Tabish Janwari
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Professional summary

- A dynamic, research-driven engineering professional with a strong academic foundation in Electronics and Communication Engineering (B. Tech) and Control & Instrumentation Systems (M. Tech), supported by practical experience in embedded systems, circuit design, and instrumentation. Skilled in integrating theoretical understanding with hands-on engineering to develop efficient, technology-driven solutions.
- Currently pursuing a Ph.D. at NIT Srinagar, where I have successfully completed the full research component of my doctoral work and am presently in the process of writing my thesis. My Ph.D. focuses on Organic Photovoltaics (OPVs), specifically on numerical modelling, charge-carrier dynamics, plasmonic enhancement using gold nanoparticles, and the analysis of device degradation through JV, CELIV, and impedance spectroscopy. I am proficient in advanced simulation and modelling tools, including SETFOS, TCAD, COMSOL, and MATLAB**.**
- In addition, I have contributed significantly to a DST SERB-sponsored project, where I worked on modelling and performance evaluation of thin-film photovoltaic devices. This experience strengthened my understanding of semiconductor device physics, computational material analysis, and scientific reporting, while also enhancing my collaborative research skills.
- My technical background also includes strong hands-on experience in embedded systems, PCB design, microcontroller programming, automation, and real-time control, enabling a seamless connection between hardware development and analytical research.
- I am now seeking an academic position in a university or engineering institution where I can contribute to teaching, curriculum development, student mentoring, and high-quality research. With a multidisciplinary skill set and a strong research profile, I am committed to advancing academic excellence and fostering innovation in analog and digital electronics, instrumentation, and renewable energy technologies.

EDUCATIONAL QUALIFICATION

- Ph. D in organic photovoltaics 2021-Present
  Simulation, modelling, and characterization
  Completed the full research component of my doctoral work and am presently in the process of writing my thesis.

- M. Tech in Control and Instrumentation Systems
  Department of Electrical Engineering
  Jamia Millia Islamia University 2019
  Gold Medalist
- B.E. in Electronics and Communication Engineering
  University of Kashmir 2016
  Third rank

TECHNICAL SKILLS

- Hands-on experience in simulation software: TCAD, MATLAB, SETFOS, COMSOL, ANSYS
- Hands-on experience in PCB design tools with 4 months of training in PCB designing using EAGLE and FRITZING from Robosapiens Srinagar.
- LabView, VHDL, Verilog.
- AI/ML/DL: One-month certified course in PYTHON for artificial intelligence, machine learning, and deep learning from IIT Kanpur.
- Electronic design automation tools.

Work Experience

Assistant professor at the University of Kashmir from Dec 2020 to Feb 2021.

- Actively involved in teaching and mentoring undergraduate engineering students. My primary instructional responsibilities included **Digital Electronics** and **Control Systems**, covering both foundational concepts and advanced applications.
- In **Digital Electronics**, I taught combinational and sequential logic design, Boolean algebra, digital circuit implementation, number systems, multiplexers, flip-flops, counters, and memory devices along with **VHDL**. I also guided students in laboratory sessions involving logic gates, digital ICs, timing analysis, and practical circuit troubleshooting.
- In **Control Systems**, I delivered coursework on system modelling, transfer functions, stability analysis, root locus, Bode plots, state-space representation, and controller design (PID, lead–lag). I also supervised practical experiments, helping students develop strong analytical and problem-solving skills through simulation tools such as MATLAB/Simulink.
- This teaching experience strengthened my pedagogical skills, improved my ability to simplify complex engineering topics, and enhanced my effectiveness in guiding students through both theory and hands-on laboratory work.

Assistant professor at the Government College of Engineering and Technology, Kashmir from Feb 2021 to Oct 2021.

- Worked as an Assistant Professor at the Government College of Engineering & Technology (GCET), Kashmir, where I taught core subjects including Signals and Systems and Digital Signal Processing (DSP). My responsibilities included delivering lectures, designing laboratory sessions, preparing course materials, evaluating student performance, and guiding students in understanding the mathematical foundations and practical applications of signal analysis, filtering, and system behavior.

Research Assistant in DST-SERB-CRG project from Oct 2021- Jan 2025

- Conducting in-depth research on organic photovoltaics in charge transport, optimizing various targets, and inserting the nanoparticles to improve the power conversion efficiency, using the numerical simulator, "SETFOS".
- Characterization Techniques (SEM, AFM, XRD).
- Impedance spectroscopy.
- Demonstrated familiarity with SERB financial governance procedure**s**, including preparation and reconciliation of Form GFR-12A (UCs) and coordination with institutional finance for submission to the Project Monitoring Group.

Assistant professor at the Kashmir College of Engineering and Technology, Kashmir from Aug 2025 to Nov 2025.

- Worked as an Assistant Professor at the Kashmir College of Engineering & Technology (KCET), Kashmir, where I taught Digital system design.

Publications and Projects

1. T. Janwari, N.Hakim, "Modeling and characterization of degradation mechanisms in gold nanoparticle-enhanced P3HT: PCBM organic solar cells", *Journal of Renewable and Sustainable Energy* 17(6), 063504 (2025). https://doi.org/10.1063/5.0291390
2. T. Janwari, N.Hakim, "Theoretical and numerical investigation of charge carrier dynamics in a P3HT: PCBM-based organic solar cell incorporating gold nanoparticles", The European Physical Journal Applied Physics 101, 16 (2026). https://doi.org/10.1051/epjap/2026013

- Design of an organic solar cell with embedded gold nanoparticles with optimization of the radius of nanoparticles and the thickness of the absorber layer in terms of maximum charge generation and optimum charge transport.
- Design and fabrication of the capacitive sensor for non-invasive hydration monitoring of cement paste
- HAND GESTURE BASED ROBOTIC HAND as a degree completion project in B.E.: Various modules and sensors like GSM, RFID, NRF, Flex Sensor, Servo Motor, etc, were controlled using Arduino.

Declaration

I hereby declare that the above information is accurate to the best of my knowledge and belief.