



Dr. Sadia Muniza Faraz

Professor & Chairperson
Dept. Of Electronic Engineering,
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A highly committed, hardworking and self-motivated teacher with strong management, leadership and communication skills & rich experience of research. More than twenty-five years of academic experience in teaching, management and assessments at undergraduate and postgraduate levels. More than fifteen-year research experience in projects, evaluation and review. Active in organizing events for encouraging females to excel in engineering profession and STEM.

Academic Qualification

PhD	Electronic Engineering, NED University of Eng. & Tech., Karachi. (2013). Partial Research carried out at Linköpings University, Linköping, Sweden. Thesis Title: Physical simulation and characterization of electronic and photonic devices in wide band gap semiconductors Supervisor: Dr. Qamar-ul-Wahab Co-Supervisors: Dr. Magnus Willander, Dr. Abdul Qadir
Licentiate	Licentiate of Engineering, Linkopings Institute of Technology, Linkopings University, Linkoping, Sweden (2011)
M.Eng.	Electronic Engineering (Micro System Design). NED University of Eng. & Tech., Karachi. (2006)
B.E	Electrical Engineering, NED University of Eng. & Tech., Karachi. (1996)

Grants and Funding

2025	Project Supervisor, State-of-Charge Estimation for Battery Powered Applications Using a Pruned and Quantized LSTM-Based TinyML Framework, amounting Rs. 0.5 million
2024	Project Supervisor, “Deep learning and vision transformer-based integration of object and lane detection for Advanced Driver Assistance System”, amounting Rs. 3 million, Research Grant from MoST Endowment Fund (11th Cycle).
2023	Project Co-Supervisor, “Synthesis and Characterization of Hybrid Organic Piezoelectric Thin Films”, amounting to Rs. 1 million
2022	Project supervisor, “Smart digital speedometer and cruise control system for motorbikes”, National Grassroots ICT Research Initiative (NGIRI) 2021-22

2021 1-Co-Principal Investigator for HEC NRPU project titled “Dynamic Analysis of Nanostructured Thin Films for Smart Energy” amounting to Rs. 9.50 million approx.

2- Project supervisor, “Energy harnessing and harvesting by piezoelectric sensors”, National Grassroots ICT Research Initiative 2020-21

2019 Project Supervisor, “Fabrication and Characterization of Sensitized Photovoltaics”, amounting to Rs. 1 million

2013 Project Supervisor, “Energy Efficient Intelligent Electronic Gas Stove”, NED Alumni Association of Southern California (NEDAASC) funding, amounting to Rs. 20655.

2011 HEC Travel grant of Rs. 0.19 million for presenting research paper at 2011-MRS-Fall meeting held in Boston, Massachusetts, USA .

2008 PhD funding from NED University Research Fund amounting Rs. 10.125 million approx

Research Supervision

PhD

2025 State-of-Charge Estimation for Battery Powered Applications Using a Pruned and Quantized LSTM-Based TinyML Framework (ongoing)

2023 Deep learning and vision transformer-based integration of object and lane detection for Advanced Driver Assistance System (ongoing)

2023 Synthesis and Characterization of Hybrid Organic Piezoelectric Thin Films (ongoing)

2019-2023 Fabrication and Characterization Of Sensitized Photovoltaics (completed)

Master Thesis

2022 Artificial intelligence approach for modelling the electrical characteristics of Schottky diode

2021 An Efficient Parameter Extraction Technique for Solar Cell Modules

2018 Power Tracking by Fast and Efficient MPPT Technique for Solar Module under Partial Shading Conditions

2017 Maximum Power Point Tracking Algorithm Based on Particle Swarm Optimization for Photovoltaic System

2016 Fabrication and characterization of organic Solar cells

Deposition of Graphene through chemical vapor deposition for electronic applications

2015 Temperature Dependent Electrical Characterization of Schottky diodes

2014 Physical Modelling and Simulation of Au/ZnO Schottky diodes

2013 Modeling and Simulation of GaN Schottky diodes using TCAD and comparison to the experimental results

2012 Electrical characterization of wideband gap semiconductors

Skills

- Clean room Semiconductor Device fabrication processes, deposition methods, thermal evaporation, annealing, cleaning, etching, growth of Nano-structures, etc.
- Device modeling and simulation using Synopsys TCAD, MicroTec, Minimos-NT and AMPS-1D .

- Electrical characterization (measurements) using Keithley SCS-4200.
- Synthesis and fabrication of Organic Solar cells
- Programming in C++, FORTRAN, MATLAB ,Verilog HDL and ADS.
- Proficient in MS Office
- Fluent in Urdu, English and basic knowledge of Swedish.

Academic Duties / Volunteering/Memberships

- Chairperson, Electronic Engineering Dept., NEDUET
- Focal Person, Sultan Qaboos Academic Chair (Oman IT Chair) at NEDUET.
- Vice Chair (Electronic Eng.) Institution of Engineers Pakistan (IEP), Karachi Center.
- Member Senate, NEDUET
- Member Academic Council, NEDUET
- Member Board of Faculties (BOF), Faculty of Electrical and Computer Engineering (ECE), NEDUET
- Member of Board of Studies (BOS), Dept. of Electronic Eng. NED.
- Member of Board of Management, Institute of Industrial Electronic Engineering (IIEE), Karachi.
- Member Board of Review (BOR), Examination Department, NEDUET.
- Expert Member Board of Studies (BOS), Institute of Industrial Electronic Engineering (IIEE), Karachi.
- Member Board of Review (BOR), Audit Department, NED University (2022-2023)
- Member National Curriculum Revision Committee (NCRC) of Higher Education Commission (HEC), Pakistan-2017
- Member Selection Board (Expert member) at DHA Suffa University, Karachi.
- Member Selection Board UIT University/ Usman Institute of Technology, Karachi
- Member Selection Board (Expert member), Mehran University of Engineering & Technology, Jamshoro.
- In-charge Electronics Design Center, Dept. of Electronic Eng. NED.
- Proposals reviewer for National Research Program for Universities (NRPU) – HEC, 2020,2021
- External examiner (Master's Thesis) for Mehran University of Engineering & Technology, Jamshoro.
- Expert, Charter Inspection and Evaluation Committee (CIEC), Sind HEC, for monitoring and evaluating Bachelor of Engineering (Avionics Engineering) program of Karachi Institute of Economics and Technology (PAF-KIET), 2019
- Proposals reviewer for HEC, National Research Program for Universities (NRPU), CPEC- Collaborative Research Grant(CRG), Local Challenge Fund(LCF), Grand Challenge Fund (GCF)
- Proposal reviewer for Sind HEC.
- Proposal reviewer for Pakistan – United States Science and Technology Cooperation Program (USAID).
- Reviewer for International/National journals
- Member Local Council of Institution of Engineers Pakistan (IEP) 2016 – 2018, 2023-2025, 2026-2028.
- Member Central Council of Institution of Engineers Pakistan (IEP) 2016 - 2018.
- Member Pakistan Engineering Council (PEC)
- Faculty Head of Green Electronics Society, Electronic Eng. Dept.

- Member Curriculum Revision Committee, Electronic Eng. Dept.
- Member Post Graduate Admission Committee, Electronic Eng. Dept. NED.
- Member Departmental OBE committee (DOBEC) Electronic Eng. Dept.

Work Experience

Jan. 2026 – to date	Chairperson, Dept. of Electronic Eng. NED University of Eng. & Tech. Karachi, Pakistan
Oct .2025 – Dec. 2025	Professor and Co-Chairperson, Dept. of Electronic Eng. NED University of Eng. & Tech. Karachi, Pakistan
June-2024 – Dec. 2025	Co-Chairperson, Dept. of Electronic Eng. NED University of Eng. & Tech. Karachi, Pakistan
Jan.2022 – Sept. 2025	Associate Professor, Dept. of Electronic Eng. NED University of Eng. & Tech. Karachi, Pakistan
Oct. 2003 – Dec. 2021	Assistant Professor, Dept. of Electronic Eng. NED University.
Nov.1998 - Oct.2003	Lecturer, Dept. of Electronic Eng. NED University.
Nov.1997 – Nov.1998	Lecturer, Dept. of Electrical Eng. NED University
Aug.1996 – Oct.1997	Lecturer, Dept. of Electronic Eng. Sir Syed University of Eng. & Tech. Karachi, Pakistan
July.1996 – Aug.1996	Assistant Software Engineer, CompuNet Online, Karachi,
Jan.1996 – Jun.1996	Lecturer, Usman Institute of Technology, Karachi.

Teaching Experience

PhD Courses:

1. Research Methodologies
2. Characterization Techniques for Semiconductor Materials
3. Electrical Characterization of Semiconductors Devices
4. Nanotechnology
5. Photovoltaic Materials
6. Solar Cell Design
7. Modern Trends in Solar Cell Design

Masters Courses:

1. Microfabrication Processes
2. Research Methods in Engineering Management
3. Light wave Engineering
4. Solid State Materials and Devices
5. High speed semiconductor devices and circuits
6. Hybrid Power Systems
7. Renewable Energy
8. Digital VLSI Design

Undergraduate Courses:

1. Solid State Devices
2. Optoelectronics and Microwave systems
3. Basic Electronics
4. Electronic Devices and Circuits
5. Analog and Digital Electronics

6. Electronics-II
7. Electric Circuits and Machines
8. Programming Languages
9. VLSI system Design

Honors

1. HEC approved PhD Supervisor.
2. Received “Distinguished Engineer Award” by Institution of Engineers Pakistan-2024
3. Received National Engineering Excellence Award by Pakistan Engineering Council (PEC) and Institution of Engineers (IEP), Pakistan-2023
4. Received certificate of award and cash prize on a journal paper from NED Alumni Association of Southern California USA (NEDAASC)-2013
5. Received a funding of Rs. 10 million for PhD research work from NED University Research Fund -2008.
6. Best teacher awards received from Dept. of Electronic Engineering, NED University of Engineering & Technology, Karachi, Pakistan from 2001-2005.
7. 99.6 percentile among approx.35,000 candidates appeared in Higher School Certificate examinations (HSC - 12th grade) in the year 1990, among top 15 girls.
8. 99.96 percentile among approx. 50,000 candidates appeared in Secondary School Certificate Examination (SSC-10th grade) in the year 1988, among top 10 girls.
9. Received President Talent Scholarship for two years 1987-1988 for being amongst top 50 students in President Talent Scholarship Examination.
10. Passed the Merit Scholarship Examination and received Scholarship for three years 1984-86 from Board of Secondary Education Karachi.

Workshops, Courses and Trainings

Workshops, Courses and Trainings Conducted

2023 Conducted faculty training on “Complex Engineering Activity”, 6th July, 2023.

2022 Conducted faculty training on “Uniform OBE framework”, 21st March, 2022.

2020 Conducted faculty training on “Learning Management System: G-suite: Google Classroom”, at Dept. of Electronic Eng. NED University on 12th May, 2020.
Conducted students training on “Outcome Based Education” at Dept. of Electronic Engg. NED University on 10th December, 2020.

2018 Conducted faculty training on “Rubric Design for Psychomotor Domain Courses” at Dept. of Electronic Eng. NED University on 12th June, 2018.
Conducted faculty training on “Rubric Design for Affective Domain Courses” at Dept. of Electronic Eng. NED University on 13th June, 2018.
Conducted workshop on “Fabrication of Dye-Sensitized Solar Cells (DSSC)” organized by Green Electronics Society, Dept. of Electronic Eng. NED University on August, 9, 2018.

2016 Conducted workshop on “Fabrication of Dye-Sensitized Solar Cells (DSSC)” organized by Green Electronics Society, Dept. of Electronic Eng. NED University on March 10-11th, 2016

2015 Conducted a workshop on “Fabrication of Dye-Sensitized Solar Cells (DSSC)” organized by Green Electronics Society, Dept. of Electronic Eng. NED University on March 24th, 2015

Workshops, Courses and Trainings Organized

2018 Organized a Workshop on “Engineering Applications of Digital Microscopy”, conducted by Leica Microsystems, on Wednesday, 3rd January, 2018.

2017 Organized a seminar on “Internship Drive- A Gateway to Industry”, by Green Electronics Society, Dept. of Electronic Engineering, on 13th March, 2017.

2015 Organized a training course on “Programming and Interfacing of Arduino Uno”, at Dept. Of Electronic Engineering, 17th Dec. – 23 Dec, 2015.
Organized a seminar in collaboration with Energy Wise (pvt).ltd. on “Energy Auditing & Conservation”, by Green Electronics Society, Dept. of Electronic Engineering, NED University, October 12th ,2015.
Organized hands on “Refresher Training of Laboratory Equipment” for the faculty of Electronics Dept, NED, 20th and 21st May, 2015.
Organized a training course on “Project Design and Implementation, using FPGA”, at dept. Of Electronic Engineering, 16th May – 13 June, 2015.
Organized a Half Day seminar on “Journey from Imagination to Implementation”, Dept. of Electronic Engineering, NED University, February 12, 2015.

Workshops, Courses and Trainings Received

2023 Four days specialized training program for HEC Grants program Reviewers, “HEC-British Council Reviewer’s Capacity building program under Pak-UK Education Gateway”, 7 -10 February, 2023

2021 Half day QEC training on “Development of SAR assessment report as per HEC guidelines for PhD program”, at NED University on 14th October, 2021.
Half day training on “Assessment of Self-Assessment reports of PhD program as per HEC guidelines”, at NED University on 15th October, 2021.

2020 Half day QEC Training, “ OBE Based students evaluation”, at NED University on 9th January, 2020.

2019 Three months training, “Higher Education Teacher’s Training 2019”, at NED University from 1st October – 31st December, 2019.
Half day training on “Higher education curriculum Design (OBE Based)”, at NED University on 26th April and 3rd May, 2019.
Half day training on “Assessment of SAR as per HEC criteria”, at NED University on 14th June, 2019.
Half day training on “G-suite: Google Classroom”, at NED University on 16th July, 2019.

2016 Two days International Research Workshop “How to Combine Multiple Research Methods- Practical Triangulation”, Organized by Research Centre for Training & Development (RCTD), held on 29-30 Jan, 2016

2009 Received a 2 weeks training on modelling and simulation using TCAD, at Advanced Engineering Research organization(AERO), Hasan Abdal, Pakistan, February 2009.

Invited Talks/ Conference Presentations

2023 Invited Speaker to give a talk on “Low-Cost Manganese Oxide Counter Electrode for Dye-Sensitized Solar Cells by Repurposing Wasted Battery Cells”, in International Conference On Nanomaterials & Nanotechnology (MSNANO-2023), held at Government College University Faisalabad, **Pakistan**, 25-27 September, 2023

2022 Invited Speaker to give a talk on “Photovoltaic properties and Impedance spectroscopy of dye sensitized solar cells co-sensitized by natural dyes”, in International Conference On Nanomaterials & Nanotechnology (MSNANO-2022), held at Khanspur, Abbottabad, KPK, **Pakistan**, 22-23 August, 2022

2021 Oral presentation (Online) on “Voltage and Frequency Dependent Electrical Characteristics and Interface State Density of Ni/ZnO Schottky Diodes”, in The 49th International School and Conference on the Physics of Semiconductors (Jaszowiec-2021), Warsaw, **Poland**, September 1-10, 2021

Keynote Speaker to give talk on “Modelling and Simulation of Eco- Friendly Solar Cells Sensitized by Natural Dyes”, International Conference on Energy, Water & Environment (ICEWE-2021), held at University of Engineering & Technology (UET), Lahore, **Pakistan**. 31st March, 2021.

Invited Speaker to give a talk on “Modelling and Simulation of Electrical Characteristics of Dye Sensitized Solar Cells” in 9th International Conference on semiconductor Materials and Nano-Devices (9th ICSMAND-2021), Khawaja Fareed University of Engineering & Information Technology(KFUEIT), Rahim Yar Khan, **Pakistan**, 1-2 April, 2021

2020 Invited Speaker to give a talk on “Impedance Spectroscopy and Photovoltaic Properties of Metallic and Natural Dyes based Dye Sensitized Solar Cells” in 8th International Conference on semiconductor Materials and Nano-Devices (8th ICSMAND-2020), Khawaja Fareed University of Engineering & Information Technology, Rahim Yar Khan, **Pakistan**. 9th -10th March, 2020

Invited Speaker to give a talk on “Impedance Spectroscopy and Photovoltaic properties of Metallic and Natural Dyes based Dye Sensitized Solar Cells”, in International Conference On Nanomaterials & Nanotechnology (MSNANO-2020), Government College University Faisalabad, **Pakistan**, 3rd – 5th March, 2020

2019 Invited Speaker to give a talk on “Fabrication and Characterization of Oxide Semiconductor based Electronic Devices” in 7th International Conference on semiconductor Materials and Nano-Devices (7th ICSMAND-2019), Khawaja Fareed University of Engineering & Information Technology, Rahim Yar Khan. **Pakistan**, February 25-27, 2019

Invited Speaker to give a talk on “Physical Modeling and Simulation of Nanostructure Electronic Devices”, in Ist International Conference on Advances in Theoretical and Applied

Physics -2019, Government College Women University, Faisalabad, **Pakistan**, 19th February, 2019

Invited Speaker to give a talk on “Fabrication and Characterization of Oxide Semiconductor based Electronic Devices” in 7th International Conference on semiconductor Materials and Nano-Devices (7th ICSMAND-2019), Khawaja Fareed University of Engineering & Information Technology, Rahim Yar Khan. **Pakistan**, February 25-27, 2019

2018 Invited Speaker to give a talk on “Fabrication and Photoelectrical characterization of Natural Dye Sensitized Solar cells”, in 2018 -Photonics Symposium and National Engineering Convention & Optics Olympiad (NECOO’2018), Ghulam Ishaq Khan Institute (GIKI) of Engineering Sciences and Technology. Topi, KPK, **Pakistan**, 30st March – 1st -April, 2018.

 Invited Speaker to give a talk on “Fabrication and Photoelectrical Characterization of Natural Dye Sensitized Solar cells”, in International Conference On Nanomaterials & Nanotechnology (MSNANO-2018), Government College University Faisalabad, **Pakistan**, February 19-20, 2018

 Invited Speaker to give a talk on “Synthesis, Fabrication and Characterization of Third Generation Solar Cells” in 6th International Conference on Semiconductor Materials and Nano-Devices (6th ICSMAND-2018), The Islamia University of Bahawalpur, **Pakistan**, February 15-17, 2018

2015 Guest speaker to give a talk on “The Science of Life Management” in Evolver-Personality Development Program powered by Enroute at Institute of Business Administration (IBA), Karachi, **Pakistan**, July 10, 2015.

 Speaker to give a talk on “Projects on Green Electronics”, in a Seminar on “Journey from Imagination to Implementation” organized by Green Electronics Society, Dept. of Electronic Engg. NED University, February 12, 2015.

 Speaker to give a talk on “Environment Friendly Electronics” in a Seminar to mark the 45th Anniversary of Earth Day, organized by Women Engineers Committee and Environment Committee of The Institution of Engineers Pakistan (IEP), Karachi Chapter, April 25, 2015.

2014 Invited speaker to give a talk on “Final Year Engineering Project Selection, Planning and Management” at Hamdard Institute of Engineering & Technology (HIET), Hamdard University, Karachi, Pakistan, Sept.24, 2014.

 Guest Speaker to give a talk on “Criteria, selection and requirements of Final year Project (FYP)” in “INFUSE,FYP-Pedia from A to Z” organized by Institute for Electrical and Electronics Engineers (IEEE), NED University Students Branch, August 5, 2014

2013 Invited Speaker to give a talk on Electronic and Photonic Devices in Wide Bandgap Semiconductors in National Workshop on Advanced Electronics: Device Design & Process Characterization, International Islamic University, Islamabad, December 2 - 3, 2013

 Invited Speaker to give a talk on Electrical Characterization of Interface States Density in Wide Bandgap Semiconductor Devices in 3rd - International Conference on Semiconductor Materials & Nano-Devices, Bahawalpur, Pakistan, April 22 – 24, 2013.

2011 Presented paper in 14th IEEE International Multi-topic Conference (INMIC 2011), Sir Syed University of Engineering & Technology, Karachi, Pakistan, December 22-24, 2011.

Presented paper in Material Research Society (MRS-2011) fall meeting, Boston, Massachusetts, USA. November 28- December 2, 2011.

Presented paper in European Material Research Society (E-MRS-2011) fall meeting, Warsaw, Poland, September 19-23, 2011.

2009 Presented paper in The 2nd International Conference on Multi-functional Materials and Structures Qingdao, China, , October 09-12, 2009.

2008 Talk on EDA tools, Dept. Of Electronic Engineering, NED University Karachi, August 30, 2008.

Mentoring Women in STEM and Entrepreneurship

Memberships

- Women Engineers Committee (WEC), Institution of Engineers (IEP), Pakistan.
- Organization for Women in Science for the Developing World (OWSD).

Events Participated and Organized

2025 Moderator of panel discussion on “Corporate Organization Initiatives to Bring Women Back to Work” in International Women’s Day celebrations with the theme “Accelerate Action for Advancement of Women and Girls in Science & Technology.” at Institution of Engineers Pakistan (IEP) Convention Center, Karachi Center, April 12, 2025.

2024 Chair Scientific and Publication Committee, NED Women Conference-2024, Theme: “Perspectives on women development”, held from 6th -7th November, 2024 at NED University of Engineering & Technology, Karachi, Pakistan

Moderator of panel discussion on “Bridging the Gap: STEM in Higher Education and Industry” being organized by The Institution of Engineers Pakistan, & Women Engineers Committee, Karachi Centre on Saturday, 31st August, 2024 at NED University, Karachi.

2023 Organizer and moderator of half day seminar on “Role of Women Leadership and Inclusion in Tech and Academia” being organized by NED University in collaboration with British Council and Higher Education Commission on Wednesday, 25th October 2023 at NED University, Karachi.

Member Organizing Committee of half day seminar on International Women’s Day – 2023, Theme: DigitALL: Innovation and technology for gender equality at Institution of Engineers Pakistan (IEP) Convention Center, Karachi Center, March 11, 2023

2021 Host and member organizing committee of “Womanium STEM + Entrepreneurship Talk Series”, organized by NED University of Engineering and Technology (Karachi, Pakistan) and NED International Alumni Association Network (NEDIAN) in collaboration with Womanium Foundation, Washington D.C., USA. Held on 9th April, 2021 (Online)

2019 Chair Scientific and Publication Committee, NED Women Conference-2019, Theme: “Perspectives on women development”, held from 19th - 20th December, 2019 at NED University of Engineering & Technology, Karachi, Pakistan

Member Organizing Committee of half day seminar on International Women's Day – 2019, Theme: "Balance for Better", held on 30th March, 2019 at Institution of Engineers Pakistan (IEP) Convention Center, Karachi Center.

2018 Member organizing Committee of half day seminar on International Women's Day- 2018, "Press for Progress" held on 10th March, 2018 at Institution of Engineers Pakistan (IEP) Convention Center, Karachi Center.

2017 Member organizing committee of half day seminar on "Exploring Job Opportunities for Women Engineers", held on 15th April, 2017 at Institution of Engineers Pakistan (IEP) Convention Center, Karachi Center.

2016 Member organizing committee of half day Seminar on International Women's Day -2016, Theme: "Pledge for Parity", held on 19th March, 2016 at Institution of Engineers Pakistan (IEP) Convention Center, Karachi Center.
Member organizing Committee of half day seminar on "Women Entrepreneurship", held on 20th February, 2016 at Institution of Engineers Pakistan (IEP), Karachi Center.

2015 Speaker to give a talk on "Perspectives of a Working Woman Engineer" in half day seminar on "Empowerment of women in Engineering profession", held on 17th January, 2015 at Institution of Engineers Pakistan (IEP) Convention Center, Karachi Center, also member of organizing committee of this event.

Member organizing committee of workshop on "Home Based Employment for Women Engineers", held on 14th November, 2015, held at Institution of Engineers Pakistan (IEP) Convention Center, Karachi Center

Member organizing Committee of half day seminar on International Women's day-2015, theme: "Empowering Women, Empowering Humanity: Picture it!", held on 28th March, 2015 at Institution of Engineers Pakistan (IEP) Convention Center, Karachi Center.

Publications

2026 M. S. Shaikh and **S. M. Faraz**, "InSegNet: Semantic segmentation-based lane detection network for clear and occluded roads." Ain Shams Engineering Journal 17, no. 1, 103870, **2026**

<https://doi.org/10.1016/j.asej.2025.103870>

M. S. Shaikh, **S. M. Faraz**, "BlueSeg: A Memory Light Lane Detection Network Using Blueprint Separable Convolution" 1st International Conference on Innovations in Information and Communication Technologies (IICT'26). Mehran University of Engineering & Technology, Jamshoro (Accepted) **2026**.

M. S. Shaikh, **S. M. Faraz**, "Artificial Intelligence Driven Memory-Efficient Approach for Lane Detection in ADAS with Multi-Path Fusion" 1st International Conference on Sustainability, Energy, Environment and Digital Innovation (SEEDI-2026), University of Karachi, Pakistan (Accepted) **2026**

R. W. Khawaja, **S. M. Faraz**, "A Precise Machine Learning Model for State-of-Charge Estimation in Lithium-Ion Batteries", 1st International Conference on Sustainable Energy, Environment, and Digital Innovation (SEEDI-26), University of Karachi, Pakistan (Accepted) **2026**

2025 M. S. Shaikh, **S. M. Faraz**, "SegViT: Hybrid Convolutional and Vision Transformer Network for Semantic Segmentation Based Lane Detection", Arabian Journal for Science and Engineering, pp. 1-22, **2025**

<https://doi.org/10.1007/s13369-025-10959-4>

H. Sajjad, S. Arshad, S. M. Faraz, H. Qureshi1, H. Fayyaz, S. I. Nusrat, "Microcontroller-Based Automated Cloth Folding Machine for Domestic and Industrial Textile Applications", International Journal of Innovations in Science & Technology, vol.7, issue 4, **2025**

<https://journal.50sea.com/index.php/IJIST/article/view/1630>

M. S. Shaikh, **S. M. Faraz** and Y. Rehman, "TMNet: A Lightweight Semantic Segmentation Based Lane Detection Network for varying Light Conditions," 2025 International Conference on Emerging Technologies in Electronics, Computing, and Communication (ICETECC), Mehran University of Engineering & Technology, Jamshoro, Pakistan, pp. 1-6, **2025**

DOI: [10.1109/ICETECC65365.2025.11070310](https://doi.org/10.1109/ICETECC65365.2025.11070310)

A. Qadir, **S. M. Faraz**, and M. Mehdi. "Electromechanical characterization of date fruit membrane: A sustainable material for bio-piezoelectric energy harvesting." Journal of Renewable and Sustainable Energy, vol. 17, no. 3, **2025**.

<https://doi.org/10.1063/5.0260813>

W. Shah, **S. M. Faraz**, Z. H. Awan, and M. H. Sayyad. "Surface Modification Strategies for Enhanced Performance and Stability of Perovskite Solar Cells." Micro and Nanostructures, 208189, **2025**. <https://doi.org/10.1016/j.micrna.2025.208189>

2024 M. S. Shaikh, **S. M. Faraz**, Y. Rehman, "SegLink: An Advanced Lane Detection Network with Minimal Computational Overhead Using Semantic Segmentation", 26th IEEE International Multi-Topic Conference (INMIC 2024), Karachi, Pakistan, December 30-31, **2024**. <https://doi.org/10.1109/INMIC64792.2024>

M. S. Shaikh, **S. M. Faraz**, Y. Rehman, "Semantic Segmentation based Lightweight Lane Detection Network (LWNet) for Intelligent Vehicles", International Journal of Innovations in Science & Technology, Vol. 6, No. 7, pp. 82-92, **2024** <https://journal.50sea.com/index.php/IJIST/article/view/1098>

M. Imran, M. Raza, H. Noor, **S. M. Faraz**, A. Raza, U. Farooq, M. E. Khan, S. K. Ali, O. Y. Bakather, W. Ali, and A. H. Bashiri, "Insight into mechanism of excellent visible-light photocatalytic activity of CuO/MgO/ZnO nanocomposite for advanced solution of environmental remediation", Chemosphere, Volume 359, pp.142224, **2024**. <https://doi.org/10.1016/j.chemosphere.2024.142224>.

2023 W. Shah, R. W. Khawaja, **S. M. Faraz**, Z. H. Awan, M. H. Sayyad, "Photovoltaic and Impedance Analysis of Dye-Sensitized Solar Cells with Counter Electrodes of Manganese Dioxide and Silver-Doped Manganese Dioxide.", *Engineering Proceedings*, vol. 46, issue, (1):31, **2023**. <https://doi.org/10.3390/engproc2023046031>

W. Shah, **S. M. Faraz**, S. Arshad, S. S. Haider, M. H. Sayyad, "Co-Sensitized DSSC with Natural Dyes Extracted from Beetroot, Pomegranate and Cranberry", *Engineering Proceedings*, vol. 32, issue, (1):13, **2023**. <https://doi.org/10.3390/engproc2023032013>

W. Shah, **S. M. Faraz**, Z. H. Awan, "Photovoltaic properties and impedance spectroscopy of dye sensitized solar cells co-sensitized by natural dyes", *Physica B: Condensed Matter*, vol. 654, 414716, **2023** <https://doi.org/10.1016/j.physb.2023.414716>

H. Noor, **S. M. Faraz**, M.W.Hanif, M. Ishaq, A. Zafar, S. Riaz, and S. Naseem, "ZnS nanoparticles-tailored electric, magnetic and mechanical properties of nanocomposites." *Physica B: Condensed Matter*, vol.650, 414572, **2023**. <https://doi.org/10.1016/j.physb.2022.414572>

2022 Z. Tajvar, **S. M. Faraz**, Z.U.H. Awan, and M.H. Sayyad, "Modelling and simulation of eco-friendly solar cells sensitized by natural dyes", *Energy & Environment*, 0(0), **2022**. <https://doi.org/10.1177/0958305X221129526>

S. R.U. N. Jafri, S. Shamim, **S. M. Faraz**, A. Ahmed, S.M. Yair, J. Iqbal, "Characterization and calibration of multiple 2D laser scanners", PLoS ONE 17(7): e0272063, **2022** <https://doi.org/10.1371/journal.pone.0272063>

S. M. Faraz, Z. Tajwar, Q. Wahab, A. Ulyashin, R. Yakimova, "Voltage and Frequency Dependent Electrical Characteristics and Interface State Density

of Ni/ZnO Schottky Diodes”, *ACTA Physica Polonica A*, Vol. 141, No. 2, pp. 99-104, **2022**.
<https://doi.org/10.12693/APhysPolA.141.99>

2021 B. Shaikh, **S. M. Faraz**, S. R.U. N. Jafri, S.U.Ali, “Self-Localization of Mobile Robot Using Map Matching Algorithm”, *Journal Of Engineering and Applied Sciences*, Vol. 40, no. 1, pp.69-77, **2021**.
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