MD. SAMIUL ISLAM SAGAR

mdsamiulislam.sagar@wsu.edu

RESEARCH INTERESTS:

Intelligent Sensor Design and Fabrication, Machine Learning, Antenna Technology, Automation, Robotics.

EDUCATION

Washington State University, Vancouver, United States (Current institution)
MS, Electrical Engineering, May 2023 (possible graduation date)
CGPA: 4.00 out of 4.00 (to date)
Research Topic: Implementation of data-driven algorithms to compensate drift in intelligent E-nose systems and Antenna technology.
Supervisor: Dr. Praveen Sekhar. (Nanomaterials-Sensor Laboratory | Washington State University (wsu.edu))
Related coursework: Experimental methods of EE, Advanced antenna design, Computational Mathematics: FEM.

Khulna University of Engineering and Technology (KUET), Bangladesh
BSc, Electrical and Electronic Engineering, March 2019
CGPA: 3.57 out of 4.00
Thesis: Design and Construction of IOT Based Energy Meter with Complete Bypass Protection and Demand Side Load Management.
Supervisor: Dr. Md. Rafiqul Islam. (https://kuet.ac.bd/eee/mri/)
Related coursework: Signals and systems, Digital Image Processing, Microprocessor and peripherals, Microwave engineering.

PROFESSIONAL EXPERIENCE:

AIMS Lab, United International University, Bangladesh.
Research Engineer (Nov, 2020 - Jan, 2021)
Project: Bolte Chai- An Augmentative and Alternative Communication (AAC) technology for Nonverbal Children.

CMED Health Ltd., Bangladesh.
Junior Data Analyst (Feb, 2021 - Jul, 2021)

PUBLICATIONS:

1. **Md. Samiul Islam Sagar**, Hassna Ouassal, Asif I. Omi, Anna Wisniewska, Harikrishnan M. Jalajamony, Renny E. Fernandez, and Praveen K. Sekhar. 2021. **"Application of Machine Learning in Electromagnetics: Mini-Review"** Electronics 10, no. 22: 2752. https://doi.org/10.3390/electronics10222752
2. B. Younes, **Md Samiul Islam Sagar**, Asif Iftekhar Omi, Noah Riley Allison, Danielle Gedlick, and Praveen Kumar Sekhar. **"High Temperature Antennas: A Review."** Progress in Electromagnetics Research B 95 (2022): 103-121.
3. Md Mostafizur Rahman Komol, **Md Samiul Islam Sagar**, Naeem Mohammad, Jack Pinnow, Mohammed Elhenawy, Mahmoud Masoud, Sebastien Glaser, and Shi Qiang Liu. 2021. **"Simulation Study on an ICT-Based Maritime Management and Safety Framework for Movable Bridges"** Applied Sciences 11, no. 16: 7198. https://doi.org/10.3390/app11167198
4. Sourin Dey, **Md Samiul Islam Sagar**, and Md Ashraful Alam. **"Region Based Convolutional Neural Network for Smart Driving Monitoring System."** In 2019 5th International Conference on Advances in Electrical Engineering (ICAEE), pp. 555-559. IEEE, 2019. (Venue: Bangladesh)
5. **Md. Samiul Islam Sagar**, Noah Riley Allison, Harikrishnan Muraleedharan Jalajamony, Renny Edwin Fernandez, and Praveen Kumar Sekhar. **"Modern Data Analysis in Gas Sensors: A Mini-Review."** Journal of The Electrochemical Society. (Under review)
6. **Md. Samiul Islam Sagar**, A. I. Omi, M. M. H. Sajeeb, B. Younes, T. Karacolak and P. Sekhar, **"A New Analytically Designed UWB Microstrip Patch Antenna for Future 5G and 6G Applications"**, 2023 United States National Committee of URSI National Radio Science Meeting (USNC-URSI NRSM), 2023. (Under review)
7. Abdul Rakib Hossain, **Md. Samiul Islam Sagar**, Nghi Tran, Praveen Kumar Sekhar, Tutku Karacolak. **"Inkjet Printed Flexible High Isolation Patch Antenna for 5.8 GHz Full Duplex Applications."** Progress in Electromagnetics Research. (Under review)
8. B. Younes, A. I. Omi, **Md. Samiul Islam Sagar**, M. M. H. Sajeeb, T. Karacolak and P. Sekhar, **"A Physically Compact Coplanar Waveguide (CPW)-fed Flexible Antenna for mmWave 5G Applications"**, 2022 12th International Conference on Electrical and Computer Engineering (ICECE), Bangladesh, 2022. (Under review)

SKILLS:

- Experience in Inkjet printing, HFSS design and simulation, Photolithography, Sputtering, Cleanroom research.
- Programming: Proficiency in C, C++, Matlab, and Python.
- Mathematics: Good in Linear Algebra, Differential Equation, FEM, and Probability analysis.
- Computers and Electronics: Autodesk Eagle, MATLAB, Simulink, microprocessor and microcontroller system design, Solidworks.

PROJECTS:

- **CPW-fed Super Wideband Antenna:** A Rogers RT/Duroid 5880 substrate CPW-fed super wideband antenna has been designed as a course requirement. The antenna working frequency range has been simulated using Ansys HFSS software from 4.68GHz to 110GHz which falls under C, X, Ku, K, Ka, Q, V, and W bands including mmWave.
- **Data Augmentation based Supervised Extreme Learning Machine for Drift Compensation in Gas sensor systems:** An augmented CNN to extract neighborhood features from sensor data to ameliorate the drift condition of E-nose based gas sensing systems.
- **Significance Analysis using ANOVA:** The significance of the features in case of sensor drifting occasion has been investigated using ANOVA as a course requirement. The ANOVA provided important information about the significance changes of different features during the sensor drifting event.
- **Power Flow Optimization:** A Gurobi based power flow optimization project for extended loading condition for future load expansion has been done as a course requirement. The project provided the optimal solution for a standard IEEE 6 bus system in case of future load expansion scenario.
- **Green Car:** A system designed for reduction of the emission of CO2 from automobiles with the help of biological elements (Algae). The green tube is referring to the Algae storage where the filtered exhaust gas will be sent and Oxygen will be created by the photosynthesis which will then be provided in the engine for increasing efficiency. This project was sort-listed by the Microsoft-Young Bangla Internship Program, 2017.
- **IoT Based Smart Wheel Chair:** A model of a Wheel chair designed for disabled person having the features of IoT based monitoring system of medical parameters (heartbeat, blood pressure, temperature) with GSM based location tracking system and alarm system for emergency health situation.
- **Color Based Object Recognizer Robotic Arm:** It is a model of industrial robotic arm which can sense color and make decision of where to put an object of specific color. This project competed in an inter-university industrial robotic arm competition organized by BUET, Bangladesh.
- **Project Retro-Pi:** A gaming interface for classic retro games using Raspberry Pi. The project was implemented in a workshop on Raspberry Pi organized by the FABLAB, KUET.

ACHIEVEMENTS:

- **2nd Runners-up**, Intra KUET Math Olympiad, 2015.
- **Judge**, Horizon: MATLAB Mania (Inter-university MATLAB competition), KUET, 2020.

APTITUDE AND LANGUAGE TESTS:

- **GRE:** 302 (Quant-156, Verbal-146, AWA-3)
- **TOEFL:** 93 (Speaking-24, Reading-27, Listening-21, Writing-21)

EXTRA-CURRICULAR ACTIVITIES:

- **General Secretory of KUET Math Club,** arranging Math Olympiads and managing club activities throughout the year.
- **Mentor of EEE Makers' Hub of KUET,** arranging different technical skill based workshops and mentoring them.
- **Office Secretary on IRAS, KUET,** arranging different research and innovation based workshops and mentoring them.
- **Class Representative for 3 terms (of 8 terms in total BSc program).**
- **Regular blood donor of DREAM, a voluntary club for blood donation of KUET.**

ONLINE CERTIFICATIONS:

- Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning by deeplearning.ai on Coursera.
- Machine Learning by Andrew Ng from Stanford University on Coursera.
- The Unix Workbench on Coursera.
- Sequence Models by deeplearning.ai on Coursera.
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization by deeplearning.ai on Coursera.
- Cybersecurity Essentials by Cisco Networking Academy organized in American International University-Bangladesh.

Personal Website:

Please visit **Md. Samiul Islam Sagar**