

Sharadindu Gopal Kirtania

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EDUCATION

- ❖ **Ph.D. in Electrical Engineering | University of Notre Dame | JUNE,2021- present**

- ❖ **Master of Science in Electrical Engineering | Washington State University | AUG,2019- MAY,2021**
 - **GPA: 4.00/4.00 (running)**
 - **Relevant Coursework:** RF Devices and Circuits (ECE 425), Advanced Antenna design (ECE 533), Lab on a Chip (ECE 501), and Experimental Methods for Electrical Engineering (ECE 525)

- ❖ **BS in Electrical and Electronic Engineering | Bangladesh University of Engineering and Technology | FEB,2011 – MAR,2016**
 - **GPA: 3.80/4.00 (top 13%)**
 - **Relevant Coursework:** Optoelectronics (EEE 459), Compound Semiconductor and Heterojunction devices (EEE 455), VLSI 1 and laboratory (EEE 453), Solid State Devices (EEE 413), Processing and Fabrication Technology (EEE 451), Electrical Properties of Materials (EEE 307), Biomedical Signal Processing, Digital Signal Processing and Laboratory (EEE 311), Engineering Electromagnetics (EEE 209).

RESEARCH EXPERIENCE

- **Graduate Research Assistant | University of Notre Dame**
 - **Nanoelectronic Devices and Circuits Lab | Advisor: Dr. Suman Datta**

- **Graduate Research Assistant | Washington State University**
 - **Nanomaterial Sensor Laboratory | Advisor: Dr. Praveen Sekhar**
 - Thesis:** Flexible microstrip antenna design and fabrication
 - Optimization of printing parameters with electrical properties and SEM surface morphology of Ag nanoparticles ink on flexible YSZ ceramic substrate.
 - Review of flexible antennas (during COVID-19 quarantine) and Working on a flexible bow-tie antenna with a full ground plane.

- **Bangladesh University of Engineering and Technology**
 - **Nanoscale Science and Technology Research Group | Advisor: Dr. Md. Kawsar Alam**
 - Thesis:** 3D Quantum Mechanical Simulation of AlGaIn/GaN HEMT: Study of Polarization Effect with a Novel Design.
 - Demonstrated a novel split donor technique to control the threshold voltage of AlGaIn/GaN HEMTs using a self-consistent Schrodinger-Poisson simulator.
 - Estimation of polarization charge and investigation and remedy of kink effect of AlGaIn/GaN HEMT.

SELECTED PUBLICATIONS (9)

- **Journals**
 - i) **S. G. Kirtania et al.**, "Flexible Antennas: A Review", *Micromachines*, vol. 11, no. 9, p. 847, Sep.2020. (<https://doi.org/10.3390/mi11090847>)
 - ii) **S. G. Kirtania**, M. A. Riheen, S. U. Kim, K. Sekhar, A. Wisniewska, and P. K. Sekhar, "Inkjet Printing on a New Flexible Ceramic Substrate for Internet of Things (IoT) Applications," *Micromachines*, vol. 11, no. 9, p. 841, Sep. 2020. (<https://doi.org/10.3390/mi11090841>)

- iii) Roy, S.; Kiratnia, S.G.; Roy, P.N.; Hasan, M.M.; Howlader, A.H.; Rahman, M.S.; Islam, M.R.; Rana, M.M.; Abdulrazak, L.F.; Mehedi, I.M.; Islam, M.S.; Hossain, M.B. Numerical Investigation into Optoelectronic Performance of InGaN Blue Laser in Polar, Non-Polar and Semipolar Crystal Orientation. *Crystals* **2020**, *10*, 1033. ([10.3390/cryst10111033](https://doi.org/10.3390/cryst10111033))
- iv) S. Roy, S. M., and **S. G. Kirtania**, "Optoelectronic Performance of Vertical Cavity Surface Emitting AlGaAs/GaAs QW Laser in Non-Conventional Orientation," *IJCA*, vol. 176, no. 6, pp. 37-42, Oct. 2017. ([10.5120/ijca2017915632](https://doi.org/10.5120/ijca2017915632))
- **Book Chapter**
 - v) M. N. A. Aadit, **S. G. Kirtania**, F. Afrin, Md. K. Alam, and Q. D. M. Khosru, "High Electron Mobility Transistors: Performance Analysis, Research Trend and Applications," in Different Types of Field-Effect Transistors - Theory and Applications, M. M. Pejovic and M. M. Pejovic, Eds. *InTech*, 2017. (<https://doi.org/10.5772/67796>)
- **Conferences**
 - vi) **S. G. Kirtania**, M. N. A. Aadit, and Md. K. Alam, "3D simulation of impact ionization induced kink effect in AlGaIn/GaN HEMTs: A novel split-channel design with asymmetric double gate for kink suppression," in 2017 3rd EICT, Khulna, Dec. 2017, pp. 1-6. ([10.1109/EICT.2017.8275186](https://doi.org/10.1109/EICT.2017.8275186))
 - vii) M. N. A. Aadit, **S. G. Kirtania**, and Md. K. Alam, "Dependence of threshold voltage on doped layer thickness in AlGaIn/GaN HEMT: An improved split donor E-mode design," in 2016 5th ICIEV, Dhaka, Bangladesh, May 2016, pp. 681-686. ([10.1109/ICIEV.2016.7760088](https://doi.org/10.1109/ICIEV.2016.7760088))
 - viii) M. N. A. Aadit, **S. G. Kirtania**, and Md. K. Alam, "Estimation of polarization charge in nitride-based MODFETs using differential threshold voltage technique," in 2016 3rd ICEEICT, Dhaka, Bangladesh, Sep. 2016, pp. 1-6. ([10.1109/CEEICT.2016.7873041](https://doi.org/10.1109/CEEICT.2016.7873041))
 - ix) M. N. A. Aadit, S. N. Juthi, and **S. G. Kirtania**, "Study and suppression of ambipolar effect in multilayer phosphorene tunnel field-effect transistors using double gate structure," in 2017 3rd EICT, Khulna, Dec. 2017, pp. 1-6, ([10.1109/EICT.2017.8275245](https://doi.org/10.1109/EICT.2017.8275245))

EXPERIMENTAL SKILLS

Transient measurements for analyzing ferroelectric polarization switching in MFM capacitor AND FeFET. Dc/pulsed current-voltage (I-V), Capacitance-voltage measurement(C-V), Inkjet Printing, Basic Photolithography.

EDA TOOLS

COMSOL Multiphysics, ANSYS HFSS, Keysight ADS, Python, MATLAB, CADENCE VIRTUOSO.

SELECTED PROJECTS:

- Multipurpose Voice Controlled Robotic Motion (Mar 2015),
- Implementation of Duckworth-Lewis Method Result Calculator for Cricket Matches using MATLAB (2013).
- Design of a 4 bit Universal Shift Register and 3 input XOR gate (with area minimization) in Cadence. (2015).

PROFESSIONAL EXPERIENCE

- **Cleanroom Assistant | Washington State University, Vancouver, WA (Aug 2020 – At present)**
 - Maintenance of all 3 bays, hallways of cleanroom with hands-on experience of basic photolithography.
- **Graduate Teaching Assistant, School of Engineering and Computer Science | Washington State University, Vancouver, WA (Aug 2019 – At present)**
 - TA courses: ECE 525 (Experimental Methods for Electrical Engineering), ECE 341 (Signals and Systems)
- **Lecturer, Department of EEE | Jashore University of Science and Technology. (Mar 2017-Aug 2019)**
- **Lecturer, Department of EEE | Daffodil International University. (Sep 2016-Mar 2017)**

AWARDS AND EXTRACURRICULAR ACTIVITY

- Honorable Mention in 19th Asia Pacific Math Olympiad, 2006.
- Champions in several regional and national **Mathematics, Astronomy and Chemistry Olympiad** from 2006 to 2010.
- Participate in the 1st International Olympiad on Astronomy and Astrophysics in Chiangmai, Thailand, 2007.
- University Merit Scholarship, Dean's List Scholarship for Level-2 and Level-4 of BS.
- Higher Secondary, Secondary, Junior and Primary Scholarship (Talentpool)