

Muhammad Imran

Assistant Professor

School of Electrical Engineering and Computer Science

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About

Dr. Muhammad Imran is working as Assistant Professor in the School of Electrical Engineering and Computer Science. Dr. Muhammad Imran has a PhD in Reliable Architectures For Emerging Memory Technologies. Dr. Muhammad Imran has published 23 research articles & conference papers having a citation count of 123, carried out 13 projects and filed 0 intellectual property.

Qualifications

PhD in Reliable Architectures For Emerging Memory Technologies Sung Kyun Kwan University , Korea	2016 - 2020
BSc in Digital System Design UET Lahore , Pakistan	2008 - 2012
F.Sc in Pre-Engineering FBISE, Islamabad , Pakistan	2006 - 2008
Matric (SSC) in Science FBISE, Islamabad , Pakistan	2004 - 2006

Experience

Assistant Professor School of Electrical Engineering and Computer Science	2025- Present
Assistant Professor School of Electrical Engineering and Computer Science	2024 - 2024
Assistant Professor School of Electrical Engineering and Computer Science	2022 - 2020
Assistant Professor School of Electrical Engineering and Computer Science	2020 - 2024
Research Assistant DATES Lab. at Sungkyunkwan University and Yonsei University , 411, Engineering Research Park, Yonsei University, 50 Yonsei-ro, Sinchon-dong, Seodaemun-gu, Seoul	2017 - 2020
Researcher Automation Lab. at Sungkyunkwan University, South Korea , Semiconductor Building, 2066, Seobu-ro, Jangang-gu, Suwon, South Korea	2016 - 2017
Junior Engineer Pakistan Atomic Energy Commission (PAEC) , PAEC H-Q, Pakistan Secretariat, Islamabad	2014 - 2016

Research Projects

National Projects	
Digital Design Verification using Artificial Intelligence Funding Agency: NESCOM Amount: PKR 300,000.00 Status: Approved_inprocess	2024
Design and Implementation of a High-Performance AXI-MIPI Conversion Module for Embedded Systems Funding Agency: NESCOM Amount: PKR 150,000.00 Status: Approved_inprocess	2023

FPGA Implementation of Quadrature Encoder Interface Funding Agency: NESCOM Amount: PKR 150,000.00 Status: Approved_inprocess	2023
FPGA-Based Hardware Accelerator for Real-Time Unmasking using Generative Adversarial Networks (GANs) Funding Agency: NESCOM Amount: PKR 200,000.00 Status: Approved_inprocess	2023
Implementation of a 32/64-bit Digital Signal Processor Funding Agency: NESCOM Amount: PKR 300,000.00 Status: Approved_inprocess	2023
Universal Verification Methodology (UVM) based Verification Environment for AXI-Lite Protocol Funding Agency: NESCOM Amount: PKR 200,000.00 Status: Approved_inprocess	2024
Indigenous FPGA Funding Agency: NUST Amount: PKR 67,390,000.00 Status: Approved_inprocess	2023
An automated AI-based solution to enforce the Security Protocols/ SOPs Funding Agency: NUST Amount: PKR 1,000,000.00 Status: Approved_inprocess	2022
Indigenous Microprocessor Funding Agency: NUST Amount: PKR 840,000.00 Status: Approved_inprocess	2023
RoboGuard: AI-Powered Automated Identity Verification of Persons at Entrance Funding Agency: NUST Amount: PKR 1,000,000.00 Status: Approved_inprocess	2022
CryptoSat: High-Performance Indigenously Designed Crypto-Accelerator for Secure Satellite-Based Communication Funding Agency: NUST Amount: PKR 1,000,000.00 Status: Approved_inprocess	2022
Adaptive Controller Design and Validation of Electric Vehicle Charger Funding Agency: NUST Amount: PKR 1,000,000.00 Status: Approved_inprocess	2022
E-Abacus: Design of Indigenous Silicon-Proven Microprocessor Funding Agency: HEC Amount: PKR 19,880,000.00 Status: Completed	2021

International Projects

Research Articles

Decentralized multi-agent control for optimal energy management of neighborhood based hybrid microgrids in real-time networking <i>Moatasim Billah Kamran Zeb Waqar Uddin Muhammad Imran Khaled S. Alatawi Fahad M. Almasoudi Muhammad Khalid</i> <i>Results in Engineering</i> , Volume:27, Article Number 106337 Impact Factor: 7.900 Quartile: 1 DOI: https://doi.org/10.1016/j.rineng.2025.106337	2025
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<p>Low-Cost Yet Effective Trojan Mitigation Techniques for Approximate Systems</p> <p><i>Raja Muhammad Zohaib Tariq Kiani Haroon Waris Rehan Ahmed Yuqin Dou Weiqiang Liu Muhammad Imran</i> <i>IEEE Transactions on Circuits and Systems II: Express Briefs</i>, Volume:72, Issue:4, Pages 603-607</p> <p>Impact Factor: 4.000 Quartile: 2 DOI: 10.1109/TCSII.2025.3537499</p>	2025
<p>Lyapunov-Based Novel Integral Backstepping and Integral Sliding Mode Controllers Design for Efficient Voltage Regulation of Resilient DC Microgrid</p> <p><i>Fozia feroze Awan Kamran Zeb Waqar Uddin Muhammad Imran Muhammad Khalid Zahid Ullah</i> <i>International Journal of Energy Research</i>, Pages 1-16</p> <p>Impact Factor: 4.300 Quartile: 1 DOI: https://doi.org/10.1155/er/8849426</p>	2025
<p>HYDRA: A Hybrid Resistance Drift Resilient Architecture for Phase Change Memory-Based Neural Network Accelerators</p> <p><i>Thai Hoang Nguyen Muhammad Imran Jaehyuk Choi Joon-Sung Yang</i> <i>IEEE Transactions on Computers</i>, Volume 73, Issue 9, Pages 2123-2135</p> <p>Impact Factor: 3.600 Quartile: 2 Citations: 3 DOI: 10.1109/TC.2024.3404096</p>	2024
<p>CRAFT: Criticality-Aware Fault-Tolerance Enhancement Techniques for Emerging Memories-Based Deep Neural Networks</p> <p><i>Thai-Hoang Nguyen Muhammad Imran Jaehyuk Choi Joon-Sung Yang</i> <i>IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems</i>, Volume 42, Issue 10, Pages 3289-3300</p> <p>Impact Factor: 2.9 Quartile: 2 Citations: 5 DOI: 10.1109/TCAD.2023.3240659</p>	2023
<p>CEnT: An Efficient Architecture to Eliminate Intra-array Write Disturbance in PCM</p> <p><i>Muhammad Imran Taehyun Kwon Nur A. Toubia Joon-Sung Yang</i> <i>IEEE Transactions on Computers</i>, Volume 71, Issue 5, Pages 992-1007</p> <p>Impact Factor: 2.663 Quartile: 2 Citations: 7 DOI: 10.1109/TC.2021.3068577</p>	2022
<p>ADAPT: A Write Disturbance Aware Programming Technique for Scaled Phase Change Memory</p> <p><i>Muhammad Imran Taehyun Kwon Joon-Sung Yang</i> <i>IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems</i>, Volume 41, Issue 4, Pages 950-963</p> <p>Impact Factor: 2.807 Quartile: 2 Citations: 7 DOI: 10.1109/TCAD.2021.3068704</p>	2022
<p>Reliability Enhanced Heterogeneous Phase Change Memory Architecture for Performance and Energy Efficiency</p> <p><i>Taehyun Kwon Muhamamd Imran Joon-Sung Yang</i> <i>IEEE Transactions on Computers</i>, Volume 70, Issue 9, Pages 1388-1400</p> <p>Impact Factor: 3.183 Quartile: 2 Citations: 14 DOI: 10.1109/TC.2020.3009498</p>	2021
<p>Pattern-Aware Encoding for MLC PCM Storage Density, Energy Efficiency and Performance Enhancement</p> <p><i>Taehyun Kwon Muhamamd Imran Joon-Sung Yang</i> <i>IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems</i>, Volume 39, Issue 9, Pages 1855-1865</p> <p>Impact Factor: 2.807 Quartile: 2 Citations: 8 DOI: 10.1109/TCAD.2019.2927510</p>	2020
<p>Virtual Tile Based Flip-flop Alignment Methodology for Clock Network Power Optimization</p> <p><i>Taehyun Kwon Muhamamd Imran David Z. Pan Joon-Sung Yang Taehyun Kwon David Z. Pan Joon-Sung Yang</i> <i>IEEE Transactions on Very Large Scale Integration (VLSI) Systems</i>, Volume 28, Issue 5, Page 1256-1268</p> <p>Impact Factor: 2.312 Quartile: 3 Citations: 8 DOI: 10.1109/TVLSI.2020.2966912</p>	2020
<p>Cost-effective Reliable MLC PCM Architecture Using Virtual Data Based Error Correction</p> <p><i>Taehyun Kwon Joon-Sung Yang Taehyun Kwon Muhamamd Imran Joon-Sung Yang</i> <i>IEEE Access</i>, Volume 8, Page 44006-44018</p> <p>Impact Factor: 3.367 Quartile: 2 Citations: 6 DOI: 10.1109/ACCESS.2020.2974013</p>	2020

Virtualization Based Efficient TSV Repair for 3-D Integrated Circuits

2020

Muhammad Imran Hyunseung Han Jooho Kim Taehyun Kwon Jaeyong Chung Joon-Sung Yang

IEEE Access, Volume 8, Page 42231-42242

Impact Factor: 3.367 | **Quartile:** 2 | **Citations:** 3

DOI: 10.1109/ACCESS.2019.2940211

Penta-notched UWB antenna with sharp frequency edge selectivity using combination of SRR, CSRR, and DGS

2018

Muhib Ur Rahman Wasif Tanveer Khan Muhammad Imran

AEU - International Journal of Electronics and Communications, Volume:93, Pages 116-122

Impact Factor: 2.853 | **Quartile:** 2 | **Citations:** 62

DOI: <https://doi.org/10.1016/j.aeue.2018.06.010>

- AFCML: Accelerating the Functional Coverage through Machine Learning within a UVM Framework** 2025
Syed Jawad Hussain Shah Majeed Ahmed Muhammad Imran Haroon Waris Nasir Mohyuddin Mahboob Ur Rehman
Design and Verification (DVCon) Conference and Exhibition, res.country(233,)
Citations: N/A
DOI: Nil
- Enhancing voltage stability in DC microgrid using robust integral sliding mode controller** 2024
Fozia feroze Awan Kamran Zeb Muhammad Imran Muhammad Khalid
t International Conference on Smart Mobility and Logistics Ecosystems (SMiLE), res.country(192,)
Citations: N/A
DOI: 10.1016/j.trpro.2025.03.083
- DynaPAT: A dynamic pattern-aware encoding technique for robust MLC PCM-based deep neural networks** 2022
Thai Hoang Nguyen Muhammad Imran Joon-Sung Yang
41st IEEE/ACM International Conference on Computer-Aided Design, ICCAD 2022, res.country(233,)
Citations: N/A
DOI: 10.1145/3508352.3549400
- Low-Cost and Effective Fault-Tolerance Enhancement Techniques for Emerging Memories-Based Deep Neural Networks** 2021
Thai Hoang Nguyen Muhammad Imran Jaehyuk Choi Joon-Sung Yang
IEEE/ACM Design Automation Conference (DAC), res.country(233,)
Citations: N/A
DOI: 10.1109/DAC18074.2021.9586112
- Study on E-Voting Systems: A Blockchain Based Approach** 2021
Muhammad Hamid Nasir Kamran Khan Muhammad Imran Joon-Sung Yang
2021 IEEE International Conference on Consumer Electronics-Asia (ICCE-Asia), res.country(121,)
Citations: N/A
DOI: 10.1109/ICCE-Asia53811.2021.9641914
- Effective Write Disturbance Mitigation Encoding Scheme for High-density PCM** 2020
Muhammad Imran Taehyun Kwon Joon-Sung Yang
IEEE/ACM Design, Automation and Test in Europe (DATE), res.country(75,)
Citations: N/A
DOI: 10.23919/DATE48585.2020.9116188
- Flipcy: Efficient Pattern Redistribution for Enhancing MLC PCM Reliability and Storage Density** 2019
Muhammad Imran Taehyun Kwon Jung Min You Joon-Sung Yang
IEEE/ACM International Conference On Computer Aided Design (ICCAD), res.country(233,)
Citations: N/A
DOI: 10.1109/ICCAD45719.2019.8942113
- Enrely: A reliable MLC PCM Architecture based on Data Encoding** 2019
Muhammad Imran Taehyun Kwon Joon-Sung Yang
International Technical Conference on Circuits/Systems, Computers and Communications (ITC-CSCC), res.country(121,)
Citations: N/A
DOI: 10.1109/ITC-CSCC.2019.8793420
- Heterogeneous PCM Array Architecture for Reliability, Performance and Lifetime Enhancement** 2018
Taehyun Kwon Muhamamd Imran Jung Min You Joon-Sung Yang
IEEE/ACM Design, Automation and Test in Europe (DATE), res.country(57,)
Citations: N/A
DOI: 10.23919/DATE.2018.8342272
- An optimized hardware implementation of Advanced Encryption Standard (AES-192)** 2015
Muhammad Imran Irfan Khaliq
International Conference on Engineering & Emerging Technologies (ICEET), res.country(177,)
Citations: N/A
DOI: NA

Editorial Activities

Reviewed Papers for Journals Impact Factor: NA	2023
Reviewed Papers for Journals Impact Factor: NA	2021
Reviewed Papers for Journals Impact Factor: NA	2021
Reviewed Papers for Journals Impact Factor: NA	2021
Reviewed Papers for Journals Impact Factor: NA	2021