Mahamudul Hassan Fuad

Lecturer | Dhaka International University (DIU) | Dhaka, Bangladesh

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Education

Jan 2019 – Jun 2023 | **B.Sc. in Electrical and Electronic Engineering (EEE), Ahsanullah University of Science and Technology (AUST)**

- CGPA : **3.916/4.00** Rank : **4/150** (Top 2% of the class) | Focus : Electronics and Photonics
- Supervisor : Mr. Md Faysal Nayan
- Thesis : Performance Analysis of CNTFET & SRAM Designs for Future Memory Technologies

Test Score

Nov 2024 | **IELTS Score :** 6.5 (Listening-7.5, Reading- 6.0, Writing-6.0, Speaking-6.0)

Honors and Awards

Dean's List Award for academic excellence at all levels of undergraduate study (2019-2023)
University Merit Scholarship for academic excellence at undergraduate study (2019-2023)
Government Merit Based Scholarship Awarded based on Secondary School Certificate result (2016-2018)
Government Merit Based Scholarship Awarded based on Primary & Junior School Certificate result (2010-2016)

Research Interests

VLSI, Semiconductor Devices, Memory Devices, Nanoelectronics Devices, Device Fabrication, Photonics & Optics

Research Paper Publications (Google Scholar)

1. **2025** *"Comprehensive Analysis of Short-Channel Effects & Switching Speed in CNTFETs: A 2D Quantum Simulation Approach",* ***M. H. Fuad****, S.S. Noor, M. F. Nayan and R. R. Mahmud,* ***Elsevier (Results in Engineering),*** *https://doi.org/10.1016/j.rineng.2025.104513*
2. **2025** *"Comprehensive Performance Analysis of CMOS & CNTFET based 8T SRAM Cell",* ***M. H. Fuad****, M.F. Nayan, R. Yeassin, M.A. Raihan and R. R. Mahmud,* ***Elsevier (Journal of Electronic Science & Technology)****, https://doi.org/10.1016/j.jnlest.2025.100306*
3. **2025** *"Advances in surface plasmon resonance-based PCF & MIM sensors",* ***M.H. Fuad,*** *M.F. Nayan, R.R. Mahmud,* ***Springer (Plasmonics),*** *https://doi.org/10.1007/s11468-025-02796-w*
4. **2024** *"Performance Analysis of Graphene Field Effect Transistor at Nanoscale Regime" ,* ***M. H. Fuad****, M. F. Nayan, M. A. Raihan, R. Yeassin and R. R. Mahmud,* ***Elsevier (e-Prime - Advances in Electrical Engineering, Electronics and Energy)*** *100679. https://doi.org/10.1016/J.PRIME.2024.100679*
5. **2025** *"High sensitivity one-dimensional photonic crystal sensor design for waterborne bacteria detection", M. F. Nayan, M. A. Raihan ,T. Ahmed,* ***M. H. Fuad,*** *and R. R. Mahmud,* ***Springer (Sensing & Imaging),*** *Sens Imaging 26, 6 (2025). https://doi.org/10.1007/s11220-024-00532-y*
6. **2025** *"Simulation Analysis of a Highly Sensitive Biosensor for Early Detection of Cancer Cells Based on a 1D Photonic Crystal". N.A. Zaman, M.F. Nayan, M.A. Raihan,* ***M. H. Fuad****, T. Ahmed & R.R Mahmud, IOP Science (ECS Journal of Solid State Science & Technology), http://iopscience.iop.org/article/10.1149/2162-8777/adb5be*
7. **2024** *"A high-performance biosensor based on one-dimensional photonic crystal for the detection of cancer cells", M. F. Nayan, M. A. Raihan* ***,M. H. Fuad****, N.A.Zaman and R. R. Mahmud,* ***Springer (Optical and Quantum Electronics)****,Volume 56, article number 1968, https://doi.org/10.1007/s11082-024-07677-w*
8. **2024** *"Characterizing CNTFET Logic Gate and Adder Performance Trade-offs by considering CNT Tube Diameter and Dielectric Constant."* ***M. H. Fuad****, S. S. Noor, K. M. M. Hassan, M. Rahman, H. A. K. Labony and F. Nayan , 2023* ***IEEE 9th International Women in Engineering (WIE) Conference on Electrical and Computer Engineering (WIECON-ECE),*** *Thiruvananthapuram, India, 2023, pp. 206-211, doi: 10.1109/WIECON-ECE60392.2023.10456438.*
9. **2024** *"Quantum Insights into Dielectric Materials and Oxide thickness-Dependent Conductance in Single-Walled CNTFET: A Parametric Simulation Study",* ***M. H. Fuad,*** *M. F. Nayan, R. Yeassin, M. A. Raihan, S. S. Noor and R. R. Mahmud* ***2024 International Conference on Advances in Computing, Communication, Electrical, and Smart Systems (iCACCESS),*** *8-9 March, Dhaka, Bangladesh, pp. 01-06, doi: 10.1109/iCACCESS61735.2024.10499571.*

10. **2023** *"Design of a Vending Machine Using Verilog HDL and Implementation in Genus & Encounter",* ***M. H. Fuad****, R. Yeassin, K. M. M. Hassan, M. M. Sykot, and M. F. Nayan,* ***European Journal of Electrical Engineering and Computer Science****,vol.7,no.6, pp. 88–95, Dec. 2023, doi:10.24018/ejece.2023.7.6.595.*

Manuscript Under Review

1. *"Exploring the Impact of Dielectric and Geometric Modifications on CNTFET-Based SRAM Cells for Low-Power, High-Speed Nanoelectronics",* ***M. H. Fuad****, M. F. Nayan and R. R. Mahmud,* ***Elsevier (Sustainable Computing: Informatics and Systems)****,Under Review*
2. *"Impact of Material and Structural Parameters on the Performance of Advanced Low-Power CNTFET-Based SRAM Designs",* ***M. H. Fuad,*** *M. F. Nayan, M. A. Raihan and R. R. Mahmud,* ***Wiley (Int. Journal of Numerical Modeling Electronic Networks, Devices & Fields),*** *Under Review*
3. *"A Comprehensive Study of Quantum Transport Effects in Graphene Nanoribbon Field-Effect Transistors (GNRFET)",* ***M. H. Fuad****, M. F. Nayan, M. A. Raihan and R. R. Mahmud,* ***Elsevier (Memories - Materials, Devices, Circuits and Systems),*** *Under Review*

Professional Experience

Present — **Lecturer, Department of EEE, Dhaka International University (DIU).**
- Courses Taught : VLSI, Electrical Circuit I & II, Electronics -I, Numerical Analysis, Digital Logic Design

Oct 2023 – Present — **Part-time Lab Instructor, Department of ECE, North South University (NSU)**
- Courses Taught :Electrical Circuits, Analog Electronics, Digital Electronics, C++

Feb 2024 – Sep 2024 — **Adjunct Faculty, Department of EEE, Ahsanullah University of Science & Technology (AUST)**
- Courses Taught : Electrical Circuit-I Lab, Electronic Devices & Circuits Lab, Electrical Service Design Lab

Jan 2024 – Oct 2023 — **Lecturer, Department of ECE, Ahsanullah Institute of Information & Communication Technology (AIICT)**
- Courses Taught : Digital Signal Processing, Instrumentation & Measurement, Physics

June 2023

Research Experience

Feb 2025 – Aug 2023 — **Part-time Research Assistant, Department of EEE, Ahsanullah University of Science & Technology (AUST)**
- Project Investigator : Dr. Russel Reza Mahmud , Associate Professor, Dept. of EEE, AUST
- Co- Project Investigator : Mr. Md Faysal Nayan, Assistant Professor, Dept. of EEE, AUST
- Project Title : **Novel design & performance analysis of photonic crystal fiber sensors for medical & chemical applications .**

Major Courses

VLSI-I, VLSI-II, Fabrication & Process Technology, Solid State Device, Electrical Properties of Materials, Electromagnetics, Computer Architecture, Multimedia communication, Digital Signal Processing, Power System-I ,Power System-II, Power Plant Engineering, Power Electronics, Control System-I.

</> Competitions

Nov 2022 Grand Finalist, "VLSI Design Competition 2022" Sponsored by Neural semiconductor.
Sep 2022 Semi-finalist ,"VLSITHON 1.0 " Present by ULKASEMI & United International University (UIU).
Jan 2023 Participated "EEE Day-2023 VLSI Competition" in Bangladesh University of Engineering & Technology.
Mar 2020 Participated AUST MINDSPARK Competition 2020 in AUST

</> Technical Skills

- Cadence Virtuoso
- Cadence Genus, Encounter
- Modelsim, MATLAB
- COMSOL Multiphysics
- PSpice, Proteus, LT-spice Quartus, Arduino
- C/C++,AutoCAD
- Simulink , Advance Design System (ADS)
- Latex, Origin Pro, MS Office

Leadership Activities

Present — **Co-Advisor**, EEE Club, Dhaka International University (DIU)
- Organized Invited Talk and Distinguished Lectures of Renowned Researchers from Academia and Industry.

Feb 2024 – Jan 2023 — **Joint Secretary**, AUST EEE Society
- Organized different cultural events & seminars for undergraduate students

Sep 2022 — **Executive Member** of AUST Robotics Club.
- Arranged different robotics related workshops & competitions.

Dec 2022 – Dec 2021
- Executive committee member one of the biggest national events (AUST Rover Challenge-2022)