

DR. MAJIDA KAZMI

Associate Professor

Computer and Information Systems Engineering

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RESEARCH INTEREST

My research interests are in Computer vision, Digital Systems Design and Artificial Intelligence.

ACADEMIC QUALIFICATION

2017 **Ph.D. (Electrical Engineering)** with specialization in **Digital System Design for Computer Vision**, National University of Sciences & Technology (NUST), Karachi, Pakistan

2008 **M.Engg (Electrical Engineering)**, NED University of Engineering & Technology, Karachi, Pakistan.

2005 **B.E (Electrical Engineering)**, NED University of Engineering & Technology, Karachi, Pakistan.

WORK EXPERIENCE

Associate Professor, NED University of Engineering & Technology, Karachi, Pakistan (Nov 2021 to date)

Assistant Professor, NED University of Engineering & Technology, Karachi, Pakistan (Mar 2018 to Nov 2021)

Senior Assistant Professor, Bahria University Karachi Campus (Jan 2018 to March 2018)

Research Scholar and Teacher Assistant, PNEC, NUST (Aug 2011 to May 2017)

Lecturer, NED University of Engineering & Technology, Karachi, Pakistan (Dec 2006 to Dec 2009)

HONORS AND AWARDS

1. Organized as Chair Publication “**IEEE 18th International Conference HONET 2021**”, 11-13 Oct 2021
2. Organized as Chair Printing and local arrangements “**First NED Women conference**”, 20-21 Dec 2019
3. Organized as Program Secretary “**34th All Pakistan IEEEEP Students Seminar**” (IEEEPSS34-2019)
4. Organized “**First International Conference on Carbon Neutral Built Environment**”- 20 and 21 December 2018
5. Organized as Program Secretary “**First International Conference on 4th Industrial Revolution**” (IC4IR-2018)
6. **Merit scholarship** from NUST for PhD studies.
7. Served as **technical program committee** in 3rd IEEE International Conference on Computer, Control & Communication 2013 (IEEE-IC4-2013)
8. Served as **technical program committee** in 32nd IEEEEP National Engineering Students Competition 2017 (NESC'17)
9. **Reviewer in Springer Nature Applied Sciences Journal, IEEE Access, Engineering, Technology & Applied Science Research (ETASR)**
10. **Member in Board of Review**, Students Affairs NED University (2019 to 2022)
11. **Member in Board of Review**, IT department NED University (2022 to date)
12. **HEC approved Supervisor**, Ref. HEC/HRD/ASA/2021/88071
13. **Supervisor (03) PhD** NED University
 - Ms. Fouzia Yasir on “Light weight AI core for edge computing”
 - Ms. Fakhra Aftab on “Embedded systems for computer vision application”
 - Ms. Mehwish Raza on “Approximate Computing for Machine learning”
14. GEC member for (02) **PhD** students in SSUET and (02) **PhD** students in PNEC, NUST.
15. Supervised four (03) **Masters ISP** NED University.

AWARD WINNING FYDP

1. AI enabled DR diagnosis and segmentation using OCT images, NEDAASC funding 2020-2021 as Project Supervisor (0.1 Million PKR)
2. An Efficient Crop Health Monitoring System Using Aerial Images", Ignite funding 2020-2021 as Project Supervisor (80,000 PKR)
3. Automated Industrial Robotic Arm For High Speed Assembly Lines", Ignite funding 2020-2021 as Project Supervisor (78,000 PKR)
4. A Machine Vision based Industrial Inspection System for Bottle Defects, NEDAASC funding 2019-2020 as Project Supervisor (0.1 Million PKR)
5. Efficient Fruit Grading System, NEDAASC funding 2018-2019, as Project Supervisor (0.1 Million PKR)
6. FPGA based system for automated diagnosis of Retinopathy", Ignite funding 2018-2019 as Project Supervisor (75,000 PKR)
7. Ligature segmentation for Urdu OCR on FPGA", Ignite funding 2019-2020 as Project Supervisor (70,000 PKR)

FUNDED PROJECTS:

1. De-burdening healthcare support via fully automated point-of-care screening process for diabetic retinopathy, NRPU HEC worth **4.68 Million PKR** as **Project Principal Investigator** in collaboration with A-eye Diagnostics (approved, ongoing project).
2. CONSOLE: Machine vision based industrial Inspection system for quality assurance, TTSF HEC worth **9.001 Million PKR** as **Project Principal Investigator** in collaboration with Procter and Gamble, Pakistan, (approved, ongoing project).
3. Artificial intelligence as a pathway to reduce industrial Downtime cost through hybrid predictive maintenance (ADVICE), NCAI-RF worth **13.16 Million PKR** as **Project Principal Investigator** in collaboration with Matco Foods, Pakistan (approved, ongoing project)
4. A-Eye Diagnostics, worth **3.6 Million PKR** as **Project Principal Investigator** in collaboration with Dr. Rehman Siddiqui (Director of Retina Services, Aga Khan Hospital), Pakistan (approved, ongoing project)
5. Brining Urdu in digital age worth **4 Million PKR** as **Project Principal Investigator** in collaboration with Dr. Anjuman Taraqqi Urdu Pakistan (approved, ongoing project)
6. Virtual Newborn Assessment worth **0.5 Million PKR** as **Project Principal Investigator** in collaboration with Indus Hospital (approved, ongoing project)
7. Capacity Building for Digital Independence, NED in collaboration with Thar Foundation worth 0.9 Million PKR
8. CNN based Efficient Urdu OCR on FPGA, Independent Research Project from NED worth **1 Million PKR** as **Project Principal Investigator** (Completed)
9. Thar Karachi Student Mobility Campaign for reducing Carbon footprint – HEC Social Integration Program, HEC Funding **0.5 Million PKR** (Completed)
10. Hira Foundation School Robotics and STEM program, HFS Funding **0.6 Million PKR**, as **Co-Principal Investigator** (Completed)

BOOK:

1. M. Hashir, **M. Kazmi**, H. R. Khan, S. A. Qazi, STEM and DIY Robotics Curriculum, A Teachers' Manual, 2020

LIST OF RECENT PUBLICATIONS

ISI Indexed Journal:

1. **Majida Kazmi**, Hashim Raza Khan, Lubaba, Hashir Bin Khalid and Saad Ahmed Qazi “Machine Learning based Optimal Short-term Electricity Load Forecasting for Higher Educational Institutions” in *Computers, Materials & Continua*, ISSN: 1546-2218, [ISI indexed journal **IF=4.89**]
2. Mustafa, Atif, **Majida Kazmi**, Hashim R. Khan, Saad A. Qazi, and Sarosh H. Lodi. 2022. "Towards a Carbon Neutral and Sustainable Campus: Case Study of NED University of Engineering and Technology" *Sustainability* 14, no. 2: 794. [ISI indexed journal **IF=3.251**]
3. **Majida Kazmi**, Fozia Yasir, Samreen Habib, Saad Hayat, Saad Ahmed Qazi, “Photometric Ligature Extraction Technique for Urdu Optical Character Recognition”, in *Engineering, Technology & Applied Science Research*, Available online [ESCI, HEC recognized journal]
4. Muhammad Faris, Tariq Javid, **Majida Kazmi**, Arshad Aziz, “Segmented Multistage Reconstruction of Magnetic Resonance Images” *Advances in Electrical and Computer Engineering* [IF=1.102]
5. Hashim Raza Khan, **Majida Kazmi**, Haris Bin Ashraf, Muhammad Hashir Bin Khalid, Abul Hasan, and Saad Ahmed Qazi “Single Phase Isolated AC-DC PFC Cuk Converter Supply for an IoT enabled BLDC Ceiling Fan with sensor less speed control based on FOC” *Electronics MDPI* [IF=2.110]
6. Fareeha Sameen, Abdul Momin Kazi, **Majida Kazmi**, Munir A Abbasi, Saad Ahmed Qazi and Lampros K Stergioulas “Improving Routine Immunization Coverage through Optimally Designed Predictive Models” in *Computers, Materials & Continua*, ISSN: 1546-2218, [ISI indexed journal **IF=4.89**]
7. Syed Wali, Muhammad Hassan ul Haq, **Majida Kazmi** and Saad Ahmed Qazi “An End-to-End Machine Learning based Unified Architecture for Non-Intrusive Load Monitoring” in *Engineering, Technology & Applied Science Research* [ESCI, HEC recognized journal]
8. Hashim Raza Khan, Abul Hasan, **Majida Kazmi**, Muhammad Nabeel Fayyaz, Hamza Khalid, Saad Ahmed Qazi, “A Holistic Approach to Urdu Language Word Recognition Using Deep Neural Network”, in *Engineering, Technology & Applied Science Research*, Available online [ESCI, HEC recognized journal]
9. **Majida Kazmi**, Arshad Aziz, Hashim Raza Khan, Saad Ahmed Qazi and Lampros Stergioulas, "Resource-Efficient Image Buffer Architecture for Neighborhood Processors," in *IEEE Access*, doi: 10.1109/ACCESS.2020.3025344 [ISI indexed journal **IF=3.6**]
10. **Majida Kazmi**, Arshad Aziz, Pervez Akhtar “A Pareto-Optimal Multi-filter Architecture on FPGA for Image Processing Applications. *Circuits Syst Signal Process* 38, 4762–4786 (2019). <https://doi.org/10.1007/s00034-019-01083-4> [ISI indexed journal **IF=1.998**]
11. **Majida Kazmi**, Arshad Aziz, Pervez Akhtar “An efficient and compact row buffer architecture on FPGA for real-time neighborhood image processing”. *J Real-Time Image Proc* 16, 1845–1858 (2019). <https://doi.org/10.1007/s11554-017-0690-7>, [ISI indexed **IF=2.01**]
12. **Majida Kazmi**, Arshad Aziz, Pervez Akhtar, Nassar Ikram “A Low Cost Structurally Optimized Design for Diverse Filter Types” *PLoS ONE*, (2016) [ISI indexed journal **IF=2.87**]
13. **Majida Kazmi**, Arshad Aziz, Pervez Akhtar, Dur-e-shahwar Kundi “FPGA Based Compact and Efficient Full Image Buffering for Neighborhood Operations” *Advances in Electrical and Computer Engineering (AECE)*, vol. 15, no. 1, pp. 95-104, (2015) [ISI indexed journal **IF=0.59**]

14. **Majida Kazmi**, Arshad Aziz, Pervez Akhtar, Nassar Ikram “A FPGA based Reconfigurable 2D Filter Architecture for Biomedical Image Preprocessing” Caspian Journal of Applied Sciences Research, vol. 5, no. 2, pp. 1-10, (2016) [ISI indexed journal]
15. Dur-e-Shahwar Kundi, Arshad Aziz, **Majida Kazmi** “An Efficient Single Unit T-box/Tinverse- box Implementation for 128-bit AES on FPGA” Wiley Journal of Security Communication Networks, vol. 8, no. 1, pp. 1725-1731 (2015). [ISI indexed journal **IF=1.06**]
16. Zareen Tabasum, **Majida Kazmi**, Arshad Aziz and Saad Qazi “A Robust Wavelet Based Digital Image Watermarking Technique Using FPGA” Mehran University Research Journal of Engineering Technology (MUJSE), vol. 29, no. 4, 2015 [ESCI, HEC recognized journal]
17. Razia Maroof, Pervez Akhtar, **Majida Kazmi** “Performance Comparison of LRBAC Method with DRLSE for the Segmentation of Tumors in MRI Images” Mehran University Research Journal of Engineering Technology (MUJSE), vol. 29, no. 4, 2015 [ESCI, HEC recognized journal]

Book Chapter:

18. **Majida Kazmi**, Arshad Aziz, Pervez Akhtar, Nassar Ikram “A FPGA Based Two Level Optimized Local Filter Design for High-Speed Image Processing Applications” Advances in Information and Communication Technology, part 2, Vol 538 of the series Advances in Intelligent Systems and Computing, pp 19-30, 2016, [Springer Book Chapter]

Conferences:

19. **Majida Kazmi**, Basra Hafeez, Hashim Raza Khan and Saad Ahmed Qazi, “Machine vision based plastic bottles inspection for quality assurance,” in 7th International Electrical Engineering Conference (IEEC 2022)
20. Syeda Hafsa Ahmed, Mehwish Raza, Shajeha, Inshal, **Majida Kazmi** and Saad A. Qazi “Faster RCNN Based Vehicle Detection and Counting Framework for Undisciplined Traffic Conditions” IEEE Honet 2021.
21. **Majida Kazmi**, Arshad Aziz, Pervez Akhtar, Aliza Maftun and Wasay Bin Afaq “Medical image denoising based on adaptive thresholding in contourlet domain” 5th International Conference on Bio Medical Engineering and Informatics, Chongqing, China 2012, pp. 313-318.
22. Quratulain, **Majida Kazmi**, Arshad Aziz “FPGA Based Secure Architecture for Medical Imaging” IEEE 8th International Bhurban Conference on Applied Sciences Technologies (IBCAST 2011) 10-13 January 2011 Pakistan.
23. **Majida Kazmi**, Arshad Aziz, Pervez Akhtar “Secure Transfer of Digital Images DICOM” 25th IEEE Annual Multi-topic International Symposium (SIMTS-2010), 17-18 March 2010 Pakistan.

Submitted in ISI indexed Journals:

24. Hashim Raza Khan, **Majida Kazmi**, Abul Hasan, Lubaba, Hahir bin Khalid, Saad Ahmed Qazi “Development of an efficient architecture of Energy Monitoring System”
25. Syeda Nashra Raza, **Majida Kazmi**, Arshad Aziz, “Hardware Implementation of Image Enhancement Technique for Biometrics”