

Amir Hamza

Associate Professor

College of Electrical & Mechanical Engineering

Email: a.hamza@ceme.nust.edu.pk

Contact: 0514540262

LinkedIn: <https://www.linkedin.com/in/amir-hamza-6bb02435/>



About

Dr. Amir Hamza is working as Associate Professor in the College of Electrical & Mechanical Engineering. Dr. Amir Hamza has a PhD in Mechanical Engineering. Dr. Amir Hamza has published 37 research articles & conference papers having a citation count of 327, carried out 6 projects and filed 14 intellectual property.

Qualifications

PhD in Mechanical Engineering King Fahad University of Petroleum and Minerals , Saudi Arabia	2011 - 2016
MS in Mechanical And Aerospace Engineering Seoul National University , Korea	2006 - 2008
BE in Mechatronics Engineering NUST, Islamabad , Pakistan	2001 - 2005

Experience

Associate Professor College of Electrical & Mechanical Engineering	2022- Present
Assistant Professor College of Electrical & Mechanical Engineering	2016 - 2022
Assistant Professor College of Electrical & Mechanical Engineering	2016 - 2016
Lecturer B King Fahd University of Petroleum and Minerals , Dhahran, KSA	2011 - 2016
Lecturer National University of Sciences and Technology , H-12 Islamabad	2009 - 2011

Professional Memberships

PEC	Since 2005
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Research Projects

National Projects

Multirobot automation system for manufacturing (Composite layup manufacturing) Funding Agency: NUST Amount: PKR 22,000,000.00 Status: Completed	2023
Agri Pro Integrated Underground Crops Harvester Funding Agency: IGNITE Amount: PKR 80,000.00 Status: Completed	2020
StairLift for Elderly Funding Agency: IGNITE Amount: PKR 80,000.00 Status: Completed	2020
Development of ATV Mounted Seeding Mechanism Funding Agency: IGNITE Amount: PKR 79,950.00 Status: Completed	2019
Intelligent Neckband for cattle health monitoring Funding Agency: IGNITE Amount: PKR 9,000.00 Status: Completed	2018
Development of High Performance and Reliable MEMs Inertial Sensors for UAVs Applications Funding Agency: HEC Amount: PKR 15,396,000.00 Status: Completed	2018

International Projects

Research Articles

Quantifying uncertainty in robotics trajectories: A time-dependent approach using polynomial chaos expansion <i>Keenjhar Ayoob Tayyab Zafar Amir Hamza Zhonglai Wang</i> <i>AIP Advances</i> , Volume:15, Issue:6, Article Number 065107 Impact Factor: N/A Quartile: 4 DOI: 10.1063/5.0252807	2025
Sensorized laparoscopic surgical grasper with integrated capacitive force sensor for robot-assisted minimally invasive surgery <i>Muhammad Ameer Usman Muhammad Rehan Taimoor Shabbir Mohsin Islam Tiwana Amir Hamza Muhammad Mubasher Saleem</i> <i>Sensor Review</i> , Volume 45, No. 2, Pages 236-247 Impact Factor: 1.600 Quartile: 3 DOI: https://doi.org/10.1108/SR-09-2024-0765	2025
Tracking Control and Backlash Compensation in an Inverted Pendulum with Switched-Mode PID Controllers <i>Aisha Akbar Awan Umar Shahbaz Khan Asad Ullah Awan Amir Hamza</i> <i>Applied Sciences-Basel</i> , Volume:14, Issue: 22, Article Number: 10265, Pages:15 Impact Factor: 2.500 Quartile: 1 Citations: 2 DOI: https://doi.org/10.3390/app142210265	2024
Application of array Bessel beam generated by superposition method in electronic glass cutting <i>Guanglei Liang Shufeng Sun Jin Wang Zhihao Qu Tao Wei Xunhuan Liu Hao Sun Peter Pavol Monka Amir Hamza</i> <i>Optics and Lasers in Engineering</i> , Volume 181, Article Number 108384 Impact Factor: 3.500 Quartile: 2 Citations: 3 DOI: https://doi.org/10.1016/j.optlaseng.2024.108384	2024
Emotion Fusion-Sense (Emo Fu-Sense) – A novel multimodal emotion classification technique <i>Muhammad Umair Nasir Rashid Umar Shahbaz Khan Amir Hamza Javaid Iqbal</i>	2024

Impact Factor: 4.9 | Quartile: 1

DOI: 10.1016/j.bspc.2024.1062

Deep Learning Based Multiresponse Optimization Methodology for Dual-Axis MEMS Accelerometer

2023

Fahad ul Hassan Asif Mattoo Tahir Habib Nawaz Muhammad Mubasher Saleem Umar Shahbaz Khan Amir Hamza

Micromachines, Volume 14, Issue 4, Article Number 817

Impact Factor: 3.523 | Quartile: 2 | Citations: 2

DOI: <https://doi.org/10.3390/mi14040817>

IoT-Based Non-Intrusive Automated Driver Drowsiness Monitoring Framework for Logistics and Public

2023

Transport Applications to Enhance Road Safety

Muhammad Adil Khan Tahir Habib Nawaz Umar Shahbaz Khan Amir Hamza Nasir Rashid

IEEE Access, Volume 11, Pages 14385-14397

Impact Factor: 3.476 | Quartile: 2 | Citations: 44

DOI: <https://doi.org/10.1109/ACCESS.2023.3244008>

Study of ferroelectric and piezoelectric response of heat-treated surfactant-based BaTiO₃ nanopowder for high energy capacitors

2023

Gulraiz Tanvir Mohsin Saleem Hamid Jabbar Amir Hamza Muhammad Asif Hussain Muhammad Zubair Khan Abrar H. Baluch Muhammad Irfan Muhammad

Shoaib Butt Faysal Naeem Abdul Ghaffar Muhammad Ahsan Muhammad Asif Rafiq Rizwan Ahmed Malik Adnan Maqbool

Materials Science and Engineering B, Volume 287, Article Number 116100

Impact Factor: 3.407 | Quartile: 2 | Citations: 9

DOI: <https://doi.org/10.1016/j.mseb.2022.116100>

Patch-wise weed coarse segmentation mask from aerial imagery of sesame crop

2022

Syed Imran Moazzam Umar Shahbaz Khan Waqar Shahid Qureshi Mohsin Islam Tiwana Nasir Rashid Ameer Hamza Kunwar Faraz Ahmed Tahir Habib

Nawaz

Computers and electronics in agriculture, Volume 203, Article Number 107458

Impact Factor: 6.757 | Quartile: 1 | Citations: 12

DOI: <https://doi.org/10.1016/j.compag.2022.107458>

Process Parameter Optimization of Additively Manufactured Parts using Intelligent Manufacturing

2022

Rizwan Ur Rehman Uzair Khaleeq uz Zaman Shahid Aziz Hamid Jabbar Adnan Shujah Shaheer Khaleequzzaman Amir Hamza Usman Qamar Dong Won

Jung

Sustainability, Volume 14(22), Article Number 15475

Impact Factor: 3.889 | Quartile: 2 | Citations: 4

DOI: <https://doi.org/10.3390/su142215475>

Prediction of fatigue crack growth rate in aircraft aluminum alloys using optimized neural networks

2022

Hassan Bin Younis Khurram Kamal Muhammad Fahad Sheikh Ameer Hamza

Theoretical and Applied Fracture Mechanics, Volume 117, Article Number 103196

Impact Factor: 4.017 | Quartile: 1 | Citations: 49

DOI: <https://doi.org/10.1016/j.tafmec.2021.103196>

A Systematic Design Optimization Approach for Multiphysics MEMS Devices Based on Combined Computer Experiments and Gaussian Process Modelling

2021

Shayaan Saghir Muhammad Mubasher Saleem Amir Hamza Kashif Riaz Sohail Iqbal Rana Iqtidar Shakoor

Sensors, Volume 21(21), Article Number 7242

Impact Factor: 3.576 | Quartile: 1 | Citations: 6

DOI: 10.3390/s21217242

An efficient design of dual-axis MEMS accelerometer considering microfabrication process limitations and operating environment variations

2021

Amir Hamza Rana Iqtidar Shakoor Muhammad Ahmad Raza Tahir Muhammad Mubasher Saleem Syed Ali Raza Bukhari

Microelectronics International, Volume 38, No. 4, Pages 144-156

Impact Factor: 0.758 | Quartile: 4 | Citations: 7

DOI: <https://doi.org/10.1108/MI-02-2021-0023>

A Novel Design of High Resolution MEMS Gyroscope using Mode-Localization in Weakly Coupled Resonators

2021

Syed Ali Raza Bukhari Muhammad Mubasher Saleem Amir Hamza Shafaat Ahmed Bazaz

IEEE Access, Volume: 9, Page(s):157597-157608

Impact Factor: 3.476 | Quartile: 2 | Citations: 16

DOI: 10.1109/ACCESS.2021.3123152

- A Patch-Image Based Classification Approach for Detection of Weeds in Sugar Beet Crop** 2021
Syed Imran Muazzam Umar Shahbaz Khan Waqar Shahid Qureshi Mohsin Islam Tiwana Nasir Rashid Waleed S. Alasmary Javaid Iqbal Ameer Hamza
IEEE Access , Volume 9, Pages 121698-121715
Impact Factor: 3.476 | **Quartile:** 2 | **Citations:** 39
DOI: 10.1109/ACCESS.2021.3109015
- A Low-g MEMS Accelerometer with High Sensitivity, Low Nonlinearity and Large Dynamic Range Based on Mode-Localization of 3-DoF Weakly Coupled Resonators** 2021
Shayaan Saghir Syed Ali Raza Bukhari Rana Iqtidar Shakoor Shafaat Ahmed Bazaz Muhammad Mubasher Saleem Ameer Hamza
Micromachines , Volume 12(3), Article Number 310
Impact Factor: 2.891 | **Quartile:** 2 | **Citations:** 19
DOI: [https://doi.org/ 10.3390/mi12030310](https://doi.org/10.3390/mi12030310)
- Improving Classification Performance of Four Class FNIRS-BCI Using Mel Frequency Cepstral Coefficients (MFCC)** 2021
Umar Shahbaz Khan Ameer Hamza Umer Izhar Javaid Iqbal Nasir Rashid Waqar Shahid Qureshi Mohsin Islam Tiwana Muhammad Saad Bin Abdul Ghaffar
Infrared Physics and Technology , Volume 112, Article Number 103589
Impact Factor: 2.638 | **Quartile:** 2 | **Citations:** 32
DOI: <https://doi.org/10.1016/j.infrared.2020.103589>
- Microfabrication Process-Driven Design, FEM Analysis and System Modeling of 3-DoF Drive Mode and 2-DoF Sense Mode Thermally Stable Non-Resonant MEMS Gyroscope** 2020
Umar Shahbaz Khan Ameer Hamza Javaid Iqbal Syed Ali Raza Bukhari Muhammad Mubasher Saleem Rana Iqtidar Shakoor
Micromachines , Volume 11, Issue 09, Article Number 862
Impact Factor: 2.891 | **Quartile:** 2 | **Citations:** 18
DOI: <https://doi.org/10.3390/mi11090862>
- EEG Based Four Class Human Limb Movement Detection by Mel Frequency Cepstral Coefficients and Quadratic Multi-Class Support Vector Machine** 2020
Nasir Rashid Javaid Iqbal Umar Shahbaz Khan Mohsin Islam Tiwana Amir Hamza
Journal of Engineering and Applied Sciences , Volume 39, Issue 1, Pages 116-126
Impact Factor: -
DOI: <http://dx.doi.org/10.17582/journal.jeas/39.1.116.126>
- Design, closed-form modeling and analysis of SU-8 based electrothermal microgripper for biomedical applications** 2019
Muhammad Mubasher Saleem Umar Shahbaz Khan Amir Hamza Muhammad Umar Masood
Microsystem Technologies , Volume 25, pages 1171–1184
Impact Factor: 1.737 | **Quartile:** 3 | **Citations:** 18
DOI: 10.1007/s00542-018-4059-z
- Evaluation and comparison of the hepatoprotective effects of trimetazidine and lovastatin against doxorubicin-induced hepatotoxicity** 2019
Abeera Sikandar Kulsoom Farhat Amir Hamza
International Journal of Basic & Clinical Pharmacology , Volume 8, Issue 4, Pages 693-699
Impact Factor: N/A
DOI: 10.18203/2319-2003.ijbcp20191102
- Efficient FIR Filter Implementations for Multichannel BCIs Using Xilinx System Generator** 2018
Usman Ghani Muhammad Wasim Umar Shahbaz Khan Muhammad Mubasher Saleem Ali Hassan Nasir Rashid Mohsin Islam Tiwana Amir Hamza Amir Kashif
BioMed Research International , Volume 2018, Article ID 9861350, 9 pages
Impact Factor: 2.197 | **Quartile:** 3 | **Citations:** 6
DOI: <https://doi.org/10.1155/2018/9861350>
- Application of Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}O_{3-δ} membranes in an oxy-fuel combustion reactor** 2016
Khaled Mezghani Ameer Hamza
Journal of Membrane Science , Volume 518, Pages 254-262
Impact Factor: 6.035 | **Quartile:** 1 | **Citations:** 18
DOI: 10.1016/j.memsci.2016.07.001
- Effect of microstructure and thickness on oxygen permeation of La₂NiO_{4+δ} membranes** 2016
Khaled Mezghani Amir Hamza Mohamed A. Habib Dongkyu Lee Yang Shao-Horn
Ceramics International , Volume 42, Issue 1, Part A, Pages 666-672
Impact Factor: 2.986 | **Quartile:** 1 | **Citations:** 18

DOI: 10.1016/j.ceramint.2015.08.163

Hybrid experimental/numerical technique for determination of the complex dynamic moduli of elastic porous materials

2009

Amir Hamza Yeon June Kang

Journal of Mechanical Science and Technology, Volume 23, Issue 2, Pages 283-290

Impact Factor: 0.374 | **Quartile:** 3 | **Citations:** 2

DOI: 10.1007/s12206-008-0715-z

Enhanced Military Aircraft Detection Using YOLOv5s with Hyperparameter Evolution in Remote Sensing Images

Wajih Ahmed Khan Fahad Ul Hassan Asif Mattoo Ali Sarosh Amir Hamza Umar Shahbaz Khan Muhammad Umar Anjum

6th International Conference on Robotics and Automation in Industry, ICRAI 2024, res.country(177,)

Citations: N/A

DOI: 10.1109/ICRAI62391.2024.10894385

2024

Bare Printed Circuit Board Defects Localization and Detection Using YOLOv5 Models

Wajih Ahmed Khan Amir Hamza Muhammad Usman Akram Umar Shahbaz Khan Tahir Habib Nawaz

2024 International Conference on Robotics and Automation in Industry (ICRAI), res.country(177,)

Citations: N/A

DOI: 10.1109/ICRAI62391.2024.10894537

2024

Impact Testing of Different Materials on Wheels Used in Throwable Unmanned Ground Vehicles

Hamza Sohail Amir Hamza Nasir Rashid Muhammad Saad Ali Taha Ghani

2nd International Conference on Modern Technologies in Mechanical & Materials Engineering (MTME-2024), res.country(177,)

Citations: N/A

DOI: <https://doi.org/10.1051/mateconf/202439801014>

2024

Optimization of Impact Resistant Throwable Unmanned Ground Vehicle Using Mathematical Modeling Techniques

Hamza Sohail Amir Hamza Nasir Rashid Muhammad Saad Ali Taha Ghani

2nd International Conference on Modern Technologies in Mechanical & Materials Engineering (MTME-2024), res.country(177,)

Citations: N/A

DOI: 10.1051/mateconf/202439801013

2024

Design and Analysis of Throwable Unmanned Ground Vehicle

Hamza Sohail Amir Hamza Nasir Rashid Muhammad Saad Ali Taha Ghani

2023 International Conference on Robotics and Automation in Industry (ICRAI), res.country(177,)

Citations: N/A

DOI: 10.1109/ICRAI57502.2023.10089612

2023

Vision-Based Hybrid Detection for Pick and Place Application in Robotic Manipulators

Muhammad Umar Anjum Umar Shahbaz Khan Amir Hamza Waqar Shahid Qureshi Wajih Ahmed Khan

2023 International Conference on Robotics and Automation in Industry, ICRAI 2023, res.country(177,)

Citations: N/A

DOI: 10.1109/ICRAI57502.2023.10089602

2023

Design and FEM Analysis of Miniature Torque Sensor for Finger Exoskeleton

Faryal Gula Hammad Munawar Amir Hamza

2021 International Conference on Robotics and Automation in Industry (ICRAI), res.country(177,)

Citations: N/A

DOI: 10.1109/ICRAI54018.2021.9651427

2021

Design of Olive Pitting Machine

Ahmed Faizan Tariq Eisha Gul Manahil Shahid Amir Hamza Hamid Jabbar Umar Shahbaz Khan

IEEE, 2021 International Conference on Robotics and Automation in Industry (ICRAI), res.country(177,)

Citations: N/A

DOI: 10.1109/ICRAI54018.2021.9651337

2021

Control of Ankle Angles During Gait Cycle for Lower Limb Prosthesis

Umar Shahbaz Khan Muneeb Masood Raja Mohsin Islam Tiwana Amir Hamza Muhammad Adnan Khalil Abdul Hanan

3rd IEEE International Conference on Robotics and Automation in Industry, res.country(177,)

Citations: N/A

DOI: 10.1109/ICRAI47710.2019.8967363

2019

Prediction of fatigue crack growth rate in aircraft aluminum alloys using radial basis function neural network.

Hassaan Bin Younis Muhammad Fahad Sheikh Amir Hamza Tayyab Zafar Khurram Kamal

2018 10th International Conference on Advanced Computational Intelligence (ICACI), res.country(48,)

Citations: N/A

DOI: 10.1109/ICACI.2018.8377568

2018

Copyrights

Patents

System for combusting a methane stream and a method of combustion	2016
Status: Filed	
sealing agent for ion transport membranes	2015
Status: Granted Filed	

Industrial Designs

Casing of Transmission Control Module	2024
Status: Filed	
Casing of Gyrocompass - A Night Navigation Device	2024
Status: Filed	
PCB of Gyrocompass - A Night Navigation Device	2024
Status: Filed	
Precision Forming Robotic Soil Drilling System	2024
Status: Filed	
High maneuverability agricultural robot with individual wheel steering	2024
Status: Filed	
Hybrid Walk and Roll Quadruped Robot (Class-01)	2022
Status: Granted Filed	
Micro-machine for Fatigue Testing of Silicon Thin Films,	2020
Status: Licensed Filed	
Resonant Micro-gyroscope	2020
Status: Licensed Filed	
Flexible and multipurpose mobile agribot platform (Class-01)	2020
Status: Filed	
Roller Mechanism StairLift (Class-01)	2020
Status: Filed	
Gripper Mechanism StairLift (Class-01)	2020
Status: Filed	
Inclined concentric quadrupole magnetic actuators for targeted drug delivery	2019
Status: Granted Filed	

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