Sriman Bidhan Baray

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Education

University of Georgia *Athens, GA, USA*

PhD in Engineering *Jan 2024 - Present*

- **CGPA: 4.00** (out of 4.00)

University of Dhaka *Dhaka, Bangladesh*

Bachelor of Science in Electrical and Electronic Engineering *Jan 2018 - Feb 2023*

- **CGPA: 3.73** (out of 4.00)

Capstone Project: Reading activity detection from EOG data in the wild

Machine learning, Deep Learning, Biomedical Signal

- Analyzed time-series data (Electrooculogram, accelerometer, gyroscope) collected from smart eyeglasses to detect 4 different reading activities.
- Used Spectrogram images in conjunction with machine learning and deep learning.

Publications

Journal Articles

- ***Sriman Bidhan Baray***, Mosabber Uddin Ahmed, Muhammad E. H. Chowdhury, and Koichi Kise. EOG-Based Reading Detection in the Wild Using Spectrograms and Nested Classification Approach. in IEEE Access, vol. 11, pp. 105619-105632, 2023, doi: 10.1109/ACCESS.2023.3316032.
- ***Sriman Bidhan Baray***, Mohamed Abdelmoniem, Sakib Mahmud, Saidul Kabir, Md. Ahasan Atick Faisal, Muhammad E. H. Chowdhury and Tariq Abbas. Automated Measurement of Penile Curvature using Deep Learning based Novel Quantification Method. Frontiers in Pediatrics - Pediatric Urology. 2023 Apr 17;11:1149318. https://doi.org/10.3389/fped.2023.1149318

Conference Proceedings

- Purnata Saha, Md. Morshed Alam, Malisha Islam Tapotee, ***Sriman Bidhan Baray***, and Md Atiqur Rahman Ahad. 2021. An Empirical Approach for Human Locomotion and Transportation Recognition from Radio Data. UbiComp-ISWC '21, Association for Computing Machinery, New York, NY, USA, 390–395. https://dl.acm.org/doi/10.1145/3460418.3479384
- Promit Basak, Shahamat Mustavi Tasin, Malisha Islam Tapotee, Md. Mamun Sheikh, A. H. M. Nazmus Sakib, ***Sriman Bidhan Baray***, and M. A. R. Ahad. 2020.Complex nurse care activity recognition using statistical features.UbiComp-ISWC '20, Association for Computing Machinery, New York, NY, USA, 384–389. https://dl.acm.org/doi/abs/10.1145/3410530.3414338

Work Experience

University of Georgia *Athens, GA, USA*

Graduate Research Assistant *January 2024 - Present*

- Working as a Graduate Research Assistant (GRA) in the Information Processing and Sensing (IMPRESS) lab (link:https://impress.engr.uga.edu/) under Dr. Mehmet Kurum.
- I am doing research in microwave remote sensing, focusing on soil moisture estimation using UAS-based GNSS-R technology.

BRAC University *Dhaka, Bangladesh*

Adjunct Lecturer *June 2023 - Nov 2023*

- Working as an adjunct lecturer for Summer 2023 at the Department of Computer Science and Engineering at BRAC University.
- Responsibilities include delivering lectures, conducting lab classes, preparing questions and grading answer scripts.
- Teaching: CSE250 Circuits and Electronics (Theory and Lab), CSE251 Electronic Devices and Circuits (Lab), CSE350: Digital Electronics and Pulse Techniques (Lab)

Qatar University Machine Learning Group *Doha, Qatar (Remote)*

Research Assistant *Sep 2022 - Sep 2023*

- Working under **Dr. Muhammad E.H. Chowdhury** in the Carotid Artery project to detect the inner and outer walls of the arteries from MRI images and classify atherosclerosis cases.
- Developed an automated system to estimate the penile curvature angle of hypospadias patients from captured 2D images.
- Python Libraries used: PyTorch, NumPy, OpenCV, Matplotlib, Pandas, Scikit-learn

DataSoft Manufacturing and Assembly Inc. Ltd. *Dhaka, Bangladesh*

Part-time Engineer *Apr 2021 - Jan 2022*

- Built a prototype telemedicine website using Django to real-time monitor the Heart Rate, Blood Pressure, Oxygen Saturation, and Temperature.
- Worked with the hardware team to design firmware that allowed integrating sensors with the central device and sending data to the IoT backend.
- Responsibilities included Python with Django, C++, HTML, CSS, GitHub, Arduino, ESP32.

Skills

Programming	Python (TensorFlow, PyTorch, Pandas, NumPy, Scikit-learn, Django, etc.), C/C++, HTML/CSS, MATLAB, SQL
Platforms	VS Code, Jupyter Notebook, MATLAB, DB Browser, GitHub, AutoCAD, PSpice
Micro-controllers	Arduino, ESP32/ESP8266

Projects

BeShuddho: A Tank based water filtration system

Control System, Water filteration *July 2022*

- Built an automated system that detects incoming water flow to automatically turn on the filtration process.
- Integrated 3-stage water filtration: UV disinfection, chlorination, and sediment filtration.
- Coordinated a team of 10 IEEE SIGHT volunteers.

Traffic Detection in Dhaka

Artificial Intelligence, Custom Object Detection, Image Processing *Dec 2020*

- Detected 22 different types of transports (Custom Object Detection) from captured images in Dhaka city.
- Used deep learning with YOLOv5 and EfficientDet frameworks.

Facial Expression Recognition with Keras

Deep Learning, Computer Vision *Oct 2020*

- Classified 7 different emotions from facial expressions (surprise, happy, sad, neutral, angry, disgust, fear) from real-time video stream using Deep-learning.

Corona affected Dhaka Map

Data mining, Data representation *May 2020*

- Scraped the website of iedcr.gov.bd, which presented regular Covid-19 updates in Bangladesh, to calculate the number of affected in different regions of Dhaka and present the data on a map with severity indication.

Achievements

2022	**Outstanding Participation Award**, IAPR/IEEE Winter School on Biometrics 2022	*Shenzhen, China*
2021	**Funding Award (1479$),** Projects Focused on Pressing Community Needs, IEEE HAC/SIGHT	*IEEE R10*
2021	**2nd Place**, Sussex-Huawei Locomotion Challenge 2021, ACM Ubicomp 2021	*Virtual, Global*
2021	**Second Best Paper award**, IEEE Computer Society Bangladesh Chapter Winter Symposium 2021	*Bangladesh*
2021	**Top 30 among 1035 ideas**, Mujib 100 Idea Contest 2021, University Grant Commission	*Bangladesh*
2020	**2nd Place**, 2nd Nurse Care Activity Recognition Challenge, ACM Ubicomp 2020	*Mexico*
2020	**3rd Place**, DhakaAI 2020: AI-based Dhaka Traffic Detection Challenge	*Bangladesh*
2020	**Champion**, National Hackathon on Frontier Technologies, ICT Division	*Bangladesh*
2018	**First Runner Up**, Line Follower Race, Technival'18, KUET	*Bangladesh*
2018	**Second Runner Up**, LFR Speed Battle, Techfest'18, DUET	*Bangladesh*
2018	**Winner**, Robo-Race, SCSE, DU	*Bangladesh*

Invited Talks

Workshop Designer and Instructor *Dhaka, Bangladesh*

Workshop on Basics of Microcontrollers: Make Your First Arduino Project *July 30, 2022*

- Designed and co-instructed the day-long workshop where 15 participants (1st and 2nd Year undergraduate students) took part in 5 teams. The hands-on workshop included the basics of microcontrollers, sensors, and actuators.
- Judged the after-workshop assignment where each team had to build a prototype toll collection system.

Instructor *Lalmonirhat, Bangladesh*

Basics of Robotics, KUP Innovation Fair 2019 *August 31, 2019*

- Introduced the concept of Robotics and computer programming to students (Grade: 6 to 10) from 12 high schools in Kaliganj sub-district.
- Took part in the evaluation of the student projects in the science fair.

Voluntary Experiences

IEEE SIGHT Student Branch University of Dhaka *Dhaka, Bangladesh*

Vice-Chair (2020-21), Chairperson (2021-22)

- Managed the project funds, tracked and documented the regular transaction as required for the ongoing projects.
- Actively mentored 19 volunteers for 3 different projects. Led a team of 7 members to arrange seminars, workshops, and other activities to promote humanitarian activities. Achieved the highest number of student members (103) the student branch chapter ever had.

IEEE Student Branch University of Dhaka *Dhaka, Bangladesh*

Vice-Chair (2021-22)

- Coordinated and co-hosted 20+ physical and online events (workshops, seminars, webinars, and competitions) including an outreach program at Savar Cant. Public High School and College.
- Received IEEE R10 Exemplary Branch Award in 2022.

Standardized Tests

GRE	318 (Quant: 168, Verbal: 150, AWA: 4.0)
IELTS	Overall 7 (Speaking 7, Reading 7.5, Listening 7.5, Writing 6.5)