator, Pakistan Science Foundation,** Played a role of Project Evaluator as eminent Scientist and Technologist according to Pakistan Science Foundation, 2022, under the project entitled, "Competitive Research Program" on payment of honorarium for the technical remarks and comments

⬡ **Scientist nominated for Mathematics Science Foundation (ECOSF),** Played a role of top notch scientist nominated by Mathematics Science Foundation (ECOSF) and participated in panel discussion on Mathematical inclusion in ECOSF (consortium of 10 countries)

2019 ⬡ **Adjudicator for Institute of Space Technology youth Carnival,** Played a role of adjudicator for Institute of Space Technology to judge the youth Carnival 2019, Islamabad, Pakistan

2017 ⬡ **Member COMSATS Mathematical Olympiad,** Played a role to the planning and execution of a Mathematical Olympiad competition held at COMSATS University Islamabad, Wah Campus, Pakistan

Current Research Students

Fall 2024 🔖 **Muhammad Usman,** working on "Machine Learning Approaches for Testing and Evaluation of Aptitude for potential youth"

Spring 2024 🔖 **Mahenoor,** working on "Human Motion Reconstruction from Monocular video with skeleton consistency"

Referee for Reviews of Esteemed Journals

Since Feb, 21 ⬡ **Engineering Applications of Artificial Intelligence (EAAI),** *Impact Factor score: 7.5, Quartile ranking: Q-1, Tier Ranking: T-1, Eigenfactor [EGF]: 92*

Since Apr, 22 ⬡ **ISPRS Journal of Photogrammetry and Remote Sensing,** *Impact Factor score: 10.6, Quartile ranking: Q-1, Tier Ranking: T-1, Eigenfactor [EGF]: 91*

Since Jun, 18 ⬡ **IEEE transactions on communications,** *Impact Factor score: 7.2, Quartile ranking: Q-1, Tier Ranking: T-1, Eigenfactor [EGF]: 98*

Since Feb, 20 ⬡ **Expert Systems with Applications,** *Impact Factor score: 7.5, Quartile ranking: Q-1, Tier Ranking: T-1, Eigenfactor [EGF]: 98*

Since Nov, 17 ⬡ **Photonics Research,** *Impact Factor score: 6.6, Quartile ranking: Q-1, Tier Ranking: T-1, Eigenfactor [EGF]: 87*

Since Jan, 16 ⬡ **Neural Computing and Applications,** *Impact Factor score: 4.7, Quartile ranking: Q-1, Tier Ranking: T-1, Eigenfactor [EGF]: 97*

Since Sep, 21 ⬡ **Remote Sensing,** *Impact Factor score: 4.4, Quartile ranking: Q-1, Eigenfactor Tier Ranking: T-1, [EGF]: 100*

Since May, 23 ⬡ **International Journal of Machine Learning and Cybernetics,** *Impact Factor score: 3.1, Quartile ranking: Q-1, Tier Ranking: T-1, Eigenfactor [EGF]: 85*

Since Jul, 16 ⬡ **Multimedia Tools and Application,** *Impact Factor score: 3.0, Quartile ranking: Q-1, Tier Ranking: T-1, Eigenfactor [EGF]: 95*

Referee for Reviews of Esteemed Journals (continued)

Since Feb, 17   ⁘   **IET intelligent transport systems,** *Impact Factor score: 2.8, Quartile ranking: Q-1, Tier Ranking: T-1, Eigenfactor [EGF]: 93*

Since Aug, 22   ⁘   **Mathematics,** *Impact Factor score: 2.3, Quartile ranking: Q-1, Tier Ranking: T-1, Eigenfactor [EGF]: 95*

Significant Scientific Contributions

2023··· ◈ **Salient Information Detection and Automation,** This study is developed on the Camoufladging, automatd parking system, deep ultraviolet laser diodes and cognitive radio networks addressing urban mobility challenges with practical solutions.

2020··· ◈ **Super-Resolution Enhancement for Digital Imaging,** This study is demonstrated for enhancing microscopic image resolution is a valuable contribution to the field. By introducing composite filtering, Abbe's limitation, and digital lens formulae. The work is developed a method that can potentially overcome the limitations of traditional microscopy techniques and achieve super-resolution imagery.

2019··· ◈ **Modeling for Intelligent Systems for Prediction, Decision, and Optimization,** This work is optimized in collaboration with well known authored of cloud-based frameworks for sports applications and predictive modeling for intelligent systems. Contributions is done to traffic sign recognition, human action recognition, and face recognition are particularly noteworthy, as important challenges in computer vision and artificial intelligence.

2018··· ◈ **Digital Imaging for Cardiac Conditions and Mammograms,** This work is developed in collaboration with well-known researchers in the field of healthcare on cardiac conditions, and mammogram by addressing critical areas where early detection can significantly improve patient diagnosing.

◈ **Leveraging innovative neuroimaging technology for the timely detection of brain abnormalities such as stroke and aneurysms,** This study is helped to identify weak spots in blood vessels—often caused by high blood pressure, head injuries, or infections—that can lead to dangerous bulges or aneurysms. This approach has made it easier to spot and treat these issues on early stages.

2017··· ◈ **Noise Cancellation of Signal,** This work is performed in collaboration with Dr. Nargis Bibi and Professor Berry Cheetham from the University of Manchester on noise cancellation using orthogonal frequency division multiplexing (OFDM) is a significant contribution to the field of signal processing.

◈ **Estimation of atmospheric light for poor vision system with dehazing model,** This study is developed the dehazing model to reduce the scene prominence in terms of color contrast to improve the poor vision system. Image captured in bad weather conditions confines scene prominence, appears grey and diminishes image contrast. This usually happens due to atmospheric dispersing phenomenon that affects the quality of outdoor computer vision frameworks.

2014··· ◈ **Noise estimation and denoising of digital images,** This study is used for denoising of digital images using sub band replacement and fusion process with adaptive weights is proposed for image denoising and estimation. These weights are required to reduce aliasing effects.

2012··· ◈ **Blind data hiding methodology using the Fresnelet transform,** This study is created a blind data hiding scheme is proposed in which data is decomposed using the Fresnelet transform. The inverse Fresnelet transform is performed on decomposed subbands by choosing different key parameters, and the coded pattern of the information data is obtained.

Collaborations & Research Invitations

2023··· ⚑ **Detection of Emulation Attack,**

- Dept. of Computer Science, Saudi Electronic University, Saudi Arabia

- Dept. of Computer Science, Fatima Jinnah Women University, Pakistan

Collaborations & Research Invitations (continued)

2021··· ⚑ **Solar energy optimization,**

- Dept. of Engineering Sciences, King Faisal University, Saudi Arabia

- Dept. of Engineering Sciences, GIKI, Pakistan

- Dept. of Electrical Engineering, PAF-IAST, Pakistan

2018··· ⚑ **Recognition of diseases using AI in tensor flow domain,**

- Dept. of Computer Science, COMSATS University Islamabad, Pakistan

- Dept. of Computer Science, Sejong University, South Korea

- Dept. of Computer Science, HITEC University, Pakistan

- Computer Science Dept., King Saud University, Saudi Arabia

- Dept. of Computer Science, Foundation University Islamabad, Pakistan

⚑ **Super-resolution/Camouflaging of image data,**

- Dept. of Computer Science, University Putra Malaysia, Malaysia

- Dept. of Computing, Atlantic Technological University, Ireland

- School of Computing, Pak-Austria Fachhochschule Institute of Applied Sciences and Technology, Pakistan

- Computer Science Department, College of Computing and Informatics, Saudi Electronic University, Saudi Arabia

⚑ **Brain Modalities,**

- Sheikh Khalifa speciality Hospital, RAK, UAE

- Dept. of Neurology, Rashid Hospital, UAE

- Cardiology center, Khyber Medical University, Pakistan

2017··· ⚑ **Prediction Mode Decision in Sports,**

- Faculty of Computer Science, Mathematics, and Engineering,

- University of Twente, Netherlands

- Dept. of Electrical and Computer Engineering, North Dakota State University, USA

⚑ **Cardiac care analysis,**

- Section of Cardiac Surgery, University of Verona, Italy

- Dept. of Anatomy, Università di Addis Abeba, Ethiopia

- Faculty of Science and Technology, Meijo University, Japan

- Dept. of Medical Sciences, The Aga Khan University, Pakistan

- Dept. of Medical Sciences, University of Liverpool, UK

- Dept. of Medical Sciences, King Saud University, Saudi Arabia

Collaborations & Research Invitations (continued)

2016··· 🏴 **Image Denoising/Dehazing,**

- Divison of Applied Mathematics, Hanyang University, South Korea

- Dept. of Applied Statistics, Gachon University, South Korea

- Dept. of Computer Science, COMSATS University Islamabad, Pakistan

- Chongqing Key Laboratory of Image Cognition, China

2014··· 🏴 **Noise Cancellation of Signals,**

- School of Computer Science, The University of Manchester, UK

- School of Computer Science, Fatima Jinnah Women University, Pakistan

- College of Computer and Information Sciences, Prince Sultan University, Saudi Arabia

Talks & Seminar Presentations

2024 🔖 Machine Learning, Artificial Intelligence, and Data Science Dependencies for Advancing Modern Technologies Using Basic Mathematics, served as an esteemed speaker, Lecture Series on Popularizing Mathematics and Science arranged by ECO Science Foundation (Consortium of 10 countries)

2023 🔖 Mathematical Machine Learning with Recent Trends and Applications, on Seminar Invitation at COMSATS University Islamabad, Pakistan

🔖 Principal Component Analysis and its associated applications in AI/Data Science and Machine Learning, expert lecture talk at School of Computing at PAF-IAST, Pakistan

2022 🔖 Deleievered a talk as a top notch scientis on World Science Day for Peace and Development arranged by United NationsEducational, Scientific and Cultural Organization (UNESCO), Standing Committee for Scientific and TechnologicalCooperation (COMSTECH), the Commission on Science and Technology for Sustainable Development in theSouth (COMSATS), Pakistan Academy of Sciences (PAS), and Pakistan Science Foundation (PSF) on the themeof importance of Basic Sciences for Sustainable Development

2017 🔖 Image De-noising using Bayes Estimators, Centre for Advanced Studies in Mathematics (CASM) at (LUMS), Pakistan

2016 🔖 Edge Enhanced Denoising Mathematical model, 11th Symposium on Computational Complexities, Innovations and Solutions COMSATS IIT, Abbotabad, Pakistan

🔖 Dynamic AI Based Learning Teaching Approach, COMSATS IIT, Wah Cantt, Pakistan

2015 🔖 On study of noise reduction and data hiding methods, School Seminar, SNS, National University of Science and Technology (NUST), Pakistan

2013 🔖 BM3D-SDT Hybrid Model for Image De-noising using PCA, School Seminar, Division of Applied Mathematics, Hanyang University, South Korea

2012 🔖 Application of Fresnelet Basis, School Seminar, Department of Electrical and Mechanical Engineering, Kangwon University, South Korea

🔖 An Efficient Data Hiding Technique in Frequency domain by using Fresnelet Basis. World Congress on Engineering. Imperial College London, UK

2011 🔖 Robust Watermarking Technique by Using LU Decomposition Method, School Seminar, Division of Applied Mathematics, Hanyang University, South Korea

Selected Patents

P2 M. Aamir, **Muhammad, Nazeer**, M. Sajid, Solar-Powered System for generating steam and distilled water, (United States Patent No: US 11,819,776 B1, Date of Patent: Nov. 21, 2023) **patents.google.com/patent/US11819776B1/en**

P1 M. Aamir, M. Sajid, **Muhammad, Nazeer**, Open Land Overhead Movable Nozzle Sprinkle Irrigation System for Varied Terrain, (United States Patent No: US 11, 877,544 B1, Date of Patent: Jan. 23, 2024) **patents.google.com/patent/US11877544B1/en**

P **In Revision and Preparation,**

"Novel Deign of Solar Thermal Integrated Declination and Steam Production Unit" (PA000183 Docket No. 33102.53S) (Filed confirmation No. 9699)

Book Chapter

B1 **Muhammad, Nazeer** and D.G. Kim, Resolution Enhancement for Digital Off-Axis Hologram Reconstruction, in IAENG Transactions on Engineering Technologies: Special Volume of the World Congress on Engineering 2012, G.C. Yang, S.-l. Ao, and L. Gelman, Editors. 2013, Springer Netherlands: Dordrecht. p. 431-443. **ISBN : 978-94-007-6189-6**

Selected Conference Proceedings

C5 **Muhammad, Nazeer**, Kim D-G. Resolution Enhancement for Digital Off-Axis Hologram Reconstruction. IAENG Transactions on Engineering Technologies: Springer; 2013. p. 431–43.

C4 **Muhammad, Nazeer**, and Dai-Gyoung Kim, A simple approach for large size digital off-axis hologram reconstruction. World Congress on Engineering. Vol. 2. 2012.

C3 **Muhammad, Nazeer** and D. G. Kim, A novel Fresnlet based robust data hiding algorithm for medical images, 2012 IEEE International Conference on Imaging Systems and Techniques Proceedings, Manchester, 2012, pp. 213-216.

C2 Zahid Mahmood, **Muhammad, Nazeer**, Muhammad Arif, Imran Shahzad, Fahad Khan, Mazhar Ali, Uzair Khan, Samee U Khan, Boosting the Accuracy of AdaBoost for Object Detection and Recognition, Frontiers of Information Technology (FIT), 2016 International Conference, 2016.

C1 Maaz, I., Muhammad, U., Urooj, M., Nabila, N., Khasan, K., **Muhammad, Nazeer**, Kiran, S. "Numerical analysis of the indium compositional variation on the efficiency droop of the GaN-based light-emitting diodes" SPIE Optical Engineering + Applications, San Diego, California, USA, volume 10755, 2018.

Journal Articles

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represent Corresponding Authorship

A75 Chidiebere Somadina Ike, **<u>Nazeer Muhammad</u>**, Nargis Bibi, Samah Alhazmi, Furey Eoghan,"Discriminative context-aware network for camouflaged object detection", Frontiers in Artificial Intelligence. 7, 1347898, 2024/3/27, *Q-2* **DOI.org/10.3389/frai.2024.1347898, (IF-3.0)**.

A74 Rida Batool, Nargis Bibi, Samah Alhazmi, **Nazeer Muhammad**,"Secure Cooperative Routing in Wireless Sensor Networks", Applied Sciences. 12, 14, 5220, 2024, *Q-1* **DOI.org/110.3390/app14125220, (IF-2.5)**.

A73 Shazma Ali and Muhammad Usman and Laraib Mustafa and Jamshad Bashir and **Nazeer Muhammad**,"Effect of optimized quaternary waveguides on the performance of deep ultraviolet laser diodes ", Journal of Luminescence. 269, 120441, 2024, *Q-1* **DOI.org/10.1016/j.jlumin.2024.120441, (IF-3.3)**.

A72 Batool, Rehna, Nargis Bibi, **Nazeer Muhammad**, and Samah Alhazmi,"Detection of Primary User Emulation Attack Using the Differential Evolution Algorithm in Cognitive Radio Networks", Applied Sciences. 13, no. 1: 571, 2023, *Q-2* **DOI.org/10.3390/app13010571, (IF-2.838)**.

A71 Bin Xiao, Hira Khan, Weisheng Li, **<u>Nazeer Muhammad</u>**,"Recent advancement in haze removal approaches", Multimedia Systems. 28, 687–710, 2022, *Q-1* **DOI.org/10.1007/s00530-021-00865-8, (IF-1.935)**.

A70 **Muhammad, Nazeer**, Hira Khan, Nargis Bibi, Muhammad Usman, Naseer Ahmed, Shahid Nawaz Khan & Zahid Mahmood. "Frequency component vectorisation for image dehazing." Journal of Experimental & Theoretical Artificial Intelligence, (2021), 33:6, 919-932. *Q-3* **DOI.org/10.1080/0952813X.2020.1794232, (IF-2.340)**.

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A **In Revision and Preparation,**

Deep features extraction for fine grained object detection

Enhanced Unsupervised Image Segmentation through Differentiable Feature Clustering

Skills

Computing		IT skills, MATLAB, Python, Mathemtica, PDF-Adobe, Wondershare-(filmora), Video-editing, Microsoft applications and LaTeX.
Misc.		Academic research, teaching, training, consultation, typesetting and publishing.
Languages		Urdu (Mothertongue-native), English (Fluent-professional), Arabic (Intermediate-Conversational, Fluent in reading and writing), Korean (Intermediate-Conversational, Two Years Conversationally training passed), German (Conversational-basic).

Extracurricular

Passions		Relax to do Mathematical puzzle playing, Photography, Day-Dreaming & Hiking.
Pursuits		Explored: Qatar (2010), Japan (2010), South Korea (2010-2015), China (2012), Denmark (2012), United Kingdom (2012), Dubai (2021), Austria (2021), Slovenia (2021), Italy (2021), Saudi Arabia (2023).