

Prof. Dr. Sohail Khalid

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Google Scholar: Google Scholar **Scopus:** Scopus

PROFESSIONAL SUMMARY

Dr. Sohail Khalid is a Professor of Computer Science and an interdisciplinary researcher in artificial intelligence, machine learning, and AI-enabled cybersecurity, with over 15 years of academic and research experience. His research programme spans AI for cybersecurity and post-quantum IoT security, AI-driven healthcare and physiological signal processing, lightweight and edge AI for resource-constrained deployment, and AI for smart energy and sustainable systems, supported by a distinctive systems-level grounding in RF, microwave, and 6G hardware engineering that allows him to design intelligence from the sensor and circuit layer upwards. He is an IEEE Senior Member and PEC-registered engineer, currently at the University of Management and Technology (UMT), Lahore, following six years as Associate Professor and Head of the Department of Electrical and Computer Engineering at Riphah International University, Islamabad. His research portfolio comprises 50+ peer-reviewed publications, three patents including Malaysian Patent MY-178842-A, an IET book on AI and Post-Quantum Security (in press, 2026), and four book chapters in three books with Elsevier, IET, and CRC Press. He has successfully supervised 8 PhD and 24 MS theses alongside 18 industry-funded capstone projects across applied AI, cybersecurity, digital health, embedded systems, and RF engineering, with active research collaborations in Pakistan, Saudi Arabia, UAE, and the United Kingdom. He holds a PhD from UTP (QS 251) and an MSc from Queen Mary University of London (QS 120).

As an academic leader, Dr. Khalid initiated two new engineering degree programmes (BS Robotics and Intelligent Systems; BS Computer Systems), led curriculum reforms aligned with PEC and NCEAC accreditation standards, and built a research-active department that recorded the highest PhD student enrolment in the Islamabad region during 2022–2023. He is a Certified OBE Master Trainer and PEC-registered Programme Evaluator for OBE-based engineering accreditation, having led the successful PEC accreditation of departmental engineering programmes and serving on national accreditation panels. He contributes to postgraduate examination activities as a PhD and MS thesis examiner across multiple universities, and delivers faculty development training in modern teaching pedagogies including outcome-based education design, AI-assisted assessment frameworks, and research supervision methods. He is currently leading efforts to establish a Center of Excellence in Artificial Intelligence at UMT, focused on research excellence, industry collaboration, postgraduate training, and technology transfer.

ACTIVE RESEARCH AREAS

- **AI for Cybersecurity and Post-Quantum Security:** Vulnerability and CVE risk ranking, intrusion detection, zero-day attack detection, agentic AI and LLM tool-use security, explainable cybersecurity, and lightweight post-quantum cryptography for IoT devices.

- **AI-Driven Healthcare and Physiological Signal Processing:** EEG emotion recognition, HRV stress detection, PPG-based emergency detection, non-invasive diagnosis, mental-health analytics, and rehabilitation engineering.
- **Machine Learning, Lightweight Models, and Edge Intelligence:** TinyML, model compression and quantisation, low-power deep learning, on-device inference, and real-time sensing for healthcare, environment, and smart systems.
- **AI for Smart Energy and Sustainable Systems:** Load forecasting, microgrid energy management, renewable-energy optimisation, smart industrial energy control, waste classification, and environmental monitoring.
- **AI-Enhanced STEM Education and Adaptive Learning:** Generative AI, RAG-based learning, XR and metaverse-supported STEM education, outcome-based assessment, and intelligent tutoring systems.
- **AI-Enabled RF, Microwave, and 6G Systems:** ANN surrogate models for RF filter synthesis, antenna design, biomedical telemetry, RF front-end optimisation, RIS, UAV communication, C-NOMA, and 6G intelligent IoT systems.

WORK EXPERIENCE

Professor, Computer Science, University of Management and Technology (Sep 2025 – Present)

- Teach undergraduate and postgraduate courses in artificial intelligence, machine learning, computer architecture, research methods, and Introduction to ICT.
- Supervise interdisciplinary research in AI cybersecurity, digital health, edge intelligence, smart energy, sustainable computing, and AI-enabled RF systems.
- Recorded 21 research outputs during the first ten months at UMT, including 11 journal articles, nine conference papers, and one international book chapter.
- Serve on the University Faculty Appraisal Committee and the faculty-level Pedagogy and Moderation Committee, and contribute to student advisorship and academic quality.
- Drive national and international research collaboration and contribute to efforts to strengthen AI research, postgraduate training, and technology transfer at UMT.
- Member of university statutory bodies.

Associate Professor/HoD, ECED, Riphah International University (Sep 2019 – Jul 2025)

- Lead departmental operations including teaching, research, and administration across 3 undergraduate and 2 postgraduate programs.
- Teach 7 to 10 credit hours per semester to 30–80 students, and supervise undergraduate, MS, and PhD research projects.
- Manage academic quality, curriculum development, and program accreditation while overseeing infrastructure, budgeting, and compliance.
- Mentor faculty, coordinate performance evaluations, and contribute to talent acquisition

and retention.

- Serve on universities statutory boards to contribute to institutional governance and policy-making.

Assistant Dean RARE, Riphah International University (Sep 2015 – Sep 2017)

- Facilitated industrial collaborations to support applied research and innovation within the engineering faculty.
- Oversaw and motivated departmental research activities to align with institutional research goals and national priorities.
- Identified and secured funding opportunities to support faculty-led research and student projects.

Assistant Professor, Riphah International University (Jul 2014 – Sep 2019)

- Taught undergraduate and postgraduate courses, contributing to academic excellence and curriculum delivery.
- Conducted research and contributed to scholarly publications in engineering and technology fields.
- Played an active role in university statutory bodies, providing input on academic policies and governance.
- Participated in key administrative committees focused on quality assurance, program development, and academic planning.

Research Assistant, Universiti Teknologi PETRONAS, Malaysia (Jul 2010 – Apr 2014)

Teaching Fellow, COMSATS Institute of Information Technology, Pakistan (Aug 2007 – Feb 2008)

ACADEMIC AND STRATEGIC LEADERSHIP

- Led departmental operations across three undergraduate and two postgraduate programs, overseeing teaching, research, and academic administration. Under this leadership, the department recorded the highest number (32) of enrolled PhD students in the Islamabad region during 2022–2023.
- Launched two new academic programs: BS Robotics and Intelligent Systems, and BS Computer Systems, addressing emerging technology demands.
- Initiated curriculum reforms aligned with national accreditation bodies (PEC and NCEAC), including OBE-based curriculum development and quality benchmarking.
- Established processes for budgeting, compliance, lab development, and performance reviews across faculty and staff.
- Strengthened industry-academia linkage by organising and leading industrial advisory board meetings and involving local industry experts in curriculum design and review.
- Successfully supervised 8 PhD and 24 MS theses alongside 18 capstone projects spanning antenna engineering, microwave circuits, embedded systems, and applied AI.

- Served on statutory bodies and accreditation panels for PEC and HEC visits; acts as a PEC Programme Evaluator for OBE-based engineering accreditation and NCEAC Programme Evaluator, leading the department to successful PEC accreditation.
- Certified OBE Master Trainer; delivered faculty development workshops across multiple institutions on OBE curriculum design, AI-assisted assessment, modern teaching strategies, and research supervision, contributing to institutional capacity building.
- Assisted in developing Riphah's in-house OBE software for efficient data entry and assessment dashboards at individual and cohort levels, including OBE-based transcript generation.
- Serves as PhD and MS thesis examiner across multiple universities and on postgraduate examination panels, contributing to research quality assurance nationally.

EDUCATION

PhD, Universiti Teknologi PETRONAS, Malaysia (QS 251) 2010 – 2014
Thesis: Novel Synthesis Procedures for Ultra-Wideband (UWB) Bandpass Filters. Outcome: 2 patents (incl. MY-178842-A), 5+ Q1/Q2 and Category A publications, YUTP FRG grant (RM 0.5 million).

MSc, Queen Mary University of London, United Kingdom (QS 120) 2008 – 2009
Scholarship recipient.

BSc, COMSATS Institute of Information Technology, Pakistan (QS 664) 2004 – 2008
Gold Medalist. PEC Washington Accord accredited programme.

PROFESSIONAL CERTIFICATIONS AND TRAINING

- Programs Evaluator Training, NCEAC (2026)
- Engineering Programs Evaluator Training, Pakistan Engineering Council (2025)
- PG-Cert in Professional Ethics and Teaching Methodology (1 year), RIU (2024)
- Certified Master Trainer for STEM, STEM.org (2023)
- Mastering the Research Supervision, HEC (2016)

PEDAGOGICAL INNOVATION AND FACULTY DEVELOPMENT

- Integrated AI-enabled tools, LMS platforms, and blended learning strategies into departmental teaching practices; proposed an AI-based assessment framework currently under journal review.
- Conducted regular workshops on assessment design, research writing, project-based learning, complex engineering problems, and OBE training for junior faculty.

- Led the department's shift toward student-centred learning using a structured educational framework.
- Implemented internal academic audits, peer review cycles, and continuous quality improvement processes aligned with international quality standards.

TEACHING EXPERIENCE

Postgraduate Courses Taught

- Machine Learning
- Advanced Computer Architecture
- Research Methodology and Professional Ethics
- Advanced Sensing Systems
- Mobile and Satellite Communication
- Advanced Microwave Engineering
- RF Circuit Theory

Undergraduate Courses Taught

- Artificial Intelligence
- Programming Fundamentals
- Computer Systems
- Computer Architecture
- Digital Logic Design
- Application of Information and Communication Technologies
- IoT and Embedded Systems
- Antennas and Wave Propagation
- Electric Circuits
- Engineering Management
- Entrepreneurship

ON-GOING RESEARCH PROJECTS

- **Explainable Cybersecurity Decision Support:** Developing DeepXploit for ranked CVE exploitation-risk prioritisation, along with cross-dataset intrusion detection, zero-day detection, and SHAP-based failure analysis for robust cybersecurity systems.

- **Agentic AI and Tool-Use Security:** Studying tool-injection attacks in LLM agents and designing policy enforcement methods at the Model Context Protocol boundary to reduce unsafe tool execution.
- **Post-Quantum Security for IoT:** Reviewing and evaluating lightweight post-quantum cryptographic methods for medical IoT, smart grids, wireless sensor networks, and wearable devices.
- **Neuro-AI and Healthcare Monitoring:** Developing explainable models for EEG-based emotion recognition, HRV-based stress detection, PPG-only elderly emergency detection, and VR-assisted post-stroke rehabilitation.
- **Edge AI for Sustainable Applications:** Designing lightweight real-time AI models for underwater plastic detection, acoustic waste classification, and low-power environmental monitoring on embedded platforms.
- **Smart Energy and Microgrid Intelligence:** Building hybrid AI models for short-term load forecasting, PV prediction, adaptive MPC tuning, battery management, and robust energy control in developing-country microgrids.
- **AI-Based Adaptive STEM Learning:** Designing an Educational Intelligence Delivery System that combines generative AI, RAG, XR learning, metaverse activities, assessment analytics, and instructor oversight.
- **AI-Assisted RF and 6G Hardware Design:** Using ANN surrogate models and hybrid optimisation to design RF filters, triplexers, antennas, RIS-assisted links, UAV communication systems, and 6G intelligent IoT front ends.

BOOK, BOOK CHAPTERS, AND PATENTS

Book

- Sohail et al. (in press). *AI and Post-Quantum Approaches for Multimedia Security: Foundations, Protocols, and Applications*. IET Publishing, 2026.

Book Chapters

- Sohail et al. “Resource-efficient models for edge devices.” In *Edge Intelligence*. Elsevier, 2025.
- Sohail et al. (in press). “AI and Machine Learning for 6G-Enabled Ambient Intelligence.” In *Ambient Intelligence for 6G*. IET, 2026.
- Sohail et al. (in press). “Security, Privacy, and Ethical Challenges in 6G-Enabled Ambient Intelligence.” In *Ambient Intelligence for 6G*. IET, 2026.
- Sohail et al. “Environmental Sustainability & Energy Efficiency in UAV Networks.” In *Unmanned Aerial Vehicle Networks: Communications and Cybersecurity Challenges*. CRC Press (Taylor & Francis), 2026.

Patents

- Multiple Resonance Resonator (Malaysia) Grant Number MY-178842-A
- Reflectionless Bandstop Notch RF Filter (Pakistan) Pakistan Patent No. 038930/ISB/19

- Digital Fuel Flow Sensor, Filed (Pakistan)

TECHNICAL AND RESEARCH SKILLS

- **AI and Machine Learning:** Machine Learning, Deep Learning, Explainable AI, Meta-heuristic Optimisation, Mathematical Modelling
- **AI Tools and Platforms:** LLMs and generative AI tools, Google Colab, Kaggle
- **Programming and Computation:** Python, MATLAB, Maplesoft
- **Embedded, RF, and Hardware Design:** ADS, HFSS, CST, Proteus, Altium
- **Academic and Technical Tools:** L^AT_EX, MS Office, EndNote, OriginPro
- **Teaching Technology:** Learning Management Systems, Digital Whiteboard, Blended Learning
- **Leadership:** Strategic Planning, Project Management

MEMBERSHIPS

- IEEE Senior Member
- Academic Editor, IECE Transactions on Cybersecurity
- Pakistan Engineering Council (PEC) Registered Member (PEC is a full signatory member of the Washington Accord)
- Member of Various University Statutory Boards

ACADEMIC SUPERVISIONS

PhD Supervision Titles

- AI-Based Non-Invasive Diagnosis of Chronic Disease with Privacy Preservation
- AI-Driven Material Classification and Detection System for Efficient Waste Management
- Human Action Recognition using Deep Learning and Best Selected Multimodal Feature Fusion
- High-performance Antenna Architectures for Biomedical Telemetry in Heterogeneous Body-Centric Environments
- Design of Multiband Analogue Microwave Filters using Novel Structures Based on Conventional Circuit Topologies
- Synthesis and Design of Microwave Filters for Advanced Wireless Systems
- Design of Multiplexers for Next Generation Wireless Systems

- A Novel Synthesis Procedure for Designing of Microwave Analog Filters

MSc Supervision Titles

- Implementation of Deep Reinforcement Learning Techniques in Swarm Robotics
- AI-based hydrocarbon identification
- Miniaturized Flexible Filter-Embedded Antenna for Breast Cancer Detection
- Design of a filtering antenna for wireless power transfer in IoT nodes
- Development of transmitting antenna at 5.8 GHz for wireless power transfer in wearable biosensors
- High Power Microwave Source Design for Directed Energy Devices-Based Electronic Warfare Systems
- Miniaturized Next Generation Microwave Bandpass Filter using CRLH Metamaterial
- Design and Fabrication of a Compact Antenna for RF Energy Harvesting
- Generalize Realization of a Reflectionless Bandstop Filter for 5G sub-6 GHz Band Interference Mitigation
- Design of a Novel Quasi-Elliptic RF Bandpass Filter Using Antiparallel Coupled Lines for Sub-6 GHz 5G Band
- Design of highly selective multiband bandpass filters for microwave applications
- New Design Method for Highly Selective Multiband Bandstop Filters
- Design of Microstrip Multiplexer using stub loaded Resonators
- Development of Transceivers for Free Space Optical Communication Networks
- Design of low return loss, high selectivity Dual Band band stop microstrip filter
- A Reflection-less Bandstop Notch RF Filter for Interference Mitigation in Wireless Communication Systems
- Design of a multiband bandpass filter using stub loader ring Resonator
- Novel Generalized Synthesis Procedure for Broadband Bandpass Filter
- Synthesis and Design of Triple Band Bandpass Filter for 5G Applications
- Synthesis and Design of Dual Band Bandstop Filter
- Design and Development of a Filtenna for Vehicle-to-Everything Communication in Automotive ADAS Applications

Supervised 18 Capstone Projects, comprising both research-based and industry-funded initiatives.

RESEARCH GRANTS AND AWARDS

- High-power interference mitigation in offshore FSO and FPSO vessels: a matched band-stop filter approach (RM 0.5 million, YUTP FRG, UTP, Malaysia)
- Low profile reflectarray antennas for X-band satellite communications (PKR 0.3 Million, CRGP HEC, Pakistan)
- Highly compact multilayer antenna arrays for microwave applications (PKR 2.98 Million, HEC, Pakistan)
- Capstone Projects (PKR 0.55 Million, IGNITE and PEC, Pakistan)
- PKR 0.6 Million Seed Grant (RARE, RIU, Pakistan)
- Gold Medalist in BSc Engineering Degree
- Medal, British Invention Show, UK (2012); Award, Malaysian Technology Expo, Malaysia (2012)
- BSc, MSc and PhD Scholarships
- Gold Medal in PG-Cert Diploma with CGPA 4.0/4.0

RESEARCH PUBLICATIONS

Journal Papers

Artificial Intelligence, Cybersecurity, and Machine Intelligence

- **S. Khalid** et al. “Shaping the future of cybersecurity: the convergence of AI, quantum computing, and ethical frameworks for a secure digital era.” *Computer Science Review* (Elsevier), 2025. [Q1]
- T. Ahsan, **S. Khalid**, S. Najam, M. A. Khan, Y. J. Kim et al. “HRNeto: human action recognition using unified deep features optimization framework.” *Computers, Materials and Continua*, vol. 75, no. 1, pp. 1089–1105, 2023. [Q3]
- M. Rehman, A. Shafique, **S. Khalid**, I. Hussain. “Dynamic substitution and confusion-diffusion based noise-resistive image encryption using multiple chaotic maps.” *IEEE Access*, 2021. [Q2]

AI for Healthcare and Biomedical Signal Processing

- M. Abrar, M. Rehman, **Khalid, S.** “The intersection of artificial intelligence and assistive technologies in the diagnosis and intervention of mental health conditions.” *Artificial Intelligence Review* (Springer), 2026. [Q1]
- **S. Khalid** et al. “A hybrid EEG-based emotion recognition with dimensionality reduction and ensemble learning.” *Concurrency and Computation: Practice and Experience* (Wiley), 2026. [Q3]
- Rehman, A., Ghias, R., Sultan, N., Sherazi, H. I., Ayouni, S., **Khalid, S.** and Rehman,

M. U. “Enhancing the efficacy of hormone therapy in prostate cancer through conditional super-twisting sliding mode control and Redfox optimization.” *Biomedical Signal Processing and Control* (Elsevier), 112, p.108895, 2026. [Q2]

- Shah, E. A., Ahsan, S. J., Qureshi, M. F., **Khalid, S.** and Ur Rehman, M. “Machine learning and multivariate analysis of depression prevalence and predictors in acute coronary syndrome.” *IEEE Access*, 2025. [Q2]
- M. Rehman, M. Driss, A. Khakimov, **S. Khalid**. “Non-invasive early diagnosis of obstructive lung diseases leveraging machine learning algorithms.” *Computers, Materials and Continua*, 2022. [Q3]
- M. Rehman, A. Shafique, **S. Khalid**, M. Driss, and S. Rubaiee. “Future forecasting of COVID-19: a supervised learning approach.” *MDPI Sensors*, 2021. [Q2]
- Syeda Ali, **S. Khalid**, Samir Brahim Belhaouari. “A novel technique to diagnose sleep apnea in suspected patients using their ECG data.” *IEEE Access*, 2019. [Q2]

AI for Energy, Sustainability, and Intelligent Control

- Sani, S. S., **Khalid, S.**, Qurashi, M. F., Saeed, N., and Rehman, M. U. “Deep learning-based material classification for waste management using acoustic spectrograms.” *Array* (Elsevier), 100913, 2026. [Q1]
- Zohaib, A., Akram, F., **Khalid, S.**, Nawaz, H. and Rehman, M. U. “Hybrid deep learning based load forecasting and AI-driven energy management for grid-connected multi-microgrids.” *Computers and Electrical Engineering* (Elsevier), 131, p.110915, 2026. [Q1]
- Raja, M. I., Tanveer, H., Rabani, H., Zohaib, A., **Khalid, S.** and Zad, H. S. “AI based smart energy saving and consumption management for industries.” *Pakistan Journal of Scientific Research*, 4(2), pp.102–113, 2025.
- Zad, H. S., Ulasyar, A., Zohaib, A. and **Khalid, S.** “Adaptive observer-based robust control of mismatched buck DC-DC converters for renewable energy applications.” *Engineering Proceedings*, 111(1), p.22, 2025.
- Zad, H. S., Zohaib, A., Ulasyar, A. and **Khalid, S.** “An improved adaptive sliding mode controller with dynamic surface extension for uncertain robotic manipulators.” *Engineering Proceedings*, 111(1), p.25, 2025.
- Zahra, S. T., Imdad, S. K., Khan, S., **Khalid, S.** and Baig, N. A. “Power transformer health index and life span assessment: a comprehensive review of conventional and machine learning based approaches.” *Engineering Applications of Artificial Intelligence* (Elsevier), 139, p.109474, 2024. [Q1]
- J. Abbas, **S. Khalid**, M. Awais, M. A. Rahman, S. B. Belhaouari. “The extended model predictive-sliding mode control of three-level AC/DC power converters with output voltage and load resistance variations.” *Systems Science and Control Engineering* (Taylor & Francis), 2021. [Q2]

RF, Microwave, Antennas, and 6G Hardware Systems

- Gogosh, N., **Khalid, S.**, Malik, B. T., Shafique, M. F., Szczepanski, S., and Koziel, S. “Electronically switchable dual-band capsule antenna for wireless endoscopic applications.” *Scientific Reports* (Nature), 2026. [Q1]
- Gogosh, N., **Khalid, S.**, Rehman, A., Najam, A. I., and Shafique, M. F. “Broadbeam sub-

- strate integrated waveguide traveling wave antenna for wearable applications.” *Microwave and Optical Technology Letters* (Wiley), 68, e70641, 2026. [Q4]
- Gogosh, N., **Khalid, S.**, Malik, B. T. and Koziel, S. “Artificial magnetic conductor backed dual-mode sectoral cylindrical DRA for off-body biomedical telemetry.” *Scientific Reports* (Nature), 15(1), p.31870, 2025. [Q1]
 - Abdul Rehman, M., Mushtaq, B., **S. Khalid**, Mujeeb ur Rehman. “Design of a miniaturized multi resonance resonator based highly selective dual wideband bandpass filter.” *Microelectronics Journal* (Elsevier), Vol. 153, 2024. [Q2]
 - Mushtaq, B., Abdul Rehman, M., **S. Khalid**, Alhaisoni, M. “Design of tri-band bandpass filter using modified X-shaped structure for IoT based wireless applications.” *IEEE Embedded Systems Letters*, 2023. [Q2]
 - Mushtaq, B. and **S. Khalid**. “Design of miniaturized single and dual-band bandpass filters using diamond-shaped coupled line resonator for next-generation wireless systems.” *International Journal of Microwave and Wireless Technologies* (Cambridge), 2022. [Q4]
 - Abdul Rehman, M., **S. Khalid**, Mushtaq, B. and Idrees, M. “Design of a novel compact highly selective wideband bandstop RF filter using dual path lossy resonator for next generation applications.” *PLoS ONE*, 17(10), 2022. [Q1]
 - B. Mushtaq, **S. Khalid** and M. A. Rehman. “Design of a compact novel stub loaded pentaband bandpass filter for next generation wireless RF front ends.” *IEEE Access*, vol. 10, pp. 109919–109924, 2022. [Q2]
 - M. Faisal and **S. Khalid**. “Multi-band bandpass filter using novel topology for next-generation IoT wireless systems.” *Computers, Materials and Continua*, vol. 73, no. 3, pp. 4819–4832, 2022. [Q3]
 - M. Faisal, **S. Khalid**, M. Rehman, M. A. Rehman. “Synthesis and design of highly selective multi-mode dual-band bandstop filter.” *IEEE Access*, 2021. [Q2]
 - **Khalid, S.** et al. “Polarization insensitive penta bandstop frequency selective surface for closely placed bands.” *Microwave and Optical Technology Letters* (Wiley), Aug. 2020. [Q4]
 - Abdur Rehman, **S. Khalid**. “Design of tri-band bandpass filter using symmetrical open stub loaded step impedance resonator.” *Electronics Letters* (IET), 2018. [Q2]
 - **S. Khalid**, Muhammad Farhan Shafique. “Exact synthesis design theory of analogue broadband bandpass filter.” *Microelectronics Journal* (Elsevier), 64, pp. 53–59, 2017. [Q2]
 - **S. Khalid**, W.P. Wen, L.Y. Cheong. “Optimum filter synthesis procedure for ultra-wideband bandpass filter using step-impedance resonator.” *Journal of Electromagnetic Waves and Applications*, 28(8), pp. 943–955, 2014. [Q4]
 - **S. Khalid**, W.P. Wen, L.Y. Cheong. “Synthesis design of UWB bandpass filter using multiple resonances resonator (MRR).” *Electronics Letters* (IET), 50(24), pp. 1851–1853, 2014. [Q2]
 - **S. Khalid**, W.P. Wen, L.Y. Cheong. “A novel synthesis procedure for ultra wideband (UWB) bandpass filters.” *Progress in Electromagnetic Research (PIER)*, vol. 141, pp. 249–

Conference Papers

AI, Cybersecurity, Healthcare, and Education

- **S. Khalid** et al. “Effects of hyperparameter variation on collective behaviours in robotic swarms.” *International Conference on Artificial Intelligence and Robotics Computing (AIRC)*, USA, 2026.
- **S. Khalid** et al. “Advancing STEM education: artificial intelligence, metaverse, and the rise of adaptive learning ecosystems.” *IEEE Global Engineering Education Conference (EDUCON)*, 2026.
- **S. Khalid** et al. “Metaheuristically enhanced ANN-based intrusion detection system with explainable AI integration.” *International Joint Conference on Neural Networks (IJCNN) 2025*, Rome, Italy.
- **S. Khalid** et al. “Novel zero-day attack detection system based on autoencoder and isolation forest.” *International Conference on Neural Computing for Advanced Applications (NCAA)*, Hong Kong, 2025.
- Sani, S.S., **Khalid, S.**, Rafiq, M., and Rehman, M.U. “Spectrogram-based deep learning model for efficient real-time waste material classification.” *International Conference on Computational Intelligence, Security, and Artificial Intelligence (IntelliSecAI)*, IEEE, December 2025.
- Rehman, M.U., **Khalid, S.**, Alkhulaiteet, M.A.R., Khawar, M., Ullah, F., and Baig, I. “Detecting mental health conditions from Reddit posts using machine learning.” *IntelliSecAI 2025*, IEEE, December 2025.
- Khawar, M., **Khalid, S.**, Siddiqua, H.A., and Hassan, M.T. “Explainable HRV-based stress detection using machine learning.” *6th International Conference on Innovative Computing (ICIC)*, IEEE, December 2025.
- Khawar, M., **Khalid, S.**, Hassan, M.T., Rehman, M.U., and Inayat, U. “Explainable ensemble learning for obesity risk prediction and personalised guidance.” *6th International Conference on Innovative Computing (ICIC)*, IEEE, December 2025.
- Khawar, M., Saeed, S.M.U. and **Khalid, S.** “A hybrid EEG based emotion recognition with dimensionality reduction and ensemble learning.” *27th International Multitopic Conference (INMIC)*, IEEE, December 2025.
- **S. Khalid** et al. “Leveraging training strategies of artificial neural networks for classification of multiday electromyography signals.” *ETECTE 2022*, Lahore, Pakistan, 2022.
- S.Q. Ali, V. Jeoti, **S. Khalid**. “Sleep apnea detection from heart rate variability data using a DWPT based technique.” *4th International Conference on Intelligent and Advanced Systems (ICIAS)*, Malaysia, 2012.

RF, Microwave, Antennas, and Hardware Systems

- Gogosh, N., **Khalid, S.**, Hussain, M., Iftikhar, A., Shafique, M.F., and Abbas, S.M. “A low-profile circumgyrated shaped GCPW patch antenna for wireless medical telemetry services.” *Asia-Pacific Microwave Conference (APMC)*, IEEE, December 2025.

- M. Idrees, B. Mushtaq, M. A. Rehman, **S. Khalid** and J. Iqbal. “Design of a planar four-port microstrip triplexer using stub-loaded coupled line resonator for advanced wireless applications.” *20th International Bhurban Conference on Applied Sciences and Technology (IBCAST)*, Bhurban, Pakistan, 2023, pp. 398–403.
- M. A. Rehman, B. Mushtaq, **S. Khalid** and J. Iqbal. “Design and analysis of broad-band bandstop filter using dual path capacitive coupled resonator for 4G and 5G applications.” *20th IBCAST*, Bhurban, Pakistan, 2023, pp. 385–392. doi: 10.1109/IBCAST59916.2023.10712815.
- **S. Khalid** et al. “An extended model predictive-sliding mode control for three-level AC/DC power converters.” *3rd Asia Pacific International Conference on Emerging Engineering (APIECE)*, Karachi, Pakistan, 2021.
- **S. Khalid** et al. “Design of highly selective dual band bandstop filter using dual-path step impedance resonator.” *3rd APIECE*, Karachi, Pakistan, 2021.
- **S. Khalid**. “Design of highly selective ultra-wideband (UWB) bandpass filter using step impedance resonator and parallel coupled lines.” *IEEE Symposium on Recent Advances in Electrical Engineering (RAEE)*, Islamabad, Pakistan, 2015.
- **S. Khalid**, W. P. Wen, and L. Y. Cheong. “Design of highly selective ultra-wideband bandpass filter using multiple resonance resonator.” *IEEE RFM Conference*, Penang, Malaysia, 2013.
- **S. Khalid**, W. P. Wen. “Highly selective, compact ultra-wideband bandpass filter using a novel multiple resonances resonator (MRR).” *International Microwave Symposium (IMS)*, pp. 672–675, Seattle, USA, June 2013.
- **S. Khalid**, W. P. Wen, and L. Y. Cheong. “Synthesis and design of four pole ultra-wide band (UWB) bandpass filter employing multi-mode resonators (MMR).” *International Microwave Symposium (IMS)*, pp. 230–233, Montreal, Canada, June 2012.
- **S. Khalid**, W. P. Wen, L. Y. Cheong. “A novel design technique for ultra-wideband (UWB) bandpass filter using step impedance resonators (SIR).” *IEEE Asia-Pacific Conference on Applied Electromagnetic (APACE 2012)*, Melaka, Malaysia, December 2012.
- **S. Khalid**, W. P. Wen. “Analysis of ultra-wide bandpass filter.” *National Postgraduate Conference (NPC)*, Malaysia, 2011.
- **Full publication list:** Google Scholar

PROFESSIONAL ENGAGEMENTS

- Academic Editor at Elsevier and IECE Transactions on Cybersecurity. Peer reviewer for many reputed international journals, including IEEE Transactions and Conferences.
- Delivered invited talks, faculty trainings, and technical workshops including:
 - Master Trainer on Research Supervision Course
 - Engineering Programs Evaluator for Pakistan Engineering Council
 - Outcomes-Based Education Certification Training

- Agile Design of Microwave Filters
- Introduction to L^AT_EX for Academic Writing
- Future of AI in Healthcare Systems
- Effective Teaching Strategies for Engineering Faculty
- Research Paper Writing for Engineering Students
- MATLAB for Engineers
- AI Tools for Academic Research

GLOBAL ENGAGEMENT AND PARTNERSHIPS

- Secured a semester-long student exchange program with UTHM Malaysia through collaboration with the International Office, enhancing institutional partnerships and directly supporting QS internationalization metrics.
- Collaborated on high-impact research with scholars from Malaysia, the UK, and Saudi Arabia, advancing global academic engagement and supporting international research benchmarks.
- Actively supported inbound/outbound student mobility and institutional linkages, aligning with global engagement and sustainable development priorities outlined in QS and THE metrics.

REFERENCES

- Ref. 1:** **Prof. Muazzam A. Khan Khattak**
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