

SHAHEER Muhammad

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WORK EXPERIENCE AND EDUCATION HISTORY

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|---|--------------|
| ➤ Assistant Professor at Hamdard University | 2023-Present |
| ➤ Consultant at UtechISC, Hong Kong | 2023-Present |
| ➤ Research Associate at PolyU | 2021-2023 |
| ➤ Postdoctoral Fellow at PolyU | 2020-2021 |
| ➤ PolyU (The Hong Kong Polytechnic University) | |
| ○ PhD (Dept. of Computing) | 2016-2020 |
| ➤ Research Assistant at PolyU. | 2015-2016 |
| ➤ AU (Air University) | |
| ○ MS Mechatronics | 2012-2016 |
| ➤ Lecturer at Namal College of Bradford, Mianwali | 2011-2013 |
| ➤ CASE (Center for Advanced Studies in Engineering) | |
| University of Engineering and Technology, Taxila | |
| ○ B.Sc. Electrical Engineering with specialization in Computer Engineering. | 2006-2011 |
| ➤ OPF Boys College H-9 Islamabad | |
| ○ F.Sc. (Pre-Engineering). | 2004-2006 |
| ➤ Siddeeq Public School 6 th road Rawalpindi | |
| ○ Matriculation. | 2002-2004 |

PhD THESIS

Intelligent management techniques for reconfigurable battery systems.

MS THESIS

Development of a real-time SLAM (Simultaneous Localization and Mapping) algorithm for dynamic environment.

<https://www.dailymotion.com/video/x2q7l64>

B.Sc. FINAL YEAR PROJECT

AUGV (Autonomous Unmanned Ground Vehicle) with extended climbing capabilities for surveillance, reconnaissance and battlefield assistance

<https://www.dailymotion.com/video/x2q7jyv>

RECENT PROJECTS

- Indoor Fire Monitoring Based on Look-Up-From-Floor Sensing of Ceiling (*Patented*).
- MelanoDetect AI: Deep Learning based Skin Cancer detection Device (100,000 HKD fund by HKSTP).
- AI-Based Re-configurable Battery System for Smart Electric Vehicles (SEVs).
- Deep Learning Based Maneuvering for Automated Vehicles in GPS/Communication Denied Environment
- Ad Hoc wireless sensor network with battery based dynamic clustering.
- Test-bed for assessing fidelity of various distance sensors in Fire and Smoke Environment.
- ARMPEER: Soft robotics based forearm exoskeleton.
- Platform stabilization using ADuC 7020.
- Robot Design for National Engineering Robotics Competition (NERC).
- DC motor based intelligent rover platform design.
- Stepper motor based intelligent rover platform design.
- Digital lock.
- Image Compression Using the Discrete Cosine Transform on MATLAB.
- File shaper simulation on MATLAB.
- Project planning of Autonomous and Unmanned Ground Vehicle.
- Monitoring patients using RFID system.
- Robust control system of UAV.
- Robust control system of line tracking robot.
- Simultaneous localization and Mapping (SLAM) on a mobile robot.
- Implementation of control system on robotic arm.
- Air University Cruiser: UGV design for real life traffic environment.

TECHNICAL SKILLS AND TRAININGS

- Programming C, C++, Python, AutoCAD, MATLAB, Multisim, Logicx pro, Keil (Micro vision), Verilog (Modelsim 5.7G), Protel, Microsoft Office, NXC (BricxCC), SPSS Modeller, Unity, Unreal engine, Motive, Fire Dynamics Simulator (FDS)
- Worked on Microcontrollers (Atmel, PIC and Analog Devices)
- Worked on Unmanned Ground Vehicle (UGV) project in NDC as an internee (6 months)
- Becoming Effective Teacher/Teaching Assistant (BETA) Training
- Research Writing/Presentation Training

ACHIEVEMENTS/PARTICIPATIONS

- Judge at **ROBIAN COMSATS** (Annual Robotics Competition Held at COMSATS Islamabad) (DEC, 2024)
- Presented a talk on “Artificial Intelligence in Food Sciences and Technology” in **FEST, HUIC** (2024).
- Participated and presented in IEEE/ASME International Conference Advanced Intelligent Mechatronics (**AIM 2019**).
- Participated in COMP Annual Research Day (**CARD 2018**).
- **2nd prize** COMP Annual Research Day (**CARD 2017**).

- Participated in **ABU ROBOCON 2012** held in **Hong Kong** on 19 August 2012 (supervisor).
- **2nd** and **3rd** prize in **Robosprint 2012** held at **CASE Islamabad** (supervisor).
- **1st prize (Final Year Project)** in ‘all Pakistan Hardware Exhibition of **NASCON 2010**’ held at **NU-FAST** (National University of Computer & Emerging Sciences) Islamabad.
- **2nd prize (Final Year Project)** in ‘**All Pakistan Project Exhibition EMCOT 2010**’ held at **CIIT** (Comsats institute of information technology), Abbottabad among hundreds of projects.
- Participated in **9th All Pakistan Inter Colleges/Universities Computer Project Exhibition & Competition COMPPEC 2010** held at **EME** (Electrical and Mechanical Engineering) college of **NUST** (National University of Science and Technology).
- As a member of **CASE Robotics Group (CRG)**; arranged and organized **ROBOSPRINT 2010**.
- Represented **CASE** in **APEX 2009** held at **UET Lahore** in a Microcontroller Programming competition.
- Participated in **National Engineering and Robotics Contest (NERC) 2009** held at **EME** (Electrical and Mechanical Engineering) college of **NUST** (National University of Science and Technology).
- Participated in **CASE robotics competition 2009** held at **CASE Islamabad**.
- Participated in Speed Programming Competition in **SoftCom 2008** in **CASE**.
- Participated in **Intel Islamabad Science Olympiad 2006**.

INTERESTS

- Embedded systems
- Robotics
- Optimization
- Cyber-physical systems

LIST OF PUBLICATIONS

Representative Research Output Items	Discipline	Journal Ranking	Impact Factor
Journal Publications			
Sattar, N.Y., Kausar, Z., Usama, S.A., Farooq, U., Shah, M.F., Muhammad, S., Khan, R. and Badran, M., 2022. fNIRS-Based Upper Limb Motion Intention Recognition Using an Artificial Neural Network for Transhumeral Amputees. <i>Sensors</i> , 22(3), p.726.	Electrical and Electronic Engineering	Q2	3.847
Muhammad, S., Rafique, M.U., Li, S., Shao, Z., Wang, Q. and Liu, X., 2019. Reconfigurable battery systems: a survey on hardware architecture and research challenges. <i>ACM Transactions on Design Automation of Electronic Systems (TODAES)</i> , 24(2), pp.1-27.	Computer Science, Software Engineering Computer Science, Hardware & Architecture	91/108, Q4 50/53, Q4	0.964

Muhammad, S., Rafique, M.U., Li, S., Shao, Z., Wang, Q. and Guan, N., 2017. A robust algorithm for state-of-charge estimation with gain optimization. <i>IEEE Transactions on Industrial Informatics</i> , 13(6), pp.2983-2994.	Engineering, Industrial Automation & Control Systems	1/49, Q1 4/63, Q1	10.215
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OTHER RESEARCH PUBLICATIONS, FUNDINGS AND OUTPUTS

- Muhammad, Shaheer, et al. "Assessing the fidelity of ultrasonic distance sensors in a fire-and-smoke environment." *Asian Journal of Science, Engineering and Technology (AJSET)* 3.1 (2024): 135-150.
- Wang, Qixin, Xinyan Huang, Muhammad Shaheer, Tamzid Mohammad, Xiaoning Zhang, L. U. O. Mingchun, Li-ta Hsu, W. U. Xiqiang, X. I. A. O. Fu, and Asif Usmani. "Indoor Fire Monitoring Based on Look-Up-From-Floor Sensing of Ceiling." U.S. Patent Application 18/528,877, filed May 23, 2024.
- Wang, Qixin, Xinyan Huang, Muhammad Shaheer, Tamzid Mohammad, Xiaoning Zhang, L. U. O. Mingchun, Li-ta Hsu, W. U. Xiqiang, X. I. A. O. Fu, and Asif Usmani. "Indoor fire monitoring based on look-up-from-floor sensing of ceiling." U.S. Patent 11,860,043, issued January 2, 2024.
- SHAHEER M. (2023) , Reconfigurable Battery Pack; Development and Management Techniques, Bela Publications, ISBN: 978-969-8394-18-9, National library of Pakistan.
- Shaheer, M. (2020). *Intelligent management techniques for reconfigurable battery systems*. Hong Kong Polytechnic University. [PolyU Electronic Theses: Intelligent management techniques for reconfigurable battery systems](#)
- Sattar, N.Y., Syed, U.A., Muhammad, S. and Kausar, Z., 2019, July. Real-time EMG signal processing with implementation of PID control for upper-limb prosthesis. In *2019 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)* (pp. 120-125). IEEE.
- Wang, J., Ma, C., Shen, Z., Muhammad, S. and Shao, Z., 2018, August. Tiler: An autonomous region-based scheme with fast cleaning for SMR storage. In *2018 IEEE 7th Non-Volatile Memory Systems and Applications Symposium (NVMSA)* (pp. 13-18). IEEE.
- Muhammad, S., Guan, N., Li, S., Wang, Q. and Shao, Z., 2017, August. Efficient and balanced charging of reconfigurable battery with variable power supply. In *2017 IEEE 23rd International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA)* (pp. 1-6). IEEE.
- Shaheer, M. (2016). *Development of a Real-time SLAM (Simultaneous Localization and Mapping) Algorithm for Dynamic Environment*. Air University, Islamabad, Pakistan.
- Shaheer, M. (2011). *AUGV (Autonomous Unmanned Ground Vehicle) with extended climbing capabilities for surveillance, reconnaissance, and battlefield assistance* Center for Advanced Studies in Engineering, University of Engineering, Taxila, Pakistan.
- MelanoDetect AI: Deep Learning based Skin Cancer detection Device (Funded By HKSTP. Ref.: 24-1309)

- Publications listed at <https://dblp.org/pid/206/2867.html>.