

DR. ZESHAN ASLAM KHAN

Assistant Professor

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https://scholar.google.com.pk/citations?user=RcKNS4UAAAAJ&hl=en&authuser=1
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EXPERIENCE

Assistant Professor

International Islamic University

October 2011 - Present Islamabad, Pakistan

- Machine Learning and Data Science
- FPGA based System Design
- Embedded Systems
- Data Structures

Lecturer

International Islamic University Islamabad

March 2006 - October 2011 Islamabad, Pakistan

- Object Oriented Programming (Python and C++)
- Microprocessors and Microcontrollers
- Digital Logic Design

Research Associate

COMSATS University Islamabad, Abbottabad Campus

November 2005 - February 2006 Abbottabad, Pakistan

- Signals and System Lab

ADMINISTRATIVE EXPERIENCE

- Incharge Graduate Research Committee
- Incharge Final Year Projects Committee
- Incharge Quality Assurance Cell
- Incharge Undergraduate Affairs
- Incharge Student Activities

RESEARCH INTERESTS

Major research areas

- Artificial intelligence
- Machine learning
- Fractional calculus
- Nonlinear system identification
- Computational intelligence
- Parameter estimation
- Optimization heuristics

STRENGTHS

Hard-working Coaching Enthusiastic MS Office MS Visio
Team Leader Pscad/MTDC Computer Software & Hardware
Simulink/Matlab Multisim & Pspice Python & PyTorch

MY LIFE QUOTE

"Humans can have only that for which they make effort"

MOST PROUD OF



Research Productivity Award 2018-21
Department of Electrical Engineering,
International Islamic University

EDUCATION

Ph.D. in Electronic Engineering

International Islamic University Islamabad, Pakistan

2020

M.S. in Computer Systems Engineering

Halmstad University, Halmstad, Sweden

2010

B.S. in Computer Information Systems Engineering

University of Engineering and Technology, Peshawar, Pakistan

2005

GOOGLE SCHOLAR

Publications 19+

Citations 300+

h-index 11

i10-index 11

LANGUAGES

English

● ● ● ● ●

Urdu

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Punjabi

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RESEARCH ASSOCIATION

Research Group

📅 Team Lead

- Leading a research group titled as **(Predictive Intelligence and System Modelling (PRISM))** in the Department of Electrical and Computer Engineering at International Islamic University Islamabad

ACADEMIC SUPERVISION

Doctoral (PhD - EE)

- Predictive Intelligence based Anomaly Detection for Smart metering Applications **(In-Progress)**

Masters (MS - EE)

- A User's Rating-Pattern Aware Sliding Window Strategy for Collaborative Recommender Systems **(In-Progress)**
- A Confidence-Integrated Deep Prediction Model for Personalized Top-N Recommender Systems **(In-Progress)**
- Parameter Estimation of Input Non-Linear Systems using Differential Evolution Algorithms **(Completed)**
- Parameter Estimation of Power System Harmonics using Evolutionary Algorithms **(Completed)**

Bachelor (BE - EE)

- Predictive Intelligence-based Smart Store Management System **(Completed)**
- Smart Vehicle Parking System **(Completed)**
- Hardware Implementation and Performance Evaluation of Synchronous and GALS Processors on FPGA **(Completed)**
- RFID-based Self-Sufficient System for Sanitation and Monitoring of Unhygienic Water **(Completed)**
- Hazards Monitoring and Detection in Coal Mines using Wireless Sensor Networks (WSN's) **(Completed)**
- Implementation of Single Phase Digital Energy Meter **(Completed)**
- Design of an Efficient and Cost Effective Uroflowmetry Device with Deep Societal Impact **(Completed)**

CONFERENCE/EVENT ORGANIZER

FETEX 2015

FET, International Islamic University

📅 April 2015

📍 Islamabad, Pakistan

International Conference on Intelligent Systems Engineering

FET, International Islamic University

📅 January 2016

📍 Islamabad, Pakistan

CONFERENCE/WORKSHOP ATTENDED

Workshop on OBE System

FET, International Islamic University

📅 December 2017

📍 Islamabad, Pakistan

Seminar on OBE

FET, International Islamic University

📅 July 2016

📍 Islamabad, Pakistan

Introduction to Compressed Sensing

FET, International Islamic University

📅 March 2016

📍 Islamabad, Pakistan

Workshop on Robotics

FET, International Islamic University

📅 April 2014

📍 Islamabad, Pakistan

Workshop on Wireless Sensor Networks

University of Engineering and Technology

📅 March 2014

📍 Taxila, Pakistan

Workshop on Semester System

Ghulam Ishaq Khan Institute of Engineering Sciences and Technology

📅 June 2006

📍 Topi, Pakistan

Conference on Frontiers of Information Technology

COMSATS University

📅 December 2005

📍 Islamabad, Pakistan

MEMBERSHIPS

PAK ENGINEERING COUNCIL

COMP # 3175

📅 Life Time Membership

REFEREES

Prof. Dr. Muhammad Asif Zahoor Raja

@ Future Technology Research Center National Yunlin University of Science and Technology, Yunlin, Taiwan

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Dr. Naveed Ishtiaq Chaudhary

@ Future Technology Research Center National Yunlin University of Science and Technology, Yunlin, Taiwan

✉ chaudni@yuntech.edu.tw

Dr. Khalid Mehmood Cheema

@ Fatima Jinnah Women University, Rawalpindi, Pakistan

✉ khalid.mehmood@fjwu.edu.pk



INTERNATIONAL COLLABORATIONS

- 1 **Prof. J. A. Tenreiro Machado**, Department of Electrical Engineering, Polytechnic of Porto, Porto, Portugal
- 2 **Dr. Nebojsa Dedovic**, Department of Agricultural Engineering, University of Novi Sad, Novi Sad, Serbia
- 3 **Prof. Yigang He**, School of Electrical Engineering, Wuhan University, Wuhan, China
- 4 **Dr. Ahmad H. Milyani**, Department of Electrical Engineering, King Abdulaziz University, Saudi Arabia
- 5 **Dr. Hani Alquhayz**, Majmaah University, Al-Majmaah, Saudi Arabia
- 6 **Prof. Wenwu Wang**, University of Surrey, Guildford, Surrey , England.
- 7 **Prof. Muhammad Asif Zahoor Raja**, National Yunlin University of Science and Technology, Yunlin, Taiwan.




PUBLICATIONS



Journal Articles

2022


- 1 Khizer Mehmood, Naveed Ishtiaq Chaudhary, **Zeshan Aslam Khan**, Khalid Mehmood Cheema, Muhammad Asif Zahoor Raja, Ahmad H. Milyani, and Abdullah Ahmed Azhari, "*Dwarf Mongoose Optimization Metaheuristics for Autoregressive Exogenous Model Identification*". *Mathematics*, 2022. IF=2.592.
 <https://doi.org/10.3390/math10203821>
- 2 Shoaib Munawar, Nadeem Javaid, **Zeshan Aslam Khan**, Naveed Ishtiaq Chaudhary, Muhammad Asif Zahoor Raja, Ahmad H Milyani, Abdullah Ahmed Azhari, "*Electricity Theft Detection in Smart Grids Using a Hybrid BiGRU-BiLSTM Model with Feature Engineering-Based Preprocessing*". *Sensors*, 2022. IF=3.859.
 <https://doi.org/10.3390/s22207818>
- 3 Naveed Ishtiaq Chaudhary, **Zeshan Aslam Khan**, Adiga Kausar Kiani, Muhammad Asif Zahoor Raja, Iqra Ishtiaq Chaudhary, Carla MA Pinto, "*Design of auxiliary model based normalized fractional gradient algorithm for nonlinear output-error systems*". *Chaos, Solutions and Fractals*, 2022. IF=9.922.
 <https://doi.org/10.1016/j.chaos.2022.112611>
- 4 **Zeshan Aslam Khan**, Naveed Ishtiaq Chaudhary, Muhammad Asif Zahoor Raja, "*Generalized fractional strategy for recommender systems with chaotic ratings behavior*". *Chaos, Solitons and Fractals*, 160, 112204.". *Chaos, Solutions and Fractals*, 2022. IF=9.922.
 <https://doi.org/10.1016/j.chaos.2022.112204>
- 5 Naveed Ishtiaq Chaudhary, Muhammad Asif Zahoor Raja, **Zeshan Aslam Khan**, Ammara Mehmood, Syed Muslim Shah, "*Design of Fractional Hierarchical Gradient Descent Algorithm for Parameter Estimation of Nonlinear Control Autoregressive Systems*". *Chaos, Solitons and Fractals*, 2022. IF=9.922.
 <https://doi.org/10.1016/j.chaos.2022.111913>
- 6 **Zeshan Aslam Khan**, Muhammad Asif Zahoor Raja, Naveed Ishtiaq Chaudhary, Khizer Mehmood, Yigang He, "*MISGD: Moving-Information-Based Stochastic Gradient Descent Paradigm for Personalized Fuzzy Recommender Systems*". *International Journal of Fuzzy Systems*, 2022. IF=4.085.
 <https://doi.org/10.1007/s40815-021-01177-9>
- 7 Khizer Mehmood, Naveed Ishtiaq Chaudhary, **Zeshan Aslam Khan**, Muhammad Asif Zahoor Raja,, Khalid Mehmood Cheema, Ahmad H. Milyani, "*Design of Aquila Optimization Heuristic for Identification of Control Autoregressive Systems*". *MDPI Mathematics*, 2021. IF=2.592.
 <https://doi.org/10.3390/math10101749>

2021





- 8 Naveed Ishtiaq Chaudhary, Muhammad Asif Zahoor Raja, Yigang He, **Zeshan Aslam Khan**, JA Tenreiro Machado, "*Design of multi innovation fractional LMS algorithm for parameter estimation of input nonlinear control autoregressive systems*". *Applied Mathematical Modelling* , 2021. IF=5.336.
 <https://doi.org/10.1016/j.apm.2020.12.035>
- 9 Naveed Ishtiaq Chaudhary, Muhammad Asif Zahoor Raja, **Zeshan Aslam Khan**, Khalid Mehmood Cheema, Ahmad H. Milyani, "*Hierarchical Quasi Fractional Gradient Descent Method for Parameter Estimation of Nonlinear ARX Systems using Key Term Separation Principle*". *MDPI Mathematics*, 2021. IF=2.529.
 <https://doi.org/10.3390/math9243302>
- 10 Hasnat Bin Tariq, Naveed Ishtiaq Chaudhary, **Zeshan Aslam Khan**, Muhammad Asif Zahoor Raja, Khalid Mehmood Cheema, Ahmad H. Milyani, "*Maximum likelihood based adaptive and intelligent computing for nonlinear system identification*". *MDPI Mathematics*, 2021. IF=2.529.
 <https://doi.org/10.3390/math9243199>

- 11 Wasim Ullah Khan, Yigang He, Muhammad Asif Zahoor Raja, Naveed Ishtiaq Chaudhary, **Zeshan Aslam Khan**, Syed Muslim Shah, "*Flower Pollination Heuristics for Nonlinear Active Noise Control Systems*". *CMC-Computers Materials & Continua*, 2021. IF=3.860.
 <https://doi.org/10.32604/cmc.2021.014674>
- 12 Sumbal Iqbal, Osama Hasan, Rehan Hafiz, **Zeshan Aslam Khan**, "*LPQ-SAM: A Low-Power Quality Scalable Approximate Multiplier*". *Journal of Circuits, Systems and Computers*, 2021. IF=1.278.
 <https://doi.org/10.1142/S0218126621500171>



2020

- 13 **Zeshan Aslam Khan**, Syed Zubair, Naveed Ishtiaq Chaudhary, Muhammad Asif Zahoor Raja, Farrukh A Khan, Nebojsa Dedovic, "*Design of normalized fractional SGD computing paradigm for recommender systems*". *Neural Computing and Applications*, 2020. IF=5.102.
 <https://doi.org/10.1007/s00521-019-04562-6>


2019

- 14 **Zeshan Aslam Khan**, Syed Zubair, Kashif Imran, Rehan Ahmad, Sharjeel Abid Butt, Naveed Ishtiaq Chaudhary, "*A new users rating-trend based collaborative denoising auto-encoder for top-N recommender systems*". *IEEE Access*, 2019. IF=3.476.
 <https://doi.org/10.1109/ACCESS.2019.2940603>
- 15 **Zeshan Aslam Khan**, Naveed Ishtiaq Chaudhary, Syed Zubair, "*Fractional stochastic gradient descent for recommender systems*". *Electronic Markets*, 2019. IF=6.017.
 <https://doi.org/10.1007/s12525-018-0297-2>
- 16 Naveed Ishtiaq Chaudhary, Syed Zubair, **Zeshan Aslam Khan**, Muhammad Asif Zahoor Raja, Nebojsa Dedovic, "*Normalized fractional adaptive methods for nonlinear control autoregressive systems*". *Applied Mathematical Modelling*, 2019. IF=5.336.
 <https://doi.org/10.1016/j.apm.2018.09.028>
- 17 **Zeshan Aslam Khan**, Syed Zubair, Hani Alquhayz, Muhammad Azeem, Allah Ditta, "*Design of momentum fractional stochastic gradient descent for recommender systems*". *IEEE Access*, 2019. IF=3.476.
 <https://doi.org/10.1109/ACCESS.2019.2954859>



2018

- 18 Naveed Ishtiaq Chaudhary, Mateen Ahmed, **Zeshan Aslam Khan**, Syed Zubair, Muhammad Asif Zahoor Raja, Nebojsa Dedovic, "*Design of normalized fractional adaptive algorithms for parameter estimation of control autoregressive autoregressive systems*". *Applied Mathematical Modelling*, 2018. IF=5.336.
 <https://doi.org/10.1016/j.apm.2017.11.023>
- 19 Syed Zubair, Naveed Ishtiaq Chaudhary, **Zeshan Aslam Khan**, Wenwu Wang, "*Momentum fractional LMS for power signal parameter estimation*". *Signal Processing*, 2018. IF=4.729.
 <https://doi.org/10.1016/j.sigpro.2017.08.009>

2015

- 20 S Batool, **Zeshan Aslam Khan**, W Kamal, G Mushtaq, M Amjad Kamal, "*In silico screening for identification of novel anti-malarial inhibitors by molecular docking, pharmacophore modeling and virtual screening*". *Medicinal Chemistry*, 2015. IF=2.329.
 <https://doi.org/10.2174/1573406411666150305113533>

Conference Proceedings

- 21 Muhammad Muzammil, **Zeshan Aslam Khan**, M Obaid Ullah, Imdad Ali, "*Performance analysis of block matching motion estimation algorithms for HD videos with different search parameters*". *International Conference on Intelligent Systems Engineering (ICISE)-2016* Islamabad, Pakistan, 2016.
 <https://doi.org/10.1109/INTELSE.2016.7475139>
- 22 **Zeshan Aslam Khan**, Edison Pignaton de Freitas, Tony Larsson, Haider Abbas "*A multi-agent model for fire detection in coal mines using wireless sensor networks*". *12th IEEE International Conference on Trust, Security and Privacy in Computing and Communications* Melbourne, Australia, 2013.
 <https://doi.org/10.1109/TrustCom.2013.275>