SAZZADUL ISLAM

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EDUCATION

Bachelor of Science (B.Sc.) in Electrical and Electronic Engineering,
Bangladesh University of Engineering and Technology (April 2019 – June 2024)
Major – Electronics
CGPA – **3.9515** / 4.00

RESEARCH INTEREST

Quantum Transport, 2D Materials, Machine Learning, Deep Learning, Device Physics

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PUBLICATIONS

Sazzadul Islam[1], Mahbub Alam,PhD[2] **"*Tight Binding Hamiltonian Parameter Extraction and I-V Characteristics of FET device formed by 13 AGNR using Machine Learning Method"* Proceedings of 6th ELECTRICAL ENGINEERING AND INFORMATION & COMMUNICATION TECHNOLOGY (ICEEICT 2024) *[Accepted]*

RESEARCH EXPERIENCE

Research Supervisor: Dr. Mahbub Alam
Title: Tight Binding Hamiltonian Parameter Extraction and I-V Characteristics of 13 AGNR using Machine Learning Method

Abstract: — The Hamiltonian of a unit cell, coupling matrices and the device can be used to find electronic properties like the band structure of a material and the I-V characteristics of the device. As new materials are emerging all the time, it is essential to know the electronic properties of these materials with the help of a unit cell or device Hamiltonian. In this paper we have used a machine learning method to generate the Hamiltonian matrix and the coupling matrices of the unit cell of 13 Armchair Graphene Nanoribbon (AGNR) from the energy band data found from Density Functional Theory. This machine learning generated Hamiltonian of 13-AGNR has been used to find the I-V characteristics of a Nano-FET device and this I-V characteristics has been compared with the already existing results.

KEY SKILLS

- Programming Language   : C, C++, Matlab, Python
- Framework and Libraries   : Pandas, Numpy, Matplotlib, Keras, Tensorflow,
                               Scikit-Learn, App Designer (Matlab)
- Simulation Software/Tools : Spice Circuit Simulator, CYME PSAF, Proteus, Cadence
                               Virtuoso, Cadence NC-Sim, EDA Playground, Matlab Simulink
- Drafting Tool   : Autocad 2007
- Computer Proficiency   : MS Office, Windows OS
- Web Development   : HTML 5
- Hardware & Embedded System : STM-32, FPGA Module, ATMEGA Microcontroller
- Language Proficiency   : English, Bangla

PROJECTS

- Ordinary differential equation solver and filter design using MATLAB [Files]
- Voice based attendance system using Machine Learning (KNN) [Files]
- Line Following and Obstacle Avoider Robot using PID controller [Files]
- Message Transmission through LASER [Files]
- Analytical Behavior of HVDC Under Normal and Faulty Conditions [Files]
- Speed Control of DC Motor with Feedback from Digital Tachometer [Files]
- IOT based door lock system [Files]
- Low Dropout Regulator (LDO) design [Files]
- Electronic Fuse Design using Op-amp [Files]
- Four ways traffic controller using Digital Logic Design [Files]
- Nine story building design in AutoCAD [Files]
- I2C bus protocol using Verilog [Files]
- Experimental setup to measure L-I characteristics of LED [Files]

AWARDS AND ACHIEVEMENTS

- Dean's List Award, January 2019
- Dean's List Award, July 2021
- Dean's List Award, January 2022
- Scholarship for University of Merit, January 2019
- Scholarship for University of Merit, January 2020
- Scholarship for University of Merit, January 2021
- Scholarship for University of Merit, July 2021
- Scholarship for University of Merit, January 2022
- Scholarship for University of Merit, July 2022
- Admission Test Scholarship, January 2019
- Scholarship for University of Merit, January 2023
- First Runners-up, BUET EEE Olympiad, March 2023
- Talent Pool Scholarship on Secondary School Certificate Result 2016, Board of Intermediate and Secondary Education, Chattogram (7th in board)
- General Scholarship on Higher Secondary School Certificate Result 2018, Board of Intermediate and Secondary Education, Chattogram
- Meritorious Student in Kazi Nazrul Islam Hall Award, March 2024

CORE COURSES

- Analog Integrated Circuits
- VLSI circuits and Design
- Digital signal Processing
- Digital Logic Design
- Compound Semiconductor Devices
- Microprocessors and Embedded Systems

- Process and Fabrication Technology
- Communication Systems (2 Courses)

- Power Transmission and Distribution
- Electrical Service Design
- Power System - 1
- Energy Conversion (2 Courses)
- Power Electronics
- Electrical and Electronic Circuits (4 Courses)
- Control System
- Semiconductor Device and Materials (5 Courses)

EXTRA CURRICULAR ACTIVITIES

- Membership Development Coordinator (2022-2023)
- Deputy Head of Event Management (2023-2024)
- Intern, Inovace Technologies (Nov,2023-Dec,2023)

REFERENCES

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