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 2016 - 2020
Sung Kyun Kwan University , Korea

BSc in Digital System Design 2008 - 2012
UET Lahore , Pakistan

F.Sc in Pre-Engineering 2006 - 2008
FBISE, Islamabad , Pakistan

Matric (SSC) in Science 2004 - 2006
FBISE, Islamabad , Pakistan

Experience

Assistant Professor 2025- Present
School of Electrical Engineering and Computer Science

Assistant Professor 2024 - 2024
School of Electrical Engineering and Computer Science

Assistant Professor 2022 - 2020
School of Electrical Engineering and Computer Science

Assistant Professor 2020 - 2024
School of Electrical Engineering and Computer Science

Research Assistant 2017 - 2020
DATES Lab. at Sungkyunkwan University and Yonsei University , 411, Engineering Research Park, Yonsei University, 50 Yonsei-ro, Sinchon-dong, Seodaemun-gu, Seoul

Researcher 2016 - 2017
Automation Lab. at Sungkyunkwan University, South Korea , Semiconductor Building, 2066, Seobu-ro, Jangang-gu, Suwon, South Korea

Junior Engineer 2014 - 2016
Pakistan Atomic Energy Commission (PAEC) , PAEC H-Q, Pakistan Secretariat, Islamabad

Research Projects

National Projects

Digital Design Verification using Artificial Intelligence 2024
Funding Agency: NESCOM
Amount: PKR 300,000.00
Status: Approved_inprocess

Design and Implementation of a High-Performance AXI-MIPI Conversion Module for Embedded Systems 2023
Funding Agency: NESCOM
Amount: PKR 150,000.00
Status: Approved_inprocess

FPGA Implementation of Quadrature Encoder Interface 2023
Funding Agency: NESCOM
Amount: PKR 150,000.00
Status: Approved_inprocess

FPGA-Based Hardware Accelerator for Real-Time Unmasking using Generative Adversarial Networks (GANs) 2023
Funding Agency: NESCOM
Amount: PKR 200,000.00
Status: Approved_inprocess

Implementation of a 32/64-bit Digital Signal Processor 2023
Funding Agency: NESCOM
Amount: PKR 300,000.00
Status: Approved_inprocess

Universal Verification Methodology (UVM) based Verification Environment for AXI-Lite Protocol 2024
Funding Agency: NESCOM
Amount: PKR 200,000.00
Status: Approved_inprocess

Indigenous FPGA 2023
Funding Agency: NUST
Amount: PKR 67,390,000.00
Status: Approved_inprocess

An automated AI-based solution to enforce the Security Protocols/ SOPs 2022
Funding Agency: NUST
Amount: PKR 1,000,000.00
Status: Approved_inprocess

Indigenous Microprocessor 2023
Funding Agency: NUST
Amount: PKR 840,000.00
Status: Approved_inprocess

RoboGuard: AI-Powered Automated Identity Verification of Persons at Entrance 2022
Funding Agency: NUST
Amount: PKR 1,000,000.00
Status: Approved_inprocess

CryptoSat: High-Performance Indigenously Designed Crypto-Accelerator for Secure Satellite-Based Communication 2022
Funding Agency: NUST
Amount: PKR 1,000,000.00
Status: Approved_inprocess

Adaptive Controller Design and Validation of Electric Vehicle Charger 2022
Funding Agency: NUST
Amount: PKR 1,000,000.00
Status: Approved_inprocess

E-Abacus: Design of Indigenous Silicon-Proven Microprocessor 2021
Funding Agency: HEC
Amount: PKR 19,880,000.00
Status: Completed

International Projects

Research Articles

Decentralized multi-agent control for optimal energy management of neighborhood based hybrid microgrids in real-time networking 2025

Moatasim Billah Kamran Zeb Waqar Uddin Muhammad Imran Khaled S. Alatawi Fahad M. Almasoudi Muhammad Khalid

Results in Engineering, Volume:27, Article Number 106337

Impact Factor: 7.900 | **Quartile:** 1

DOI: https://doi.org/10.1016/j.rineng.2025.106337

Low-Cost Yet Effective Trojan Mitigation Techniques for Approximate Systems 2025

Raja Muhammad Zohaib Tariq Kiani Haroon Waris Rehan Ahmed Yuqin Dou Weiqiang Liu Muhammad Imran

IEEE Transactions on Circuits and Systems II: Express Briefs, Volume:72, Issue:4, Pages 603-607

Impact Factor: 4.000 | **Quartile:** 2

DOI: 10.1109/TCSII.2025.3537499

Lyapunov-Based Novel Integral Backstepping and Integral Sliding Mode Controllers Design for Efficient Voltage Regulation of Resilient DC Microgrid 2025

Fozia feroze Awan Kamran Zeb Waqar Uddin Muhammad Imran Muhammad Khalid Zahid Ullah

International Journal of Energy Research, Pages 1-16

Impact Factor: 4.300 | **Quartile:** 1

DOI: https://doi.org/10.1155/er/8849426

HYDRA: A Hybrid Resistance Drift Resilient Architecture for Phase Change Memory-Based Neural Network Accelerators 2024

Thai Hoang Nguyen Muhammad Imran Jaehyuk Choi Joon-Sung Yang

IEEE Transactions on Computers, Volume 73, Issue 9, Pages 2123-2135

Impact Factor: 3.600 | **Quartile:** 2 | **Citations:** 3

DOI: 10.1109/TC.2024.3404096

CRAFT: Criticality-Aware Fault-Tolerance Enhancement Techniques for Emerging Memories-Based Deep Neural Networks 2023

Thai-Hoang Nguyen Muhammad Imran Jaehyuk Choi Joon-Sung Yang

IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, Volume 42, Issue 10, Pages 3289-3300

Impact Factor: 2.9 | **Quartile:** 2 | **Citations:** 5

DOI: 10.1109/TCAD.2023.3240659

CEnT: An Efficient Architecture to Eliminate Intra-array Write Disturbance in PCM 2022

Muhammad Imran Taehyun Kwon Nur A. Touba Joon-Sung Yang

IEEE Transactions on Computers, Volume 71, Issue 5, Pages 992-1007

Impact Factor: 2.663 | **Quartile:** 2 | **Citations:** 7

DOI: 10.1109/TC.2021.3068577

ADAPT: A Write Disturbance Aware Programming Technique for Scaled Phase Change Memory 2022

Muhammad Imran Taehyun Kwon Joon-Sung Yang

IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, Volume 41, Issue 4, Pages 950-963

Impact Factor: 2.807 | **Quartile:** 2 | **Citations:** 7

DOI: 10.1109/TCAD.2021.3068704

Reliability Enhanced Heterogeneous Phase Change Memory Architecture for Performance and Energy Efficiency 2021

Taehyun Kwon Muhamamd Imran Joon-Sung Yang

IEEE Transactions on Computers, Volume 70, Issue 9, Pages 1388-1400

Impact Factor: 3.183 | **Quartile:** 2 | **Citations:** 14

DOI: 10.1109/TC.2020.3009498

Pattern-Aware Encoding for MLC PCM Storage Density, Energy Efficiency and Performance Enhancement 2020

Taehyun Kwon Muhamamd Imran Joon-Sung Yang

IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, Volume 39, Issue 9, Pages 1855-1865

Impact Factor: 2.807 | **Quartile:** 2 | **Citations:** 8

DOI: 10.1109/TCAD.2019.2927510

Virtual Tile Based Flip-flop Alignment Methodology for Clock Network Power Optimization 2020

Taehyun Kwon Muhamamd Imran David Z. Pan Joon-Sung Yang Taehyun Kwon David Z. Pan Joon-Sung Yang

IEEE Transactions on Very Large Scale Integration (VLSI) Systems, Volume 28, Issue 5, Page 1256-1268

Impact Factor: 2.312 | **Quartile:** 3 | **Citations:** 8

DOI: 10.1109/TVLSI.2020.2966912

Cost-effective Reliable MLC PCM Architecture Using Virtual Data Based Error Correction 2020

Taehyun Kwon Joon-Sung Yang Taehyun Kwon Muhamamd Imran Joon-Sung Yang

IEEE Access , Volume 8, Page 44006-44018

Impact Factor: 3.367 | **Quartile:** 2 | **Citations:** 6

DOI: 10.1109/ACCESS.2020.2974013

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

Conference Proceedings

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 Hammad 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

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

Reviewed Papers for Journals
Impact Factor: NA