Jawad Shah, PhD
Senior Member, IEEE
Professional Engineer
AWS Accredited Academy Instructor

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Profile Summary

18+ years of industry, research, and teaching experience with current focus on Machine learning, Data Analytics and IoT. Outstanding academic background (winner of two gold medals & presidential award), good track record of publishing work (more than 40 International journal & conference publications) and recipient of many national/international research grants (FGRS Malaysia, NRPU Pakistan, RDO Saudi Arabia). Proven record of teaching & research at three international universities in Pakistan, USA and Malaysia. Presently, I am also the Amazon Web Services (AWS) Academy accredited instructor and AWS cloud faculty ambassador, conducting trainings and workshops on AWS Data Analytics (ADA), IoT, Machine learning and Python. I am the team member of Parallel Processing & Machine learning lab for Industry 4.0 research cluster at UniKL British Malaysian Institute (BMI) Malaysia. Besides teaching and graduate students' supervision, I am also collaborating with various international universities in my area of research.

Education

PhD (Electronic Engineering)Sep 2011- May 2015
(International Islamic University Pakistan with Six months research fellowship at UC Denver/Anschutz Medical Campus USA)

Thesis Title: Applications of Compressed Sensing to biomedical Imaging.

Distinctions:

- Secured 9000 USD for perusing PhD Research at UC Denver USA.
- First position (course work CPGA=4.00/4.00)

MS (Telecom Engineering)Aug 2007-Nov 2009
(University of Engineering & Technology Peshawar, Pakistan)

Distinctions:

- Secured Pakistan Telecom Nomination for MS
- First position (CGPA=3.87/4.00)

BSc (Electrical Engineering)Mar 1997-Sep 2001
(University of Engineering & Technology Peshawar, Pakistan)

Distinctions:

- Winner of Two Gold medals for outstanding academic performance
- Winner of presidential award (89.22% marks)
- Winner of merit scholarship during each academic year.

Job Experience
Academic

1. ***Expatriate Faculty member*** *(Electronic Section, UniKL British Malaysian Institute Malaysia (Dec 2016 To date)*

Responsibilities: Teaching, research, industry collaboration, research projects and graduate student supervision. Members of Curriculum development committee, Final year Project (FYP) assessment committee and organizing committee member for various international conferences. Conducting trainings and workshops/Tutorials on AWS cloud computing, IoT and Python for data Analytics. Recently, I have developed curriculums for engineering degree program of UniKL on cloud computing, IoT and Big data analytics related to IR 4.0.

2. **Assistant Professor**, *Electrical Engineering, International Islamic University Islamabad Pakistan (Jan 2010 to Dec 2016)*

   Responsibilities: Worked as Undergraduate Program coordinator, Member Pre-selection and scrutiny committee, Member curriculum development committee, Member Board of Studies (Department of Electrical Engineering), Member board of faculty (Faculty of Engineering and Technology), Member of admission test/selection committee, Session Incharge & member of organizing committee for IEEE International Conference on Intelligent Systems Engineering (ICISE) 2016 & 2018.

3. **Visiting Assistant Professor** *UnikL BMI Malaysia (2015 to 2016)*

4. **Visiting Researcher** *University of Colorado, Denver USA (May 2014 to Nov 2014)*

Industry Experience

1. **Consultant** *(Aritifical Intelligence, Cloud computing & IoT),* **RT Technology, Malaysia (Mar 2018 to Nov 2018)**
2. **Pakistan Telecom Company Limited (Dec 2002 to Jan 2010).**

   i. **Senior Engineer** *Network Operation Center*

   ii. **Manager** *(Technical Assistance Center)*

   iii. **Engineer** *IN/IGE Operations*

3. **National Engineering & Scientific Commission Pakistan (Jun 2002 Dec 2002)**

   Assistant Manager *Electronic: R&D work on sine wave inverters*

Research Grants

- International **Collaborator** for the grant: "Intelligent Real-time Crowd Monitoring System Using Unmanned Aerial Vehicle (UAV) and Global Positioning Systems (GPS)", RDO 2020, Ministry of Education Saudi Arabia. (**1.277 Million SAR**).
- **Co-PI** for the research grant: "Improving Predictive Algorithm for Predicting Paddy Yield Based on Multiple Linear Regression and Internet of Things", Ministry of Education Malaysia, FRGS 2020. (**RM 55,900**)
- Principal Investigator **(PI)** of research project: Improving computational efficiency of Compressed Sensing based recovery algorithms for biomedical images, Ministry of Education Malaysia, FRGS 2019 (**68.2 thousand RM**)
- **Co-PI** for the grant: "Fundamental Study on Graph Transformed Deep 'Interactive' Learning Framework In Medical Image Segmentation", FRGS 2018, Ministry of Education Malaysia (**76 thousand RM**)
- **Co-PI** for the grant: "Development of Continuous-time Non-invasive Glucose Sensing System", FRGS 2018, Ministry of Education Malaysia (**104 thousand RM**)
- Principal Investigator **(PI)** of research project: "Implementation of Recovery Techniques for Compressively Sampled Biomedical Images Using Graphical Processing Unit", awarded by Higher Education Commission Pakistan (**6.4 Million PKR**), 2017.
- Principal Investigator **(PI)** Short term research grant: "Development of Real time fatigue detection/prediction", UnikL (**20 thousand RM**)
- **Co-PI** of research project: "Reconstruction of biomedical signals from under sampled data using sparse signal processing techniques", awarded by Higher Education Commission Pakistan (**6 Million PKR**), 2017.
- **PI** of research project: "Design Space explorations and development of functionally radiation hardened embedded computer in any satellite", awarded by National Engineering & Scientific Commission, Pakistan (0**.2 Million PKR**), 2016.

Professional Memberships

1. Senior Member IEEE (Membership number: 93159954, R10 -Asia and Pacific)
2. Graduate Engineer, Board of Engineers Malaysia (1818-030000-G2-0067L)
3. Professional Engineer, Pakistan Engineering Council (Elect/17445)

Area of research Interest
- Sparse Signal Processing
- Machine Learning and Data Analytics
- Cloud Computing & IoT

PhD Supervision

1. Muhammad Bilal: "Reconstruction of compressively sampled cardiac imaging", International Islamic University Islamabad, Pakistan (2019)
2. Shahid Ikram: Optimized Dictionary learning techniques for compressively sampled biomedical Imaging modalities, IIUI Pakistan (2020).

Currently, I am supervising three PhD students having research titles:
1. Akbar Khan: Crowd monitoring and localization using deep learning, UniKL BMI Malaysia.
2. Hassaan Haider: Efficient Implementation of Sparse recovery algorithms using Graphical Processing Units (GPU), IIUI Pakistan.
3. Abdul Wahid Tareen: Optimized implementation of multilayered convolutional sparse coding (ML-CSC) framework for high dimensional, IIUI Pakisan.

MS Supervision
Supervised/Co-supervised:

1. Pattern detection methods using EEG signal Processing, Ezatti Shaiful, UniKL BMI, Malaysia (2020).
2. Anterior Cruciate Ligament (ACL) knee injuries classification using convolutional Neural Networks (CNN), Hanif Razali, UniKL BMI, Malaysia (2020).
3. Elbow angle estimation for rehabilitation using deep learning, Muhammad Yahya, UniKL BMI (2019)
4. FPGA based architecture for STM-1 core development and clock synchronization, Salman Waheed, IIUI Pakistan (2018)
5. Recovery of Compressively Sampled Biomedical Images using Iterative Thresholding Algorithms, Hassan Haider, NUST Pakistan (2017)
6. De-noising of biomedical images using techniques of Sparse Signal Processing, Hayat Ullah Kha, IIUI Pakistan (2016)

MS Students Under Supervision:

1. Parallel implementation of Compressed sensing algorithms for MR images, Syed Saadain, UniKL BMI, Malaysia.
2. Energy consumption and maximum demand prediction using machine learning techniques, Aman Ullah, UniKL BMI, Malaysia.
3. Modulation schemes classification based on Deep Neural Networks, Amirah, UniKL BMI

Selected BS Engineering Projects supervised

1. Cloud based rehabilitation of stroke patients.
2. IoT based energy monitoring system
3. Speech signals denoising using TMS30C712.
4. Implementation of Error correction codes in C++.
5. Micro controller-based SCADA system using FM communication.
6. EMG signal acquisition and denoising using Arduino.

Special invitations (Guest/Keynote Speaker etc.)
- Chief judge at SBPI Gombak, for competition on "Smart Industry: Reforming the World", 2019.
- Invitation by R.T Technology Sdn Bhd, for knowledge sharing session on AWS cloud, 2019.
- Worked with the Ministry of Human Resource (MOHR) Malaysia as cloud computing expert, 2018.
- Represented UniKL BMI at Centre for instructor and advanced skill training (CIAST), JPK Malaysia for introducing scratch programming, 2018
- Keynote Speaker at Symposium on Acoustic, Speech and Signal Processing (SASSP) held at Multimedia University Cyberjaya, Malaysia 2017.

- Tutorial on sparse Signal acquisition and compressed sensing, The International Conference on Engineering Technologies and Technopreneurship (ICE2T 2017), Kuala Lumpur.
- Graduate Seminar on Sparse Signal Acquisition and recovery, at UIA Malaysia, 2017.
- Graduate Seminar on "Introduction to Sparse Coding & Dictionary learning" at UniKL British Malaysian Institute, Malaysia, 2016.
- Guest Lecture: "Under-determined Systems of Linear equations and Sparse Signal processing", COMSATS Islamabad Pakistan, 2015.
- Guest Lecture: "Compressed Sensing for Fourier encoded biomedical imaging modalities" at UniKL (British Malaysian Institute), 2015.
- Professional Development Program: "Linear algebra for Digital Signal Processing" at IIU Islamabad, Pakistan, 20015.

Trainings conducted/Courses Taught

Professional trainings conducted:
- *IoT with Raspberry Pi, NobleProg **Singapore** (One day), 2020.*
- *Introduction to Python, DBS Bank **Singapore** (2 days), 2019.*
- *Python for Data Analytics, **DBS Bank Singapore** (2 days), 2019.*
- *AWS cloud fundamentals, UniKL BMI, Malaysia (2 days), 2019.*
- *IoT with raspberry PI and Node-RED, UniKL BMI Malaysia (2 days), 2018.*

Graduate Level

Machine learning with Scikit-learn, Adaptive Signal Processing, Sparse Signal Processing, Applied Linear Algebra.

Undergraduate

Signals & Systems, Probability and Random Variables, Circuit Analysis-II, Digital logic Design, Introduction to programming, Introduction to Microprocessors.

International/National Trainings attended

I have participated in more than 20 professional and academic trainings in Pakistan, China, Singapore, Malaysia & USA. These include industry related workshops such as Next Generation Networks, Data Networks, relational Databases etc. as well as academic related trainings like Curriculum Development, Teaching methodology, Outcome based Education and Teaching Assessments.

Selected Trainings list
- *Introduction to STM32 microcontroller programming   (2 days)*
- *Big Data Analytic for Industry 4.0, IBM Malaysia   (2 days)*
- *Architecting on AWS(3 days)*
- *AWS Technical Essentials   (One Day)*
- *AWS Academy Cloud Computing Architecture - Instructor Accreditation (One week)*
- *AWS Academy Cloud Foundations (ACF)(3 days)*
- *ORACLE and UNIX, PTCL Academy Islamabad Pakistan   (One Week)*
- *TeMIP Fundamentals, HP Training Center Singapore   (One Week)*
- *TeMIP Administration, HP Training Center Singapore   (One Week)*
- *SSP and IN Engineer, Huawei Training Center Shenzhen China (21 Days)*
- *Pedagogy P2: Assessment & Evaluation, UniKL Malaysia   (01 Day)*

Computer Skills

Software Skills

Python (Numpy, Pandas, Matplotlib, Scikit-learn etc.), Matlab, C/C++, MS office, Linux, Windows, Databases (MS SQL, Informix, Influx DB, MS Access), Protues, Tensorflow, Node-RED, Keil, STM Cube.

Hardware Skills

STM32, TMS30C6713, Raspberry Pi, Aurdino, TI CC3200, TI CC2650 Sensor tag, ESP32

IoT, Machine Learning & Cloud computing Skills

- AWS Certified Solution Architect Associate (Validation Number: NXCSNHQKBER41R5S)
- AWS Academy accredited Instructor
- AWS Educate cloud Faculty ambassador (2019)
- Data Analysis with Python
    (https://courses.cognitiveclass.ai/certificates/f1a7721cfa9b4f13b0aeed89ecfed67e)
- Python for Data Science
    (https://courses.cognitiveclass.ai/certificates/5b6c7719f42e444697bcf4188550263e)
- Hands on experience using AWS EC2, S3, VPC, RDS, EBS etc.
- Can implement IoT solutions: Collecting data using sensors (TI CC2650, DS18B20 etc), storing it in database and visualizing it on dashboard.
- Team member of Parallel Processing & Machine learning research lab, established under the research cluster "Industry 4.0" in UniKL BMI.

Reviewer

Reviewing MS/PhD Thesis from various universities and research papers for various National & International conferences as well as scientific journals in the related field of research.

CSR Activities:

GEN-C Program with HP, JA and UniKL:
- Trained more than 500 Malaysian kids on using Scratch programming.
- Developed a website (www.scratch4kidz.com) for kids with video lectures which is widely been used in Malaysia by the school kids.
- Made a Youtube Channel (https://www.youtube.com/user/jwdalishah) for kids to improve programming skills.

Member of Smallefforts Trust (SET) (https://www.facebook.com/SmallEfforts/):
- Developed a complete infrastructure for SET in Mardan, KPK, Pakistan.
- Helped more than 300 families to get interest free loans for small businesses.

References

Dr. Yiming Deng,
Associate Professor, College of Engineering, Michigan State University, USA.
(dengyimi@egr.msu.edu, Phone: +1(517) 432-0492)

Dr. Ijaz Mansoor Qureshi,
Professor, Air University Islamabad, Pakistan
(imqureshi@mail.au.edu.pk , Phone: +92 332 5588404)

List of Selected Publications

(Peer Reviewed International Journals)

1. Abdul wahid, Jawad Shah, Adnan Umar Khan, Zaki Ayob, Hanif Razali, "Multi-layered Basis Pursuit algorithms for classification of MR Images of Knee ACL tear", IEEE Access, 2020 (**Accepted**)
2. Abdul wahid, Jawad Shah, Adnan Umar Khan, Manzoor Ahmed, Hanif Razali, "Multi-layer Basis Pursuit for Compressed Sensing MR Image Reconstruction", IEEE Access, 2020
3. Akbar K, Jawad Shah, Kushsairy K, Waleed Albattah and Faizullah K, "Crowd Monitoring and Localization Using Deep Convolutional Neural Network: A Review", Applied Sciences (MDPI), 2020.

4. Bilawal Khan, Babar Kamal, Sadiq Ullah, Imran Khan, Jawad Ali Shah, Jingdong Chen, "Design and experimental analysis of dual-band polarization converting metasurface for microwave applications", Scientific Reports (2020).

5. S. Ikram, S. Zubair, J. Shah, I. Qureshi, A. Wahid, A. Umar, "Enhancing MR Image Reconstruction Using Block Dictionary Learning", IEEE Access, IEEE (2019).

6. M. Altaf, M. Uzair, M. Naeem, A. Ahmad, S. Badshah, J. Shah, A. Anjum, "Automatic and Efficient Fault Detection in Rotating Machinery using Sound Signals", Acoustics Australia, (2019)

7. Yahya, M.; Shah, J.A.; Warsi, A.; Kadir, K.; Khan, S.; Yusaf, Z. "Motion Capture Sensing Techniques Used in Human Upper Limb Motion: A Review." Sensor Review, Emerald Insight, 2019.

8. M. Bilal, H. H. Anis, I. Qureshi, J. Shah, K.Kadir, "Reduction of motion artifacts in the recovery of under-sampled DCE MR images using data binning and L+S decomposition", (*BioMed Research International*) (2019).

9. Shahid Ikram , Jawad Ali Shah , Syed Zubair , Ijaz Mansoor Qureshi , Muhammad Bilal, "Improved reconstruction of MR scanned images by using a dictionary learning scheme "Sensors", MDPI (2019)

10. Muhammad Bilal, Jawad Ali Shah, Ijaz Mansoor Qureshi, Abdul Haseeb, "Motion Adaptive Wavelet Thresholding for Recovery of Compressively Sampled Static and Dynamic MR Images", Applied Magnetic Resonance, Springer (2018)

11. Najeeb Khan, Jawad Shah, Ian Stavness , "Bridgeout: stochastic bridge regularization for deep neural networks", IEEE Access (2018) .

12. Muhammad Bilal, Jawad Ali Shah, Ijaz Mansoor Qureshi, Kushsairy Kadir "Respiratory Motion Correction for Compressively Sampled Free Breathing Cardiac MRI Using Smooth l1-Norm Approximation", International Journal of Biomedical Imaging (2018)

13. Jawad Shah, IM Qureshi, Yiming Deng, Kushsairy Abdul Kadir, "Reconstruction of Sparse Signals and Compressively Sampled Images Based on Smooth l_1-Norm Approximation". Journal of signal processing systems, Springer (2017).

14. Abdul Haseeb Ahmed, Ijaz.M.Qureshi, Jawad Shah, Muhammad Zaheer, "Motion correction based reconstruction method for compressively sampled cardiac MR Imaging", Journal of Magnetic Image Resonance, Elsevier B.V, 2017.

15. Hassaan Haider, Jawad Ali Shah, Ijaz Mansoor Qureshi , Hammad Omer , Kushsairy Abdul Kadir "Compressively Sampled MRI Recovery using Modified Iterative Reweighted Least Square Method", Applied Magnetic Resonance, Springer, (2016).

16. Khan Bahadar Khan, Amir A. Khaliq, Muhammad Shahid, Jawad Ali Shah, "A new approach of weighted gradient filter for denoising of medical images in the presence of Poisson noise", Journal-Technical Gazatte, 23(6), 1330-3651 (2016).

17. Jawad Shah, IM Qureshi, Julio Proano, Yiming Deng, "Compressively Sampled MR Image Reconstruction using hyperbolic tangent based soft-thresholding", Applied Magnetic Resonance, springer, 46 (8) 837-851 (2015).

18. Jawad Ali Shah, I M Qureshi, Hammad Omer, Amir A Khaliq, "A modified POCS based reconstruction method for compressively sampled MR imaging". International journal of imaging systems and technology, John Wiley, 24 (3) 203–207 (2014)

19. Jawad Ali Shah, I M Qureshi, Hammad Omer, Amir A Khaliq, Yiming Deng, "Compressively sampled MR image reconstruction using Separable Surrogate Functional method". Concepts in magnetic resonance, John Wiley, 43 (5) 157–165 (2014).

20. Amir A Khaliq, I M Qureshi, Jawad A Shah, "Source Extraction from Functional magnetic resonance imaging (fMRI) data using ICA based on Fourth order and Exponential contrast functions" , Journal of the Chinese Institute of Engineers, Taylor & Francis, (2013).

21. Amir A Khaliq, I M Qureshi, Suheel A Malik, Jawad A Shah, "A modified Infomax ICA algorith for fMRI data source separation", Research journal of applied sciences, engineering and technology, 5(20) 4862-4868 (2013)

22. Amir A Khaliq, I M Qureshi, Ihsanulhaq, Jawad A Shah , "Independent Component Analysis of Functional Magnetic Resonance Imaging (fMRI) data: A simple Approach"., Research journal of applied sciences, engineering and technology, 5(24), 8494-8502, (2013)

23. Amir A. Khaliq, I.M. Qureshi, Ihsanulhaq, Jawad A. Shah, "Detection of Brain Activity in Functional Magnetic Resonance Imaging Data using Matrix Factorization", Research journal of applied sciences, engineering and technology, 5(24): 5566-5571, (2013)

24. Amir A Khaliq, I M Qureshi, Jawad A Shah, "Un-mixing Functional Magnetic Resonance Imaging (fMRI) data using Matrix Factorization" , International journal of imaging system and Technology, John Wiley, 22 (4) 195-199, (2012)

25. Amir A Khaliq, I M Qureshi, Jawad A Shah, "Temporal Correlation based spatial filtering of Functional MRIs", Chinese Physic Letters, IOPScience, (2012)

(International conferences)

1. H. Haider, J. Shah, K.Kadir,H.Nair, "Sparse Signal Reconstruction of Compressively Sampled Signals Using Smoothed l0-Norm", IEEE ICSIPA, Malaysia 2019.

2. A.Wahid, A. Khan, Mukhtarullah, S. Khan, J.Shah "A Multilayered Convolutional Sparse Coding Framework for Modeling of Pooling Operation of Convolution Neural Networks", IEEE ICSIMA, Malaysia 2019.

3. M. Yahya, Jawad Shah, Kushsairy Kadir, Sheroz Khan, "Accurate Shoulder Joint Angle Estimation Using Single RGB Camera For Rehabilitation", I2MTC, New Zealand, 2019.

4. Abdul Haseeb Ahmed, Jawad Shah, Bilal, Ijaz Quershi, "Hyperbolic Tangent Based Reconstruction of Compressively Sampled Cardiac Cine MRI Using Smooth l_1-Norm Approximation", IEEE Region 10 Conference (TENCON 2017), Penang Malaysia.

5. Majdee Tohtayong, Sheroz Khan, Jawad Shah, Kushsairy Kadir, "Harmonics Elimination Based on Curve Fitting Method for Modular Multilevel Converters", IEEE Region 10 Conference (TENCON 2017), Penang Malaysia.

6. Jawad A Shah, Hassaan Haider, Kushsairy Abdul Kadir, Sheroz Khan, "Sparse Signal Reconstruction of Compressively Sampled Signals Using Smoothed l_0-Norm", IEEE ICSIPA, Malaysia 2017 .

7. Hassaan Haider, Jawad A Shah, Shahid Ikram, Idris Abd Latif, "Sparse signal recovery from compressed measurements using hybrid particle swarm optimization", IEEE ICSIPA, Malaysia 2017.

8. Hassaan Haider, Jawad Ali Shah, Usman Ali, "Comparative analysis of sparse signal recovery algorithms based on minimization norms" IEEE Congress on Sustainable Technologies (WCST), 2014.