Sajid Gul Khawaja

Associate Professor

College of Electrical & Mechanical Engineering

Email: sajid.gul@ceme.nust.edu.pk
Contact: 0518749822
LinkedIn: www.linkedin.com/in/sajid-gul-khawaja

About

Dr. Sajid Gul Khawaja is working as Associate Professor in the College of Electrical & Mechanical Engineering. Dr. Sajid Gul Khawaja has a PhD in Digital System Design. Dr. Sajid Gul Khawaja has published 54 research articles & conference papers having a citation count of 497, carried out 5 projects and filed 15 intellectual property.

Qualifications

PhD in Digital System Design   2011 - 2017
   NUST, Islamabad , Pakistan

MS in Digital Signal Processing   2009 - 2011
   NUST, Islamabad , Pakistan

BE in Cptr Sys Engg   2006 - 2009
   NUST, Islamabad , Pakistan

Experience

Associate Professor   2024- Present
   College of Electrical & Mechanical Engineering

Associate Professor   2024 - 2024
   College of Electrical & Mechanical Engineering

Associate Professor   2021 - 2009
   College of Electrical & Mechanical Engineering

Assistant Professor   2014 - 2024
   College of Electrical & Mechanical Engineering

Lecturer   2011 - 2011
   College of Electrical & Mechanical Engineering

Lab Engineer   2011 - 2014
   College of Electrical & Mechanical Engineering

Lab Engineer   2009 - 2011
   College of Electrical & Mechanical Engineering

Awards

Community Service Teacher   2017

Best Teacher Award

School / College Best Researcher Award -2022

Professional Memberships

PEC

Research Projects

National Projects

HearSmart
2019
  Funding Agency: IGNITE
  Amount: PKR 77,095.00
  Status: Completed

EPIC- A Wearable Epilepsy Monitoring Device
2019
  Funding Agency: HEC
  Amount: PKR 12,440,000.00
  Status: Completed

Robust Communication Solution for Drone Swarm based Patrolling Operations
2022
  Funding Agency: HEC
  Amount: PKR 82,571,295.00
  Status: Approved_inprocess

Study of RISC-V Architecture
2022
  Funding Agency: NESCOM
  Amount: PKR 100,000.00
  Status: Approved_inprocess

EPIC-A wearable Epilepsy monitoring device
2019
  Funding Agency: HEC
  Amount: PKR 9,515,675.00
  Status: Completed

International Projects

Research Articles

Radiology report generation from a singular perspective using transformers with Knowledge Distillation
2026

Asad Mansoor Khan Mashood mohammad Mohsan Muhammad Usman Akram Taimur Hassan Sajid Gul Khawaja Adil Qayyum

Biomedical Signal Processing and Control, Volume:111, Article Number 108340

Impact Factor: 4.900 | **Quartile:** 2
DOI: https://doi.org/10.1016/j.bspc.2025.108340

PHARFF: A Pipeline-Based Graceful Live Migration and Checkpointing Framework for Achieving High Availability and Reliability in FPGA Applications on Cloud
2025

Sajid Gul Khawaja Muhammad Usman Akram Muhammad Asad Shoab Ahmad Khan Alina Mirza Yame Asfia

IEEE Access, Volume:13, Pages 63203-63218

Impact Factor: 3.400 | **Quartile:** 2
DOI: 10.1109/ACCESS.2025.3557303

Insights from EEG Analysis of Evoked Memory Recalls Using Deep Learning for Emotion Charting
2024

Muhammad Najam Dar Muhammad Usman Akram Ahmad Rauf Subhani Sajid Gul Khawaja Constantino Carlos Reyes-Aldasoro Sarah Gul

Scientific Reports, Volume 14, Article Number: 17080

Impact Factor: 3.800 | **Quartile:** 1 | **Citations:** 2
DOI: https://doi.org/10.1038/s41598-024-61832-7

Dual contrastive learning based image-to-image translation of unstained skin tissue into virtually stained H&E images
2024

Muhammad Zeeshan Asaf Babar Rao Muhammad Usman Akram Sajid Gul Khawaja Samavia Khan Thu Minh Truong Palveen Sekhon Irfan J. KHan Muhammad Shahmir Abbasi

Scientific Reports, Volume 14, Article Number: 2335

Impact Factor: 3.800 | **Quartile:** 1 | **Citations:** 12
DOI: https://doi.org/10.1038/s41598-024-52833-7

An incremental noise constrained LMS algorithm
2023

Sajid Gul Khawaja Usman Hameed Muhammad Omer Bin Saeed Azzedine Zerguine Oualid Hammi

Signal Processing, Volume 213, Article Number 109187

Impact Factor: 4.4 | **Quartile:** 2 | **Citations:** 7
DOI: https://doi.org/10.1016/j.sigpro.2023.109187

Multi-head deep learning framework for pulmonary disease detection and severity scoring with modified progressive learning   2023

Asad Mansoor Khan Muhammad Usm Sajid Nazir Taimur Hassan Sajid Gul Khawaja Tatheer Fatima

Biomedical Signal Processing and Control, Volume 85, Article Number 104855

Impact Factor: 5.076 | **Quartile:** 2 | **Citations:** 4
DOI: https://doi.org/10.1016/j.bspc.2023.104855

Analysis of EEG signals using deep learning to highlight effects of vibration-based therapy on brain   2023

Syeda Noor-Ul-Huda Safder Muhammad Usman Akram Muhammad Najam Dar Aliya Ashraf Khan Sajid Gul Khawaja Ahmad Rauf Subhani Imran Khan Niaz Sarah Gul

Biomedical Signal Processing and Control, Volume 83, Article Number 104605

Impact Factor: 5.076 | **Quartile:** 2 | **Citations:** 5
DOI: https://doi.org/10.1016/j.bspc.2023.104605

EEG-based emotion charting for Parkinson's disease patients using Convolutional Recurrent Neural Networks and cross dataset learning   2022

Muhammad Najam Dar Muhammad Usman Akram Rajamanickam Yuvaraj Sajid Gul Khawaja M. Murugappan

Computers in Biology and Medicine, Volume 144, Article Number 105327

Impact Factor: 7.7 | **Quartile:** 1 | **Citations:** 57
DOI: https://doi.org/10.1016/j.compbiomed.2022.105327

Machine Learning and Signal Processing Based Analysis of sEMG Signals for Daily Action Classification   2022

Sajid Gul Khawaja Muhammad Usman Akram Aimal Khan Arsalan Shaukat Ayesha Sadiq Norah Saleh Alghamdi

IEEE Access, Volume 10, Pages 40506-40516

Impact Factor: 3.476 | **Quartile:** 2 | **Citations:** 8
DOI: 10.1109/ACCESS.2022.3166885

Resource-Restricted Environments based Memory-Efficient Compressed Convolutional Neural Network Model for Image-level Object Classification   2022

Zahra Waheed Shehzad Khalid Syed Mursleen Riaz Sajid Gul Khawaja Rimsha Tariq

IEEE Access, Volume 11, Pages 1386-1406

Impact Factor: 3.476 | **Quartile:** 2 | **Citations:** 3
DOI: 10.1109/ACCESS.2022.3230008

A Novel Multiplier-Less LMS Adaptive Filter Design Based on Offset Binary Coded Distributed Arithmetic   2021

Sajid Gul Khawaja Shawez Ahmad Naeem Amjad Muhammad Usman

IEEE Access, Volume 9, Pages 78138-78152

Impact Factor: 3.476 | **Quartile:** 2 | **Citations:** 18
DOI: 10.1109/ACCESS.2021.3083282

Extraction of Retinal Layers Through Convolution Neural Network (CNN) in an OCT Image for Glaucoma Diagnosis   2020

Hina Raja Muhammad Usman Akram Arsalan Shaukat Norah Alghamdi Sajid Gul Khawaja Noman Nazir Shoab Ahmad Khan

Journal of Digital Imaging, Volume 33, Pages 1428-1442

Impact Factor: 4.056 | **Quartile:** 1 | **Citations:** 39
DOI: 10.1007/s10278-020-00383-5

RIDB: A Dataset of fundus images for retina based person identification   2020

Muhammad Usman Akram Anum Abdul Salam Sajid Gul Khwaja Shoab Ahmed Khan Gul Hassan Naqvi

Data in Brief, Volume 33, Article Number 106433

Impact Factor: 0 | **Citations:** 15
DOI: https://doi.org/10.1016/j.dib.2020.106433

sEMG dataset of routine activities   2020

Asad Mansoor Khan Sajid Gul Khawaja Muhammad Usman Akram Ali Saeed Khan

Data in Brief, Volume 33, Article Number 106543

Impact Factor: - | **Citations:** 7
DOI: https://doi.org/10.1016/j.dib.2020.106543

Neurotransmission cognitive theory: A novel approach for non-invasive brain stimulation using mechanical vibrations for the rehabilitation of neurological patients   2020

Aliya A. Khan Shahbaz K. Ranjha Muhammad Usman Akram Sajid Gul Khawaja Arsalan Shaukat

Medical Hypotheses, Volume 143, Article Number 110078

CNN and LSTM-Based Emotion Charting Using Physiological Signals
2020

Sajid Gul Khawaja Muhammad Usman Akram Muhammad Najam Dar Amit N. Pujari

Sensors , Volume 20, Issue 16, Article Number 4551

Data on OCT and Fundus Images for the Detection of Glaucoma
2020

Muhammad Usman Akram Sajid Gul Khawaja Hina Raja Muhammad Arslan Aneeqa Ramzan Noman Nazir Hina Raja Muhammad Arslan Aneeqa Ramzan Noman Nazir

Data in Brief , Volume 29, Article Number 105342

Data on fundus images for vessels segmentation, detection of hypertensive retinopathy, diabetic retinopathy and papilledema
2020

Shahzad Akbar Taimur Hassan Ubaidullah Yasin Imran Basit Sajid Gul Khawaja Muhammad Usman Akram Shahzad Akbar Taimur Hassan Ubaidullah Yasin Imran Basit

Data in Brief , Volume 29, Article Number 105282

Finding the Unique Permutation Matrix for Reverse Order Kronecker Product Intuitively
2019

Sajid Gul Khawaja Muhammad G. Ali Muhammad G. Ali Shoab Amad Khan

International Journal of Computer Theory and Engineering, Vol. 11, No. 6, Pages 107-111

Multiprocessor architecture for real-time applications using mean shift clustering
2019

Amna Tehreem Sajid Gul Khawaja Asad Mansoor Khan Muhammad Usman Akram Shoab A. Khan

Journal of Real-Time Image Processing, Volume 16, Pages: 2233-2246

Automated glaucoma detection using retinal layers segmentation and optic cup-to-disc ratio in optical coherence tomography images
2019

Sajid Gul Khawaja Ubaid Ullah Yasin Wasi Haider Butt Aneeqa Ramzan Muhammad Usman Akram Arsalan Shaukat

IET Image Processing , Volume 13, Issue 3, Pages 409-420

A Parallel Architecture for the Partitioning around Medoids (PAM) Algorithm for Scalable Multi-Core Processor Implementation with Applications in Healthcare
2018

Hassan Mushtaq Sajid Gul Khawaja Muhammad Usman Akram Amanullah Yasin Muhammad Muzammal Shehzad Khalid Shoab Ahmad Khan

Sensors , NULL

Analysis of PCG signals using quality assessment and homomorphic filters for localization and classification of heart sounds
2018

Qurat-ul-Ain Mubarak Muhammad Usman Akram Arsalan Shaukat Farhan Hussain Sajid Gul Khawaja Wasi Haider Butt

Computer Methods and Programs in Biomedicine, Volume: 164, Pages 143-157

Structure Tensor Graph Searches Based Fully Automated Grading and 3D Profiling of Maculopathy From Retinal OCT Images
2018

Taimur Hassan Muhammad Usman Akram Arsalan Shaukat Sajid Gul Khawaja BILAL HASSAN

IEEE Access , Volume 6, Pages 44644-44658

Network-on-Chip based MPSoC architecture for k-mean clustering algorithm
2016

Sajid Gul Khawaja Muhammad Usman Akram Shoab Ahmed Khan Arsalan Shaukat Saad Rehman

Microprocessors and Microsystems, Volume 46, Part B, Pages 1-10

Impact Factor: 1.025 | **Quartile:** 3 | **Citations:** 5
DOI: 10.1016/j.micpro.2016.08.006

Designing Area Optimized Application-Specific Network-On-Chip Architectures while Providing Hard QoS Guarantees   2015

Sajid Gul Khawaja Muhammad Usman Akram Mian Hamza Mushtaq Shoab A. Khan Habib ullah Jamal

PLoS ONE, Volume 10, Issue 4, Article Number e0125230

Impact Factor: 3.057 | **Quartile:** 1 | **Citations:** 6
DOI: 10.1371/journal.pone.0125230

Prioritized direction based switch for bufferless network on chip architecture   2011

Sajid Gul Khawaja Mian Hamza Mushtaq Shoab Ahmed Khan

International Journal of Electrical and Computer Sciences, Volume 11 No. 4, Pages 23-29

Impact Factor: N/A
DOI: 115704-8383-IJECS-IJENS

Conference Proceedings

An Intelligent Model to Predict Cardiovascular Disease using Machine Learning Techniques   2023

Zawaria Sadaf Sajid Gul Khawaja Muhammad Usman Akram

2023 25th International Multitopic Conference (INMIC), res.country(177,)

Citations: N/A
DOI: 10.1109/INMIC60434.2023.10465961

YAAD: Young Adult's Affective Data Using Wearable ECG and GSR sensors   2022

Muhammad Najam Dar Amna Rahim Dr Muhammad Usman Akram Dr Sajid Gul Khawaja Aqsa Rahim

2022 2nd International Conference on Digital Futures and Transformative Technologies (ICoDT2), res.country(177,)

Citations: N/A
DOI: 10.1109/ICoDT255437.2022.9787465

TM-BERT: A Twitter Modified BERT for Sentiment Analysis on Covid-19 Vaccination Tweets   2022

Muhammad Talha Riaz Muhammad Shah Jahan Dr Sajid Gul Khawaja Dr Arsalan Shaukat Asst Prof Jahan Zeb

2022 2nd International Conference on Digital Futures and Transformative Technologies (ICoDT2), res.country(177,)

Citations: 1
DOI: DOI: 10.1109/ICoDT255437.2022.9787395

Surface EMG Signal Analysis using Hand-Crafted Features for Detection and Classification of GTC seizures   2022

Maryam Naveed Dr Sajid Gul Khawaja Dr Muhammad Usman Akram

2022 2nd International Conference on Digital Futures and Transformative Technologies (ICoDT2), res.country(282,)

Citations: N/A
DOI: 10.1109/ICoDT255437.2022.9787476

Reconfigurable Architecture for Real-time Decoding of Canonical Huffman Codes   2022

Rimsha Tariq Dr Sajid Gul Khawaja Dr Muhammad Usman Akram Dr Farhan Hussain

2022 2nd International Conference on Digital Futures and Transformative Technologies (ICoDT2), res.country(282,)

Citations: N/A
DOI: 10.1109/ICoDT255437.2022.9787442

Power profiling-based side-channel attacks on FPGA and Countermeasures: A survey   2022

Ali Hasnain Yame Asfia Dr Sajid Gul Khawaja

2022 2nd International Conference on Digital Futures and Transformative Technologies (ICoDT2), res.country(282,)

Citations: N/A
DOI: 10.1109/ICoDT255437.2022.9787473

Framework for Live Migration of FPGA based ECB-mode AES-128 accelerator   2022

Yame Asfia Sajid Gul Khawaja Muhammad Asad Alina Mirza

2022 2nd International Conference on Digital Futures and Transformative Technologies (ICoDT2), res.country(282,)

Citations: N/A
DOI: 10.1109/ICoDT255437.2022.9787468

Framework for Dynamic Partial Configuration of Algorithms for Zynq-7000 SoC using JPEG as Case Study   2022

Sajid Gul Khawaja Arsalan Shaukat Muhammad Usama Iqbal Shoab Ahmed Khan

2022 2nd International Conference on Digital Futures and Transformative Technologies (ICoDT2), res.country(282,)

Citations: N/A

DOI: 10.1109/ICoDT255437.2022.9787460

A Theoretical CNN Compression Framework for Resource-Restricted Environments   2022

Dr Sajid Gul Khawaja Zahra Waheed Awan Dr Shehzad Khalid

2022 2nd International Conference on Digital Futures and Transformative Technologies (ICoDT2), res.country(282,)

Citations: N/A

DOI: 10.1109/ICoDT255437.2022.9787431

Design Space Exploration Scheme for Mapping Convolutional Neural Network on Zynq Zedboard   2020

M. Sohaib Ul Hassan Umar Shahbaz Khan Sajid Gul Khawaja

12th International Conference on Electronics, Computers and Artificial Intelligence (ECAI), res.country(188,)

Citations: N/A

DOI: 10.1109/ECAI50035.2020.9223137

An Incremental Noise Constrained Least Mean Square Algorithm   2019

Usman Hameed Muhammad Omar Bin Saeed Sajid Gul Khawaja Usman Hameed Muhammad Omar Bin Saeed

5th International Conference on Frontiers of Signal Processing (ICFSP), res.country(75,)

Citations: N/A

DOI: 10.1109/ICFSP48124.2019.8938040

A Machine Learning Technique to Classify LSST Observed Astronomical Objects Based on Photometric Data   2019

Asad Mansoor Khan Muhammad Usman Akram Sajid Gul Khawaja Ali Saeed Khan

2019 6th Swiss Conference on Data Science (SDS), res.country(43,)

Citations: N/A

DOI: 10.1109/SDS.2019.000-9

Hybrid RID Network for Efficient Diagnosis of Tuberculosis from Chest X-rays   2018

Rabia Rashid Sajid Gul Khawaja Muhammad Usman Akram Asad Mansoor Khan

The 9th Cairo International Biomedical Engineering Conference (CIBEC 2018) , res.country(65,)

Citations: N/A

DOI: 10.1109/CIBEC.2018.8641816

Learning Based Segmentation of Skin Lesion from Dermoscopic Images   2018

Muhammad Ammar Sajid Gul Khawaja Abeera Atif Muhammad Usman Akram Muntaha Sakeena

2018 IEEE 20th International Conference on e-Health Networking, Applications and Services (Healthcom), res.country(56,)

Citations: N/A

DOI: 10.1109/HealthCom.2018.8531156

Crowd Behavior Categorization using Live Stream based on Motion Vector Estimation   2017

Amna Sajid Sajid Gul Khawaja Mehak Tofiq

Proceedings of the 2017 Future Technologies Conference (FTC), res.country(38,)

Citations: N/A

DOI: https://saiconference.com/Conferences/FTC2017Proceedings

Parallel Architecture for Implementation of Frequent Itemset Mining using FP-Growth   2017

Amna Tehreem Sajid Gul Khawaja Muhammad Usman Akram Shoab A. Khan Muhammad Ali

International Conference on Signals and Systems (ICSigSys), res.country(100,)

Citations: N/A

DOI: 10.1109/ICSIGSYS.2017.7967077

A Novel Mean-Shift Architecture for Scalable Multiprocessor Implementation   2016

Amna Tehreem Sajid Gul Khawaja Muhammad Usman Akram Shoab A. Khan

2016 Future Technologies Conference (FTC) , res.country(233,)

Citations: N/A

DOI: 10.1109/FTC.2016.7821741

A Novel Multiprocessor Architecture for k-means Clustering Algorithm based on Network-on-Chip   2016

Sajid Gul Khawaja Muhammad Usman Akram Shoab A. Khan Ammar Ajmal

2016 19th International Multi-Topic Conference (INMIC), res.country(177,)

Citations: N/A

DOI: 10.1109/INMIC.2016.7840112

A Novel Architecture for K-means Clustering Algorithm 2016

Sajid Gul Khawaja Asad Mansoor Khan M. Usman Akram Shoab A. Khan

Third International Afro-European Conference for Industrial Advancement — AECIA 2016, res.country(136,)

Citations: N/A
DOI: 10.1007/978-3-319-60834-1_31

Multicore Framework for Finding Frequent Item-Sets using TDS 2016

Muhammad Usman Akram Sajid Gul Khawaja Amna Tehreem Shoab Ahmed Khan

16th International Conference on Hybrid Intelligent Systems (HIS 2016), res.country(136,)

Citations: N/A
DOI: 10.1007/978-3-319-52941-7_34

A Surrogate Channel Based Analysis of EEG Signals for Detection of Epileptic Seizure 2016

Saqib Ejaz Sajid Gul Khawaja Muazzam A. Khan M. Usman Akram

2016 IEEE International Conference on Imaging Systems and Techniques (IST) , res.country(88,)

Citations: N/A
DOI: 10.1109/IST.2016.7738256

Crackle Separation and Classification from Normal Respiratory Sounds using Gaussian Mixture Model 2015

Syed Osama Maruf M. Usama Azhar Sajid Gul Khawaja M. Usman Akram

2015 IEEE 10th International Conference on Industrial and Information Systems (ICIIS), res.country(129,)

Citations: N/A
DOI: 10.1109/ICIINFS.2015.7399022

Analysis of EEG Signals for Detection of Epileptic Seizure using Hybrid Feature Set 2014

Ammama Furrukh Gill Syeda Alishbah Fatima Sajid Gul Khawaja Saqib Ejaz Awan Muhammad Usman Akram

Theory and Applications of Applied Electromagnetics APPEIC 2014, res.country(100,)

Citations: N/A
DOI: 10.1007/978-3-319-17269-9_6

Separation and Classification of Crackles and Bronchial Breath Sounds from Normal Breath Sounds using Gaussian Mixture Model 2014

Ali Haider M. Daniyal Ashraf M. Usama Azhar Syed Osama Maruf Mehdi Naqvi Sajid Gul Khawaja M. Usman Akram

International Conference on Neural Information Processing, res.country(157,)

Citations: N/A
DOI: 10.1007/978-3-319-12640-1_60

Time Domain Analysis of EEG Signals for Detection of Epileptic Seizure 2014

Ammama Furrukh Gill Syeda Alishbah Fatima Aafreen Nawaz Ayesha Nasir Sajid Gul Khawaja Saqib Ejaz Muhammad Usman Akram

2014 IEEE Symposium on Industrial Electronics & Applications (ISIEA) , res.country(157,)

Citations: N/A
DOI: 10.1109/ISIEA.2014.8049867

Book Chapters

Physical Action Categorization Pertaining to Certain Neurological Disorders Using Machine Learning-Based Signal Analysis 2022

Asad Mansoor Khan Sajid Gul Khawaja Muhammad Usman Akram Ali Saeed Khan

In: *Book on Biomedical Signals Based Computer-Aided Diagnosis for Neurological Disorders*, 1st Edition, Chapter 2, Pages 23-42

Citations: 1
DOI: https://doi.org/10.1007/978-3-030-97845-7_2

Editorial Activities

IEEE Access   2023
  Reviewed Papers for Journals
  Impact Factor: 3.367

Biomedical Signal Processing & Contro   2022
  Reviewed Papers for Journals
  Impact Factor: 5.076

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  Reviewed Papers for Journals

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  Reviewed Papers for Journals

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  Reviewed Papers for Journals

Intellectual Property

Copyrights

A system for detecting and regulating anxiety using haptics 2020
    Status: Granted Filed

Graphical User Interface of EKKO-Wave therapeutic Device 2020
    Status: Licensed Filed

Mobile application of EKKO-Wave therapeutic Device 2020
    Status: Licensed Filed

Web application of EKKO-Wave therapeutic Device 2020
    Status: Licensed Filed

Epilepsy Care mobile application 2020
    Status: Licensed Filed

Desktop application for HESS screening system 2020
    Status: Filed

Patents

Systems and Methods for Testing Neurological Disorders using Vibratory Therapeutic Device 2019
    Status: Filed

Apparatus and System for Retinal Screening Using Smartphone 2018
    Status: Filed

Retinal Screening System using mobile terminal and method thereof 2017
    Status: Granted

A NETWORK-ON-CHIP BASED MULTIPROCESSOR ARCHITECTURE FOR IMPLEMENTING K-MEANS CLUSTERING ALGORITHM 2017
    Status: Filed

Industrial Designs

Vibration Therapy device 2020
    Status: Filed

Joy Stick based Assembly for Acquisition of Retina using Portable Device (Class-12) 2019
    Status: Granted Filed

Mobile Mount for Retina Acquisition (Class-12) 2019
    Status: Granted Filed

HESS Screening System (Class-12) 2019
    Status: Filed

EKKO-WAVE THERAPEUTIC DEVICE 2019
    Status: Filed

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