# Muhammad Ayyaz Tariq

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## Education and Qualification

- **Ph.D. Electrical Engineering** (4/4 in coursework)

University of Engineering and Technology, Lahore. [2021-Present]

- **MS. Electrical Engineering** (4/4)

University of Engineering and Technology, Lahore. [2017-2019]

- **BS. Electrical Engineering** (3.489 / 4)

University of Engineering and Technology, Lahore. [2013-2017]

- **F.Sc. Pre-engineering** (90%)

BISE Lahore. [2011 – 2013]

- **Matriculation** (Science) (95.04%)

BISE Lahore. [2009-2011]

## Academic Awards

- Gold Medallist from UET Lahore (2017).

## Professional Experience

- Lecturer (BS-18), the Department of Electronics, GCU Lahore [2023-Present].
- Visiting Lecturer, the Department of Electronics, GCU Lahore [2021-2023].
- Graduate Assistant, the Department of Electrical Engineering, UET Lahore [2017-18].

## Research Interests

- Control and design of Inverters.
- Selective harmonics reduction in Inverters.
- Solution of power and electronics related problems via metaheuristic optimization algorithms.
- Comparative analysis of nature-inspired optimization algorithms

## Research Experience & Publications

- **International Journal Paper (with Impact Factor):**

1. Torque Smoothness for a Modified W-Type Inverter-Fed Three-Phase Induction Motor with Finite Set Model Predictive Control for Electric Vehicles (**World Electric Vehicle Journal, 2025), Impact Factor: 2.6**
2. Comparative assessment of differently randomized accelerated particle swarm optimization and squirrel search algorithms for selective harmonics elimination problem **(Scientific Reports, Nature, 2024), Impact Factor: 3.9**
3. Dragonfly Algorithm-Based Optimization for Selective Harmonics Elimination in Cascaded H-Bridge Multilevel Inverters with Statistical Comparison **(Energies, 2022), Impact Factor: 3.25**

- **International Conference Papers:**

1. Impact of the voltage profiles of CHB vs MWtype inverters on torque and speed ripples for 3-phase induction motors **(Publisher: IEEE, 2024)**

2. Impact of Constraint Handling on the Performance of Differential Evolution for Cascaded Short-term Hydrothermal Scheduling **(Publisher: IEEE, 2022-23)**

3. Impact of Constraint Handling on the Performance of PSO on CSTHTS Problem: An Improvement in Results **(Publisher: IEEE, 2022-23)**

- Participated as **'Paper Reviewer'** in International Conference of Energy Conservation and Efficiency **(2023)**

## Courses/Labs Taught

- Circuits Analysis
- Control Systems
- Machine Learning
- Power Electronics
- Digital Signal Processing
- Digital Electronics
- Basic Electronics
- Microprocessor Interfacing Techniques
- Microprocessor, Microcontroller and Programming
- Mathematical Methods
- Quantitative Reasoning
- Analog Electronics

## Software Skills

- MATLAB
- STM32CubeIDE
- Latex/Overleaf
- Python
- SPSS
- Multisim/Proteus

## Workshops & Co-curricular Experience

- Speaker at Latex workshop, the Department of Electronics, GCU Lahore [2025, 2024 and 2021]
- Speaker at Python workshop, the Department of Electronics, GCU Lahore [2023]
- Speaker at MATLAB workshop, the Department of Electronics, GCU Lahore [2022]
- Vice President (Operations) at IET UET Chapter [2016-17]

## Administrative Responsibilities

- Member of departmental PREE, PGPR, HEC/University ranking related data collection team, the Department of Electronics, GCU Lahore [2024-Present]
- Assistant coordinator (Sports), the Department of Electronics, GCU Lahore [2024-Present]
- Member BS admissions committee, the Department of Electronics, GCU Lahore [2024-Present]