

# M Rifat Hossain

Home: 180/b, Khanom Tower, Titash Road, East Rampura, Dhaka-1219, Bangladesh

m.rifathosn@gmail.com | +880 1601-572251 | Website | LinkedIn | Github | ResearchGate

## Research Interests

---

- ✓ Optoelectronic Devices
- ✓ FPGA
- ✓ VLSI

## Education

---

**Shahjalal University of Science and Technology, Sylhet**

Jan 2019 – Apr 2024

B.Sc. in Electrical and Electronic Engineering

- CGPA: 3.52/4.00
- **Focus:** Optoelectronics

## Publications

---

- **M. R. Hossain**, M. A. A. Chowdhury, and M. S. Hossain, "Digital data encryption and decryption following the Enigma Machine technology and designing of a Cipher IC" in International Conference on Electrical and Computer Engineering (ICECE 2024) (Submitted Conference Paper)
- R. Zakaria, A. Mahmood, **M. R. Hossain**, et. al., "Design and Implementation of a Light-duty Electric Vehicle Incorporated with Wireless Charging System" (Ongoing Journal Article)

## Research Work

---

- Design and Simulation of PIN Double Heterostructure GeSnC LED (Undergraduate Thesis)
  - Simulating LED with new material GeSnC and determining its usage
  - Completion date: Mar 2024
- Design and Implementation of a Light-duty Electric Vehicle Incorporated with Wireless Charging System
  - Wireless Power Transfer using induction technology
  - Building a basic light-duty EV
  - Completion date: Nov 2023
- Wireless Communication System over N-Byte AES Encrypted Channel
  - Audio encoding and decoding
  - Encryption-Transfer-Decryption systems
  - Completion date: Jan 2023
- Enigma Encrypted Wireless Communication Device (ongoing)
- Atmospheric Oxygen Meter determining the oxygen level from the amount of infrared (580-1270 nm) light absorption (ongoing)

## Projects

---

- EESMS: Enigma Encrypted SMS & Group Chat (ongoing)
- PSystem Library: A C++ library for determining power system properties (i.e., Z-bus, Y-bus, Load flow)
- Guitar Tuner using Arduino
- hugeMath.JS: A calculator in which any datatype's value range does not bound operations.
- A game company website development
- Patient DBMS for Ayesha Homeo Clinic

## Experience

**Undergraduate Research Assistant,**  
Shahjalal University of Science and Technology, Sylhet

Aug 2022 – Nov 2023

- Project Completion: Design and Implementation of a Light-duty Electric Vehicle Incorporated with Wireless Charging System
- Reaching to media personnel
- Confronting TV interview

**Industrial Trainee,** Training Institute for Chemical Industries (TICI), Narshingdi

Sep 2023

- Hands-on experience with industrial equipment
- Gaining skills in Instrumentation and Control Engineering

## Technical Skills

<b>COMSOL Simulation</b> Having experience in creating photodiode, phototransistor, and LED using custom-made semiconductor material (for example GeSnC); Building 1D, 2D, Axisymmetric, and 3D geometry on various complexity; Custom meshing that helps to reach an optimal state (on both the required time and quality) in simulation.	<b>Xilinx Vivado</b> Coding on an FPGA (i.e., designing a cipher IC that mimics the properties of the enigma machine) using Verilog and their performance analysis (size, power consumption, etc.).
<b>Circuit Simulation (LTSpice, Simulink)</b> Being used to simulate various analog circuitries.	<b>Programming Languages</b> C++, Python, Java, Verilog, Assembly (8086), MATLAB, SQL, PHP, Godot
<b>PCB Design (KICAD)</b> Able to design PCBs with preset components along with custom symbols and footprints.	<b>Frameworks</b> Arduino, .NET, Bootstrap, Mkdocs, Tkinter, Pandas, Scikit-learn

## Standardized Test Scores

GRE: Quant - 166, Overall - 305

TOEFL: Overall - 98 (R-27, L-27, S-23, W-21)

## Language Proficiency

Bangla	Native
English	Fluent

## Awards/Achievements

- Certificate of Excellence: for holding the esteemed position of General Secretary, EEE Society, SUST - 2023
- Secured CGPA 4.00 (A+) in industrial training at Training Institute for Chemical Industries (TICI), Narshingdi - Sep 2023
- Certificate of Appreciation: for serving as the Vice President of Shahjalal University Speakers Club (SUSC) - (Mar 2022 - Nov 2023)
- Silver Medalist in National Olympiad in Software Innovation (NOSI) - 2014