Dr. Engr. Ronak Ali *(He/Him/His)*

Address: The Benazir Bhutto Shaheed University of Technology and Skill Development, Khairpur Mirs, Sindh, Pakistan.
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scholar.google.com/citations?user=fE-ySbIAAAAJ&hl=en
orcid.org/0009-0008-6795-8084
www.linkedin.com/in/ronakali/
www.webofscience.com/wos/author/record/IUP-5909-2023

Research Areas:
Semiconductor electronic devices
Semiconductor materials Nanotechnology
Sensors
Nano-scale device fabrication
Future MOS Transistors
Gate Dielectrics for MOS Devices
Nanomaterials and Nano-scales materials growth
Advanced carbon-based materials and nanoscale devices
Nano-electronics and single electronics
Nanostructures for electronics and photonics

Education

University of Kentucky, Lexington, Kentucky, United States of America
PhD, Electrical Engineering (Jan 2022 to May 2025)
CGPA 3.5/4.0
Advisor: Professor Dr. Zhi David Chen, PhD University of Illinois at Urbana-Champaign
Doctoral Dissertation Committee:
1. Professor Dr. Todd J Hastings, PhD, MIT
2. Professor Dr. Fuqian Yang, PhD, University of Rochester
3. Professor Dr. Yuan Liao, PhD, Texas A&M University

Bahria University Karachi Campus, Pakistan
Master of Science, Electrical Engineering (Jan 2017- Oct 2019)
CGPA: 3.7/4.0

Sukkur IBA University, Pakistan
Bachelor of Engineering, Electrical Engineering (Aug 2011- May 2015)
CGPA: 3.47/4.0

Research and Teaching Experience

Department of Electrical and Computer Engineering, University of Kentucky, Lexington, KY, USA
Research Assistant/Doctoral Candidate
Aug 2023 – May 2025

- *Fabricating Low Humidity Sensors/Dew Point Sensors in Nanotechnology Laboratory, ASTeCC, A0349, the University of Kentucky, Lexington.*
- *Depositing nanodevices at Micro-Nano Technology Center, the University of Louisville*

- *Handling nanomaterials at the Center for Nanoscale Science and Engineering (CeNSE), the University of Kentucky*
- *Varying Current Effect on Small Pores Inside Large Pores by Anodic Spark Deposition*
- *Investigation of Sensing Mechanism of Low Humidity Sensors*
- *Coverage of Small Pores with Sputtered Aluminum to Analyze Response Speed of Humidity Sensors*
- *The research group works on fabrication of nanodevices. Our research is centered on Nanophysics, Nanostructures and Nanomaterials to name a few.*
- *This RA role is going on under Professor Dr. Zhi David Chen, ECE, University of Kentucky, US. Dr. Chen is also my doctoral studies' advisor.*

IOP Publishing Limited, England and Wales *Nov 2023 – to date*

Reviewer of Journals

- *Assessing novelty of research.*
- *Enforcing the rigorous standards of the scientific process by taking part in the peer-review system.*
- *Upholding the integrity of the scientific record by identifying invalid research and helping to maintain the quality of academic literature.*
- *Meeting deadlines to review articles in professional communication with editors and authors.*

American Chemical Society, Washington DC, USA *July 2024 – to date*

Reviewer, Journals under American Chemical Society

- *Deciding research and novelty, is this the right fit for the journal?*
- *Helping to prevent ethical breaches by identifying potential plagiarism, research misconduct, and other problems through their familiarity with the subject area.*
- *Assessing the manuscript appropriately and helping in improving the quality of the finished article.*
- *Meeting deadlines to review articles in professional communication with editors and authors.*

BBSUTSD Khairpur Mirs, Sindh, Pakistan *Sept 2020 – to date*

Assistant Professor, Electronics Engineering Technology, The Benazir Bhutto Shaheed University of Technology and Skill Development (BBSUTSD), Khairpur Mirs, Pakistan

- *At the moment, I am on study leave, right now I am not teaching there (BBSUTSD) actively, because I am here at the University of Kentucky, KY, USA for my doctoral studies.*
- *Taught theory classes of **Field Programmable Gate Array (FPPGA)**, performed laboratory experiments with help of VIVADO Software, Vivado Design Suite is a software suite produced by Xilinx for synthesis and analysis of HDL designs, superseding Xilinx ISE with additional features for system on a chip development and high-level synthesis. Vivado represents a ground-up rewrite and re-thinking of the entire design flow (compared to ISE) and has been described by reviewers as "well-conceived, tightly integrated, blazing fast."*
- *Unlike ISE which relied on ModelSim for simulation, the **Vivado** System Edition includes an in-built logic simulator. Vivado also introduces high-level synthesis, with a toolchain that converts C code into programmable logic. Vivado has been described as a state-of-the-art comprehensive EDA tool with all the latest bells and whistles in terms of data model, integration, algorithms, and performance.*
- ***Vivado** enables developers to synthesize (compile) their designs, perform timing analysis, examine RTL diagrams, simulate a design's reaction to different stimuli, and configure the target device with the programmer. Vivado is a design environment for FPGA products from Xilinx and is tightly coupled to the architecture of such chips and cannot be used with FPGA products from other vendors.*
- ***Used Digilent Adept Software:** Digilent Adept Software is a suite of tools designed for programming and interfacing with Digilent's FPGA (Field-Programmable Gate Array) and microcontroller boards. It's primarily used by engineers, students, and hobbyists working with digital design and embedded systems.*
  Device Programming: It allows users to program Digilent's FPGA and microcontroller boards with custom designs and firmware.

USB Interface: The software facilitates communication between a computer and Digilent hardware devices via USB.

- ***Used NEXYS2 Spartan 3E Kit:*** *The NEXYS2 Spartan-3E Kit is a popular FPGA (Field-Programmable Gate Array) development board designed for educational and prototyping purposes. It's based on the Xilinx Spartan-3E FPGA, which is a versatile and cost-effective programmable logic device.*
  Xilinx Spartan-3E FPGA: The core of the board, allowing users to implement complex digital circuits.
  On-board peripherals: Typically includes LEDs, switches, push buttons, and seven-segment displays for user interaction and debugging.
  Expansion capabilities: Often features expansion headers for connecting additional modules or custom hardware.
  Memory: Usually includes both on-chip memory and external memory options.
  Programming interface: Commonly uses JTAG for programming and debugging the FPGA.
  Clock sources: Provides various clock options for different design requirements.
  I/O interfaces: May include VGA, PS/2, and other standard connectors for interfacing with external devices.
- ***NEXYS2 Spartan 3E Kit*** *is widely used in digital design courses, allowing students and hobbyists to learn FPGA programming, digital logic design, and hardware description languages like VHDL or Verilog. It provides a hands-on platform for implementing and testing digital circuits, from simple combinational logic to more complex sequential systems and even soft-core processors.*
- *Conducted laboratory experiments of Field Programmable Gate Array (FPPGA)*
  - *Designing, Simulation, Synthesis & Implementation of Combinational Logic*
  - *Designing Complex Combinational Logic (Multiplexer)*
  - *Designing BCD -To-Seven Segment Decoder*
  - *Designing of Basic Sequential logic (D Flip-Flop)*
  - *Design of Counters, and One Bit Comparator*
  - *Implement Delay Flip-Flop using FPGA*
  - *Designing Toggle Flip Flop using VHDL*
  - *Verilog Design for different Gates*
  - *4 - Bit binary to gray code converter and 4- Bit gray to binary code converter*
  - *Design of 8-bit Arithmetic Logic Unit*
  - *Traffic light controller using HDL*

- *Beside main course of FPGA, I also taught theory classes of other undergraduate courses, i.e. Data and Mobile Communications, and Wireless Networks.*
- *Conducted laboratory experiments of other undergraduate courses, i.e. Data and Mobile Communications, and Wireless Networks.*
- *Worked on proformas and documentation for accreditation our Electronics Engineering Technology Department from National Technology Council (NTC) Pakistan*

Nazeer Hussain University, Karachi, Pakistan *Jan 2020 – Sept 2020*
Lecturer, Electrical Engineering

- *Taught course of* ***Electronic Circuit Design****, this course was an introduction to the fundamentals of* ***Microelectronic Circuits****. The topics were modeling of* ***Microelectronic Devices****, basic microelectronic circuit analysis and design, Power Amplifiers, Operational Amplifiers circuits, Frequency response of Amplifiers, Feedback Amplifiers and oscillators. MOS & BJT Single Stage Amplifiers, Capacitor Coupled & Direct Coupled Amplifiers, Cascaded Amplifiers, Amplifiers with active loads,* ***MOS & BJT*** *Cascade amplifiers and its types, Wilson current mirror, Widlar current source,* ***MOS & BJT Differential amplifiers****, Multistage amplifiers, Signal generators, RC, LC & crystal Oscillator circuits, Waveform shaping circuits, Output stages and Power amplifiers.*
- *Books referred for* ***Electronic Circuit Design*** *course:*

1. *S. Sedra and K. C. Smith, **"Microelectronic Circuits"**, Oxford University Press.*
2. *Behzad Razavi, **"Fundamentals of Microelectronics,"** Wiley.*
3. *Robert L. Boylestad and Louis Nashelsky, **"Electronic Devices and Circuit Theory",** Prentice Hall.*
4. *Thomas L. Floyd **"Electronic Devices (Conventional Current Version)",** Prentice Hall.*
5. *T. F. Bogart, **"Electronic devices and circuits"**.*

- *Also taught theory classes of undergraduate courses, i.e. Communication Systems, Signals and Systems, Digital Signal Processing, Mobile & Wireless Communications, and Power Generation Systems.*
- *Managed Signals and Systems Lab, NHU in the capacity of in charge*
- *Worked on proformas and documentation for accreditation our Electrical Engineering Department from Pakistan Engineering Council (PEC)*
- *Worked on proformas and documentation for accreditation our Electrical Engineering Technology Department from National Technology Council (NTC) Pakistan*

Nazeer Hussain University, Karachi, Pakistan *Sept 2017 – Dec 2019*
Laboratory Engineer, Electrical Engineering

- *Conducted lab tasks for **Electronic Circuit Design**.*
  - ***BJT and FET** base electronic circuits including amplifiers and oscillators.*
  - ***Different types of BJT and FET** based electronic circuits including amplifiers and oscillators.*
  - ***FET and BJT based amplifiers oscillators** and other circuits.*
- *Conducted laboratory experiments of undergraduate courses, i.e. Signals and Systems, Digital Signal Processing, Communication Systems, and Mobile & Wireless Communications*
- *Managed Electronics Laboratory as in charge of the laboratory*
- *Worked on proformas and documentation for accreditation our Electrical Engineering Department from Pakistan Engineering Council (PEC)*
- *Worked on proformas and documentation for accreditation our Electrical Engineering Technology Department from National Technology Council (NTC) Pakistan*

GoTech Enterprise, Sukkur/Khairpur
Trainer, Electronics/Electrical Research *Mar 2016 – Sept 2017*

- *Planning*
- *Execution*
- *Supervisory Role*

Sukkur IBA University, Sukkur, Sindh, Pakistan *Aug 2015 – Feb 2016*
Instructor, PMYSDP

- *When I joined Sukkur IBA's contract, the Center for Entrepreneurial Leadership & Incubation (CEL&Inc) assigned me the course of Building Electrician.*
- *Taught theory classes of Building Electrician Course*
- *Conducted laboratory experiments of Electrician Course*

Pakistan Telecommunication Limited, Sukkur, Sindh, Pakistan *May 2015 – July 2015*
Intern, *Integrated Digital Services and Equipment*

- *Received hands-on experience in telecommunications, information technology, customer services, and marketing, Fiber Optics, VoIP, Generation Technologies, LTE, QoS Management and Network Security.*

Zhong Xing Telecommunication Equipment, Sukkur, Sindh, Pakistan *May 2014 – July 2014*
Intern, Transmission and Networking
Received hands-on experience in MPLS Networking, SD-WAN, Cloud Services, IoT Integration, RF Engineering and QoS Management

Skillset

- Scanning Electron Microscope
- MOS Fabrication
- Atomic Layer Deposition
- Low Pressure CVD
- Photolithography
- Device Fabrication
- Cleanroom's management
- Fabrication Equipment
- Anodic Spark Deposition
- Nano-scale device fabrication
- JavaScript & HTML
- Chemical Vapor Deposition
- Physical Vapor Deposition
- Etching
- Nano-scales materials growth
- Nanostructures
- Multisim, Protius, & WorkBench
- Plasma Enhanced Chemical Vapor Deposition
- Sputtering
- Low Humidity Sensors
- Nanotechnology
- Spectroscopic Ellipsometer
- Profilometer
- CAD, C, C++ & JAVA
- Arduino & MATLAB

Paper and Abstracts/Poster Presentations (Conferences/Summits)

1. **Ronak Ali**, Riasad Azim Badhan, Jiaming Cai, James Jieming Chen, Zhi David Chen and Chaoyuan Mary Liu, "Moisture Adsorption and Desorption Characteristics for a Hybrid-Dielectric Moisture Sensor", the Electrochemical Society (ECS) Meeting Abstracts, Volume MA2025-01, M01: Recent Advances in Sensors Systems: General Session, DOI: 10.1149/MA2025-01592825mtgabs, 247th ECS Meeting May 17-22, 2025, **Montreal, Canada.**

2. Riasad Azim Badhan, Aaron Swartz, **Ronak Ali**, James Jieming Chen, Zhi David Chen, Chaoyuan Mary Liu, Jiangbiao He, Ning Ren, Z George Zhang, Gefei Wu and Roger England, "A Sensor System for Trace Moisture Measurement in Oils and Lubricants", the Electrochemical Society (ECS) Meeting Abstracts, Volume MA2025-01, M01: Recent Advances in Sensors Systems: General Session, DOI: 10.1149/MA2025-01592824mtgabs, 247th ECS Meeting May 17-22, 2025, **Montreal, Canada.**

3. **Ronak Ali,** Aaron Swartz, Riasad Azim Badhan, Reza Ilka, Yiju Wang, Jiangbiao He, Zhi Chen, Ning Ren, Z George Zhang, Gefei Wu, and Roger England, "Surface Morphology and Response Speed of Moisture Sensors", NNCI Nano + Additive Manufacturing Summit, July 30-31, 2024, **University of Louisville, Louisville, Kentucky, the United States of America.**

4. **Ronak Ali,** Aaron Swartz, Riasad Azim Badhan, Reza Ilka, Yiju Wang, Jiangbiao He, Zhi Chen, Ning Ren, Z George Zhang, Gefei Wu, and Roger England, "Porous Dielectric Structure and Response Speed of Moisture Sensors", 245th ECS (Electrochemical Society) Meeting, May 26-30, 2024, **San Francisco, California, the United States of America.**

5. Zhi David Chen, and **Ronak Ali**, "High-Performance Humidity Sensor Capable for Monitoring Low-Moisture Levels in Energy Industries", 245th ECS (Electrochemical Society) Meeting, May 26-30, 2024, **San Francisco, California, the United States of America.**

6. **Ronak Ali** and Zhi David Chen, "Varying Current Effect on Small Pores Inside Large Pores by Anodic Spark Deposition", 8th Nano Today Conference, April 22-25, 2023, Paradise Point, **San Diego, California, the United States of America.**

7. **Ronak Ali** and Zhi David Chen, "Investigation of Sensing Mechanism of Low Humidity Sensors", 8th Nano Today Conference, April 22-25, 2023, Paradise Point, **San Diego, California, the United States of America.**

8. **Ronak Ali**, Zhi David Chen, "Coverage of Small Pores with Sputtered Aluminum to Analyze Response Speed of Humidity Sensors", NNCI Nano and Additive Manufacturing Summit July 25-26, 2023, held at University of Louisville, **Louisville, Kentucky, the United States of America.**

9. **Ronak Ali** Baladi, Khawaja Haider Ali, Tayyaba Khan Riaz, and Madad Shah, "Multi-technologies of PV Cells with Comparative Analysis, Improved Reliability, Performance and Cost Reduction in Solar Energy System", National Conference on Intelligent Manufacturing and Sustainable Energy Systems (IMSES 2015), Mehran University of Engineering and Technology (MUET) Shaheed Zulfiqar Ali Bhutto (SZAB) Campus, Khairpur Mirs on October 6-7, 2015.

10. **Ronak Ali** Baladi and Madad Shah, "Regulating Solar LED Array with Vehicle Detection to Turn Streetlight On or off To Save Energy", ICEEST Conference 2017 held at IQRA University Karachi on August 25-26, 2017.

11. **Ronak Ali** Baladi and Madad Shah, "Solar Powered Irrigation System for Agriculture based on Moisture Content in the Field and Saving Energy and Water with Optimum Design", ICEEST 2017 Conference held at IQRA University on 25-26th August 2017.

12. Shujaat Ali, Ubaidullah, Saad Ali and **Ronak Ali**, "Energy Saving through lighting control with Building Management System and Motion Sensor", 3rd International Conference on Emerging Trends in Engineering, Management & Sciences ICETEMS-2018, at City University of Science & Information Technology Peshawar, Pakistan.

13. Tariq M Pirzada, **Ronak Ali** and Shujaat Ali, "Wireless Based Vibration Detection Scheme", International Conference the First South Asia Conference on Earthquake Engineering (SACEE'19), Ramada Plaza Karachi, February 21-22, 2019, Organized by South Asia Earthquake Network (SHAKE) and supported by Higher Education Commission (HEC) Pakistan, National Disaster Management Authority Pakistan and NED University, Karachi.

Publications

1. Ali, Ronak, "SURFACE MORPHOLOGY AND MOISTURE ADSORPTION/DESORPTION CHARACTERISTICS OF HYBRID-DIELECTRIC MOISTURE SENSORS" (2025). Theses and Dissertations--Electrical and Computer Engineering. 217. https://uknowledge.uky.edu/ece_etds/217, DOI:10.13023/etd.2025.279 **(PhD Dissertation).**

2. **Ronak Ali,** Aaron Swartz, Riasad Azim Badhan, Reza Ilka, Yiju Wang, Jiangbiao He, Zhi Chen, Ning Ren, Z George Zhang, Gefei Wu, and Roger England, "Porous Dielectric Structure and Response Speed of Moisture Sensors", **Electrochemical Society (ECS) Transactions**, Volume 113, Number 2, DOI: 10.1149/11302.0003ecst.

3. **Ronak Ali,** Aaron Swartz, Riasad Azim Badhan, and Zhi Chen, "Effect of Surface Morphology on the Response Speed of Moisture Sensors", **Journal of The Electrochemical Society (JES)** by Electrochemical Society (ECS), Volume 171, Number 10, ISSN: 1945-7111, October 18, 2024, DOI: 10.1149/1945-7111/ad8598.

4. **Ronak Ali**, Ahmed J Obaid, and Haroon Rasheed, "Performance Analysis of Photovoltaic Cells at Varying Environmental Parameters and Solar Cell Precise Algorithm", **IOP journal of Physics:**

conference series (JPCS), Online ISSN: 1742-6596, Print ISSN: 1742-6588, May 2020, DOI: 10.1088/1742-6596/1530/1/012156.

5. Reza Ilka, Yiju Wang, JiangBiao He, **Ronak Ali**, Aaron Swartz, David Chen, Ning Ren, Z. George Zhang, Gefei Wu and Roger England, "Multi-Physics Modeling of Power Electronic Converters with Liquid Immersion Cooling", **IEEE Explore** December 29, 2024, The 2023 IEEE Energy Conversion Congress and Exposition (ECCE) October 2023, **Nashville Tennessee, the United States of America,** DOI: 10.1109/ECCE53617.2023.10362241.

6. **Ronak Ali,** Shujaat Ali, Tariq Pirzada, Syed Hadi Hussain Shah, Madad Shah, and Saeed Ahmed Khan "Best State Estimate for the Phase Angles of Busbars in Power Systems via Circuit Modeled with DC Load Flow", **IEEE Explore** January 23, 2024, the 13th IEEE Integrated STEM Education Conference (ISEC) March 11, 2023, Johns Hopkins University (Applied Physics Laboratory), **Laurel, Maryland, the United States of America,** DOI: 10.1109/ISEC57711.2023.10402299.

7. **Ronak Ali** Baladi, Madad Shah, and Khawaja Hyder Ali, "Raised Soundness and Production of Single Axis Tracker with Fixed Mount and Cost Depletion with Relative Investigation of PV Technologies", **Bahria University Journal of Information & Communication Technologies (BUJICT)**, vol 9, issue I, p: 92-97, ISSN: 1999-4974, June 2016.

8. **Ronak Ali** Baladi and Madad Shah, "Regulating Solar LED Array with Vehicle Detection to Turn Streetlight On or off To Save Energy", **Asian Journal of Engineering, Sciences & Technology**, Vol.8, Issue 1, March 2018, Online ISSN: 2309-8538, Print ISSN: 2077-1142, journals.iqra.edu.pk/archives/view/ajest/8/AJEST8106

9. **Ronak Ali** Baladi and Madad Shah, "Solar Powered Irrigation System for Agriculture based on Moisture Content in the Field and Saving Energy and Water with Optimum Design", **Asian Journal of Engineering, Sciences & Technology**, Vol.8, Issue 1, March 2018, Online ISSN: 2309-8538, Print ISSN: 2077-1142, DOI: 10.13140/RG.2.2.32397.90085.

10. **Ronak Ali** Baladi, "Using Principal Component Analysis and Gaussian Mixture Regression Techniques with Automation in Construction", **International Journal of Computer Science and Emerging Technologies (IJCET)**, Volume 2(2), December 2018, ISSN: 2522-3348, DOI: 10.13140/RG.2.2.29042.45767.

11. **Ronak Ali** Baladi, "Wireless Sensor Based Water Quality Management Using Solar Energy", **International Journal of Computer Science and Emerging Technologies (IJCET)**, Volume 2(2), December 2018, ISSN: 2522-3348.

Reviewer

a. Reviewer for American Chemical Society i.e. ACS Omega journal.
b. Reviewer for IEEE Nanotechnology Magazine.
c. Reviewer for IOP Publishing, i.e. Nano Express journal, and also completed Peer Review Excellence IOP Graduate Training by IOP Publishing.
d. Reviewer for the International Journal of Environment and Climate Change (ISSN: 2581-8627).

Ohio-Southwest Alliance on Semiconductors and Integrated Scalable-Manufacturing (OASiS) Program

Enrolled and Passed OASiS program in Spring 2024 designed by Intel and different universities

- University of Cincinnati (Contents/Fabrication Part)
  Semiconductor Processing Environment (Cleanroom) and Safety Protocols
  - Instructors: Dr. Jonathan Nickels, Jeff Simkins, Dr. Rashmi Jha, Dr. Marc Cahay, and Ron Flenniken
  - Advent of semiconductor industry, Clean Room Safety and Protocol, Basic process and equipment in clean room environment, Wafer Cleaning, Oxidation (Thermal, Low Temperature Oxidation, Plasma Enhanced Chemical Vapor Deposition, Low Pressure Chemical Vapor Deposition, Atomic Layer Deposition), Nitridation (Thermal, Plasma Enhanced Chemical Vapor Deposition, Low Pressure Chemical Vapor Deposition, Atomic Layer Deposition), Photolithography, Physical Vapor Deposition (PVD) Deposition of Metals and Dielectrics, Etching, Doping, Chemical Mechanical Polishing, Metrology, Chemistry Principles, Roles of chemicals in semiconductor fabrication, Chemical hazards, Chemical waste and storage, CMOS transistor technology, fabrication environment, process equipment with hands on experience in cleanroom, and semiconductor processing and safety measures.

- University of Dayton, USA (Cleanroom/Contents Part)
  Integrated Circuits (IC) Fabrication Processes and Metrology
  - Instructors: Dr. Andrew Sarangan, and Dr. Guru Subramanyam
  - Overview of CMOS process flow, Gate Dielectrics, Mask design, patterning and lithography, Plasma etching, Doping in Semiconductors, Thin Film Metallization, and Metrology and Packaging.

- Wright State University, USA (Contents/Fabrication)
  Semiconductor Manufacturing and Equipment Safety
  - Instructors: Dr. Ahsan Mian, Dr. Deniel Sim, and Dr. Subhashini Ganapathy
  - Wafer handling, wafer cleaning, dehydration, photoresist coating, sot bake, exposure, microscope inspection i.e. photolithography, equipment safety and different roles in semiconductors fabrication facility, introduction to Semiconductor Manufacturing Process - describe basics of semiconductor manufacturing concepts, processes, introduction to vacuum control systems, tools used in semiconductor manufacturing, mechatronics, understanding the role of a Semiconductor Technicians and Engineers, introduction to safety protocols - equipment use, machines, and tools.

- Miami University, USA
  Professional Skills for Career in Semiconductor Fabrication
  - Content: Dr. Kumar Singh, Professor, Miami University
  - Careers in Semiconductor Industries and Desired Skillset, Strategies for Career Success, Time Management, Problem Solving, and Communications Skills

Trainings Conducted

- Conducted series of seminars on "How to attempt paper" for Electronics/Telecommunication/Computer system/Power Engineering students at Sukkur IBA University (November 2014).
- Training on "Troubleshooting of Circuit Based projects" was given to EE Electronics' students at Sukkur IBA University, Pakistan (October 2014).
- Training on "Designing complex projects on software" was given to Computer Science/Software Engineering students at Sukkur IBA University, Pakistan (October 2014).
- Training on "Circuit Simulation on Multisim Software" was given to Energy system engineering students at Sukkur IBA University, Pakistan (September 2014).
- Training was given to first year electrical engineering students on "Analyzing voltage, current and power on software" at Sukkur IBA University, Pakistan (September 2014).

- Conducted series of seminars for Electrical Engineering students on topic of "Proactive approaches for studies" at Sukkur IBA University, Pakistan in September 2014.

Awards and Honors

- **Awarded Fulbright Scholarship** for doctoral studies at the University of Kentucky, Lexington, KY, USA (2022-2025).
- **Awarded $500** for presenting paper in the 245th ECS Meeting, San Fransisco, California, The United States of America.
- Being part of Robot team of University of Kentucky, USA, won Third Position in Robotics Hardware Competition at IEEE SoutheastCon at Westin Peachtree Plaza, Atlanta, Georgia, USA March 20-24, 2024.
- Awarded Sindh Endowment Scholarship for bachelor's studies at the Sukkur IBA University, Sukkur, Sindh, Pakistan (2011-2015).
- Awarded Professional Development Grant of $250 for 8th Nano Today Conference (April 22-25, 2023).
- Awarded Professional Development Grant of $250 for 13th IEEE Integrated STEM Education Conference, Laurel, Maryland, the United States of America (March 11, 2023).
- Achieved **First Position** in the Master of Science in Electrical Engineering Class at Bahria University Karachi Campus (2019).
- Achieved **First Place** in bachelor's studies of Electrical Engineering at Sukkur IBA University (2015).
- Achieved **First Position** at workshop "Corruption Free Future Generation" organized by Transparency International Pakistan at Regent Plaza Hotel Karachi in March 2013.

Events Organized

- As a Chair student branch, organized IEEEXtreme 8.0 on 18 October 2014 00:00:00 UTC, at Sukkur IBA University, Pakistan.
  - IEEEXtreme is a global challenge in which teams of IEEE Student members, supported by an IEEE Student Branch, advised and proctored by an IEEE member, compete in a 24-hour time span against each other to solve a set of programming problems.
- As a Chair of IEEE Student Branch, organized IEEE Day on 7th October 2014 at Sukkur IBA University, Pakistan.
- As a Coordinator Engineering Society, organized Career Workshop for THP, Regular foundation and summer program students at Sukkur IBA University, Pakistan (2014).
- As a Coordinator Engineering Society, organized Arduino Workshop for IT Students at Sukkur IBA University, Pakistan during undergraduate studies (2014).
- As a Coordinator Engineering Society, organized Family festival in Spring 2013 Semester at Sukkur IBA University, Pakistan.

Professional Affiliations/Memberships

Member, IEEE	2014, 2023-to date
Member, IEEE-HKN	Fall 2023 to Present
Member, Electrochemical Society	Sept 2023 to date
Member, American Chemical Society	Jul 2023 to date
Member Material Advantage	
IEEE Nanotechnology Council	For 2 Years
IEEE Sensors Council	For 2 Years
IEEE Biometrics Council	For 2 Years
IEEE Council on Electronic Design Automation	For 2 Years
IEEE Council on RFID	For 2 Years
IEEE Systems Council	For 2 Years
Member, IEEE Electron Devices Society	For 1 Year
Member, IEEE Power & Energy Society	For 1 Year
Member, IEEE Microwave Theory and Technology Society	For 1 Year

Member, IEEE Young Professionals	For 1 Year
Member, IEEE Communications Society	For 1 Year
Member, IEEE Signal Processing Society	For 1 Year
IEEE Council on Superconductivity	For 1 Year
Global Earth Observing System of Systems Community, IEEE	For 1 Year
Smart Cities Community, IEEE	For 5 Years
Smart Grid Community, IEEE	For 5 Years
Transportation Electrification Community, IEEE	For 5 Years
Cloud Computing, IEEE Computer Society Technical Community on	
Internet of Things Community, IEEE	For 10 Years
Life Sciences Community, IEEE	For 10 Years
Software Defined Networks Community, IEEE	For 10 Years
Sustainable ICT Community, IEEE	For 10 Years

Campus Involvement

President IEEE-HKN Beta Upsilon Chapter, University of Kentucky	Dec 2024 to May 2025
Vice President IEEE-HKN Beta Upsilon Chapter, University of Kentucky	Apr 2024 to Dec 2024
Graduate Chair IEEE Student Branch, University of Kentucky	2024-2025
Graduate Senator Student Government Association, University of Kentucky	2023-2024
Chair Student Activities Board, University of Kentucky	Feb 23 to Apr 2024
Member, U of Kentucky Community Hearing Board, Office of Student Conduct	May 2024 to May 2025
Chairman IEEE Student Branch, Sukkur IBA University	Feb-Dec 2014
Coordinator Engineering Society, Sukkur IBA University	Feb-Dec 2014
Member, Material Advantage Chapter, University of Kentucky	Nov 2022 to May 2025
Member, Kentucky Organization of Robotics and Automation	Oct 2023 to May 2025
Member, Team SpaceLex, Rocketry and Propulsion, University of Kentucky	Oct 2022 to May 2025
Member, Solar Car Team, University of Kentucky	Sept 2022 to May 2025
Member, Engineering Student Council, University of Kentucky	Apr 2024 to May 2025
Member, Automotive Industry Club, University of Kentucky	Aug 2024 to May 2025
Member, Science Olympians, University of Kentucky	Sept 2022 to May 2025
Member, Alpha Lambda Delta, University of Kentucky	Aug 2022 to May 2025
Member, International Student Council, University of Kentucky	Aug 2022 to May 2025
Member, Muslim Student Association, University of Kentucky	Aug 2022 to May 2025
Member, Student Parent Organization, University of Kentucky	Aug 2022 to May 2025
Member, Elementary Education Student Association	Aug 2022 to May 2025
Member, National Society of Black Engineers, University of Kentucky	Sept 2023 to May 2025
Member. Alternative Service Breaks, University of Kentucky	Aug 2023 to May 2025
Member, Military Appreciation Club, University of Kentucky	Sept 2022 to May 2025
Member, American Institute of Aeronautics and Astronautics, U of Kentucky	Aug 2022 to May 2025
Member, Team Wildcat, University of Kentucky	Sept 2022 - Apr 2023
Member, Engineers Without Borders, University of Kentucky	Aug 2022 - Apr 2024
Member, Energy Club, University of Kentucky	Aug 2022 - Apr 2024
Member, Zine Club, University of Kentucky	Aug 2022 - Oct 2024
Member, Snowcats - Extreme Outdoor Club, University of Kentucky	Sept 2022 - Sept 2024
Member, Sustainability Future Leaders, University of Kentucky	Aug 2022 - Aug 2024
Member, Knitting Club, University of Kentucky	Sept 2022 - Aug 2024
Member, Asian/Asian American Association, University of Kentucky	Aug 2022 - Apr 2024
Member, Bluegrass Collegiate Middle Level Association, UKY	Oct 2022 - May 2024
Member, National Association for the Advancement of Colored People, UKY	Dec 2022 - May 2024
Member, Engineering in Medicine & Biology Society Student Branch Chapter, UKY	Oct 2022 - May 2024
Member, Society of Women Engineers (Graduate), University of Kentucky	Oct 2023 - Apr 2024
Member, The Horticulture Club, University of Kentucky	Jan 2023 - May 2024

Member, Society of Hispanic Professional Engineers Bluegrass Chapter, UKY	Oct 2023 - Apr 2024
Member, Non-Traditional Student Organization, University of Kentucky	Sept 2022 - Sept 2023
Member, Brazilian Student Association, University of Kentucky	Sept 2022 - Aug 2023
Member, Student Alumni Association, University of Kentucky	Sept 2022 - May 2023
Member, Kesem (Volunteer for cancer team), University of Kentucky	Aug 2022 - May 2023
Member, Pi Sigma Alpha, University of Kentucky	Sept 2022 - May 2023
Member, Biomedical Engineering Society, University of Kentucky	Sept 2022 - May 2023
Member, American Institute of Chemical Engineers, University of Kentucky	Oct 2022 - May 2023
Member, Entrepreneurship Club, University of Kentucky	Oct 2022 - May 2023
Member, Underground Perspective, University of Kentucky	Sept 2022 - May 2023
Member, Model United Nations, University of Kentucky	Aug 2022 - Apr 2023
Member, College Mentors for Kids, University of Kentucky	Sept 2022 - Apr 2023