Curriculum Vitae

Dr. Jawwad Sami Ur Rahman

Assistant Professor | Biomedical Engineering
PEC Program Evaluator | Senior Member IEEE
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Professional Summary

Dr. Jawwad Sami Ur Rahman is a PhD-qualified Biomedical Engineer specializing in medical image processing, artificial intelligence, and biomedical instrumentation. He has more than 13 years of combined academic and industry experience in biomedical engineering, research, and laboratory instrumentation technologies. His research focuses on brain tumor detection, medical image segmentation, AI-driven healthcare systems, and biomedical imaging technologies.

Dr. Jawwad has extensive experience teaching undergraduate and postgraduate biomedical engineering courses, supervising graduate research students, and organizing international IEEE seminars and academic workshops. He has published research in Scopus-indexed journals and at international conferences, and he actively serves as a reviewer for several international journals.

His professional background also includes industrial experience in advanced research instrumentation, electron microscopy, and medical imaging systems, supporting research laboratories and universities across Saudi Arabia.

Research Interests

- Medical Image Processing
- Artificial Intelligence in Healthcare
- Brain Tumor Detection and Segmentation
- Biomedical Signal and Image Analysis
- Internet of Things (IoT) in Healthcare
- Digital Pathology and Automated Microscopy
- Nanotechnology in Biomedical Engineering
- Biomedical Instrumentation

Education

PhD in Engineering (Image Processing)

- Asia Pacific University of Technology & Innovation, Malaysia
  2017 – 2023

Thesis:

Enhanced Biomedical Image Processing Algorithms for MRI Brain Segmentation and Brain Tumor Detection.

The study proposed hybrid segmentation techniques, including:

• *Fuzzy K-Means*
• *Radial Basis Function Neural Networks*
• *Neuro-Fuzzy K-Means*

Postgraduate Diploma in Professional Ethics & Teaching Methodology

- Riphah International University, Pakistan
  2024 – 2025

MSc Technology Management

- Staffordshire University, United Kingdom
  2012 – 2013

BS Biomedical Engineering

- Sir Syed University of Engineering and Technology
  Karachi, Pakistan
  2007 – 2011

Final Year Project:
Handheld Touch Screen Temperature and Pulse Detector

Research Grants & Funding

■ International Industrial Research Grant (2026 – 2028)

Project: Precision-Driven Microscopy: Integrating Motorized Stage Control and MATLAB-Based Image Analytics

Funding Agency:
Shining Candle Trading Establishment, Saudi Arabia

Role: Principal Investigator

Grant Amount:
0.6 Million PKR

The project focuses on developing an automated digital microscopy system integrating motorized XYZ stage control with AI-based image analytics for high-precision biomedical imaging and laboratory diagnostics. The research involves designing integrated hardware-software architecture, implementing stepper motor-based motion control systems, and developing AI-driven image processing techniques, including segmentation, feature extraction, and automated scanning for digital pathology. The project aligns with Saudi Vision 2030 through the advancement of localized biomedical instrumentation technologies.

Academic Experience

Assistant Professor & Postgraduate Program In-Charge

Biomedical Engineering Department
Riphah International University, Islamabad
September 2023 – Present

Responsibilities

Teaching undergraduate and graduate biomedical engineering courses
Supervising postgraduate research students

Organizing IEEE seminars and workshops

Conducting research in AI and biomedical image processing

Academic Contributions

- Supervising **7 MS students and 2 PhD students**
- Organized **30+ engineering seminars and workshops**
- IEEE Student Branch Counselor
- Active participant in international research collaborations

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Assistant Professor

Biomedical Engineering Department

Hamdard University, Karachi

October 2022 – September 2023

Responsibilities included teaching biomedical engineering courses, supervising student projects, and conducting research activities.

Industry Experience

Sales Manager

Future Trade Link (FTL)

Jeddah, Saudi Arabia

2018 – 2022

Managed laboratory consumables supply for research laboratories and universities, coordinated with global suppliers, provided Arabic translation for technical documentation, and supported universities with research equipment procurement.

Sales Engineer

Naizak Global Engineering Systems

Jeddah, Saudi Arabia

2013 – 2018

- Worked with advanced research equipment including:
  - ***Electron Microscopy***
  - ***Confocal Microscopy***
  - ***Clean Room Technologies***
  - ***MRI, CT, PET, and SPECT Imaging Systems***
- Conducted technical seminars for universities across Saudi Arabia.

Books Authored

Fundamentals of Biomedical Image Processing and its Impact on Cancer Research

Focus areas include:

- ***Medical image enhancement***
- ***Image segmentation techniques***
- ***MRI and electron microscopy applications in cancer research***

Nanotechnology in Biomedical Engineering

- ***Nanomaterials for diagnostics***
- ***Biomedical nanotechnology applications***
- ***Surgical nanorobotics***
- ***Tissue engineering***

Book Chapters

Smart Sensors and Devices in IoT-Enabled Healthcare

Authors:

Laiba Junaid, Syed Muddasir Hussain, Jawwad Sami Ur Rahman, Muhammad Zaeem Khalid, Saleh I. Alzahrani, Tayaba Naz, Najam Ul Saqib

Book: ***Intelligent Robots in Smart Hospitals: IoT-Enabled AGI Robotics Systems***

Publisher: Elsevier

Status: Accepted for Publication

Environmental Sustainability and Energy Efficiency in UAV Networks

Authors:
Adil Zohaib, Haris Sheh Zad, Jawwad Sami Ur Rahman, Sohail Khalid, Faraz Akram, Abasin Ulasyar

Book: Unmanned Aerial Vehicle Networks: Communications and Cybersecurity Challenges
Publisher: CRC Press – Taylor & Francis

Fundamentals of Remote Surgery Technology

Authors:
Irfan Ahmad, Muhammad Zaeem Khalid, Babar Ali, Jawwad Sami Ur Rahman, Saleh I. Alzahrani, Syed Muddasir Hussain, Najam Ul Saqib

Book: AG IoT in Remote Surgeries: Cyber Secure Communication for Next-Generation Healthcare
Publisher: CRC Press – Taylor & Francis

Research Publications

Journal Publication

[1] RISHNAN, Lokesh; Kuppusamy, Alagirisamy; Ali, Babar; WEI, Calvin R.; Rahman, Jawwad Sami Ur; Akilimali, Aymar, "Comparison of Machine Learning Based Prediction Models for Diabetes" Health Science Reports, Wiley {Q2-Scopus Indexed Journal- Under Revision}.

[2] Jawwad Sami Ur Rahman, Sathish Kumar Selvaperumal & Rajasvaran Logeswaran, "Literature Review on Biomedical Imaging Technique for Detection of Brain Tumour" Journal of Adv. Research in Dynamical & Control Systems, Vol. 12, 03-Special Issue, 2020, pp 1315- 1323 {Q3-Scopus Indexed Journal}

[3] Jawwad Sami Ur Rahman, Sathish Kumar Selvaperumal & Rajasvaran Logeswaran, "HYBRID METHOD OF MRI BRAIN SEGMENTATION USING

FUZZY K MEANS", European Journal of Molecular & Clinical Medicine. ***{Q4 Scopus Indexed Journal}***

[4] Jawwad Sami Ur Rahman & Sathish Kumar Selvaperumal, "Integrated Approach of Brain Segmentation using Neuro-Fuzzy K-Means" , Indonesian Journal of Electrical Engineering and Computer Science, Vol. 29, No.1 , 2022, pp. 270-276 { Q3-Scopus Indexed Journal}

[5] Laiba Junaid, Javeria Noor, Aqsa Zahoor and Jawwad Sami Ur Rahman "A Systematic Review on Comparative Study of AI Techniques for Classification of Brain Tumour" Asian Journal of Science, Engineering and Technology {HEC Y Category}

[6] Minahil Kamal, Aleena Kamal, Azka Abid, Sarah Ahmed, Syed Muddusir Hussain, Jawwad Sami Ur Rahman and Sathish Kumar Selvaperumal. " Blue Light Therapy Device for Wound Healing." Indonesian Journal of Electrical Engineering and Computer Science. {Q3-Scopus Indexed}

[7] Aleena Kamal, Minahil Kamal, Mashal Fatima, Syed Muddusir Hussain, Jawwad Sami Ur Rahman, Tayaba Naz and Sathish Kumar Selvaperumal. "Predictive Modelling of Osteoporosis and Effect of BMI on the Risk of Fracture in Femur Bone using COMSOL Multiphysics: A Computational Modelling Approach" Indonesian Journal of Electrical Engineering and Computer Science. {Q3-Scopus Indexed}

[8] Tehreem Fatima Butt, Sana Tameer, Muhammad Saleem, Jawwad Sami Ur Rahman, and Sathish Kumar Selvaperumal. " A Comparative Study on Electricity Load Forecasting: A Comparison of ARIMA, LSTM, and Attention-Based Transformer Neural Network" Indonesian Journal of Electrical Engineering and Computer Science. {Q3-Scopus Indexed}

[9] Aqsa Bibi and Jawwad Sami Ur Rahman. "Machine Learning Enabled In-Home ECG: A Review" Medinformatics Journal {Q4 – Scopus Indexed}

[10] Muhammad Zaeem Khalid, Nida Iqbal, Babar Ali, Jawwad Sami Ur Rahman, Saman Iqbal, Lama Almudaimeegh, Zuhal Y. Hamd, Awadia Gareeballah "Detection and Classification of Alzheimer's Disease Using Deep and Machine Learning" MDPI Tomography{Q2, IF: 2.2}

[11] Sultan A Alotaibi, Awadia Gareeballah, Jawwad Sami Ur Rahman, Wael A Faqihi, Sara Ali, Meaad Elbashir, Nisreen Haj , Kawthar Mohammed Sharief Abdulrhman, Raga Ahmed Abouraida Ahmed, Ahmed Hazazi, and Babar Ali " Evaluation of the Diagnostic Accuracy of Mammography and Ultrasonography for Breast Cancer Diagnosis Using Histopathology as the Reference Standard: A Cross Sectional Study" Annals of Medicine and Surgery{IF: 1.6}

Conference Publication

[12] Jawwad Sami Ur Rahman, Sathish Kumar Selvaperumal & Rajasvaran Logeswaran, "Automated Radial Basis Function Based Brain Segmentation using Magnetic Resonance Imaging", AIP Conference Proceedings {Scopus Indexed}

[13] Jawwad Sami Ur Rahman & Sathish Kumar Selvaperumal, "Hybrid Method of Brain Tumour Detection using Fuzzy K-means" AIP Conference Proceedings {Scopus Indexed}

[14] Jawwad Sami Ur Rahman & Sathish Kumar Selvaperumal, "Integrated Approach of Brain Tumour Detection using Neuro-Fuzzy K-Means" AIP Conference Proceedings {Scopus Indexed}

[15] Jawwad Sami Ur Rahman , Syed Muddusir Hussain, Falak Anjum, Tayaba Naz, and Sathish Kumar Selvaperumal, "Brain image Segmentation using K mean Segmentation and Fuzzy C-Means (FCM) Algorithm to improve efficiency of Tumor detection" AIP Conference Proceedings {Scopus Indexed}

[16] Syeda Rida Zehra Hamdani , Syed Mudassir Hussain , Tayaba Naz , Maryam Nadeem, Jawwad Sami Ur Rahman and Sathish Kumar Selvaperumal, "Comparative study of various image enhancement techniques using performance metrics for effective detection of Diabetic Retinopathy" AIP Conference Proceedings {Scopus Indexed}

[17] Syed Muddasir Hussain, Tayaba Naz, Muhammad Shakeel, Faraz Akram, Jawwad Sami Ur Rahman, and Sathish Kumar Selvaperumal, "Advanced Imaging Technique-based Brain Tumor Segmentation Using ResNET-50 CNN," AIP Conference Proceedings {Scopus Indexed}

[18] Syed Muddasir Hussain, Faraz Akram, Tayaba Naz, Muhammad Sadiq, Jawwad Sami Ur Rahman, and Sathish Kumar Selvaperumal, "Non-Intrusive Drowsiness

Model for Driver Safety Using Facial Features and Machine Learning." AIP Conference Proceedings {Scopus Indexed}.

Professional Appointments / National Contributions

- National Vocational & Technical Training Commission (NAVTTC), Government of Pakistan

Member – Qualification Development Committee (Artificial Intelligence Courses) 2026. Nominated as a national expert by the Government of Pakistan to contribute to the development of Artificial Intelligence (AI) curriculum under NAVTTC. Actively participated in Qualification Development Committee (QDC) meetings (2–6 March 2026, Islamabad), collaborating with leading academicians and industry experts to design standardized AI courses at the national level.

Professional Certifications

- Electron and Ion Beam Characterization – Arizona State University, 2026
- Generative AI Application Developer Certificate – Pakistan Engineering Council
- Outcome Based Education (OBE) Certification
- Outcome Based Accreditation (OBA) Program Evaluator Certification – Pakistan Engineering Council
- Seerah in the Contemporary Era Diploma
- National Scientist Directory Certificate

Awards & Recognition

- IEEE Senior Member – IEEE USA (October 2024)
- IEEE Best Student Branch Award – IEEE Islamabad Section (January 2025)
- Outstanding Mentor Recognition Award (January 2026)

Professional Memberships

- Pakistan Engineering Council – Lifetime Member
- Institution of Engineers Pakistan – Lifetime Member
- Saudi Council of Engineers
- Senior Member IEEE

Editorial and Reviewer Roles

- Reviewer for the following journals:
- Computer Communications – Elsevier
- Cognitive Neurodynamics – Springer Nature
- American Journal of Bioscience and Bioengineering

Professional Training

- FTIR Training – Thermo Scientific, Dubai
- MiniVap Vision Training – Grabner Instruments, Austria
- Electron Microscopy Training – Naizak Global Engineering Systems
- Atomic Force Microscopy Training – King Abdulaziz University

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Technical Skills

Programming

- MATLAB
- Python
- C Programming

Tools

- Microsoft Office
- Research Writing
- Data Analysis Software

IEEE and Academic Activities

- Organized Biomedical Engineering seminars and workshops
- Organized IEEE Nanotechnology seminars
- Organized IEEE APU Exchange Program talk
- Organized the first IEEE Student Conference at Riphah International University

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Professional Service

Co-Chairman – MDT Board, Pakistan

The MDT Board brings together multidisciplinary specialists to discuss complex scientific problems and collaborative healthcare research.

References

Dr. Sathish Kumar Selvaperumal

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Asia Pacific University of Technology & Innovation
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Prof. Dr. Ahmed Nadeem Abbasi

Professor
Aga Khan University
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Dr. Eraj Humayun Mirza

Associate Professor
NED University
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