

M Rifat Hossain

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Objective

A graduate fresher with the experience of being an undergraduate research assistant for a year – aiming to become a good researcher and a better academician. I have experience working with high-level to low-level programming languages, designing/simulating optoelectronic devices, logic/circuit design of ICs using Verilog, and executing the design practically on FPGA, which I plan to implement to good use.

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

COMSOL Simulation 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.	Xilinx Vivado 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.).
Circuit Simulation (LTSpice, Simulink) Being used to simulate various analog circuitries.	Programming Languages C++, Python, Java, Verilog, Assembly (8086), MATLAB, SQL, PHP, Godot
PCB Design (KICAD) Able to design PCBs with preset components along with custom symbols and footprints.	Frameworks Arduino, .NET, Bootstrap, Mkdocs, Tkinter

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