# ARIYAN HOSSAIN

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## EDUCATION

**Bachelor of Science in Computer Science and Engineering**  *Jan 2020 – Nov 2023*
*Brac University, Dhaka, Bangladesh*
GPA: 4.0/4.0 | 19 A+ (Marks: 97%-100%), 26 A (Marks: 90%-96%)

**General Certificate of Education Advanced Level (Cambridge)**  *May 2019*
*Sunnydale, Dhaka, Bangladesh*
3 A* (Marks: 90%-100%)

**General Certificate of Education Ordinary Level (Cambridge)**  *May 2017*
*Sunnydale, Dhaka, Bangladesh*
5 A (Marks: 80%-90%), 2 B (Marks: 70%-80%)

## RESEARCH & PUBLICATION

**Exploration and Mitigation of Gender Bias in Word Embeddings from Transformer-based Language Models** | *Undergraduate Thesis*  *Nov 2022 - Nov 2023*
- Supervisor: Dr. Farig Yousuf Sadeque
- Detected gender bias in different transformer models -BERT, RoBERTa, DistilBERT, ALBERT
- Introduced a novel metric and continued pretraining on gender balanced datasets to mitigate the bias
- Publication: **Hossain, A.**, Hannan, K. M. A., Haque, R., Musarrat, H., Rafa, N. T., Islam, S. B., Dipu, S. A., Sadeque, F. Y. (2023). *Exploration and Mitigation of Gender Bias in Word Embeddings from Transformer-based Language Models.* Manuscript submitted for publication.

## EXPERIENCE

**Graduate Research Assistant**  *Nov 2023 – Present*
*Department of Computer Science and Engineering, Brac University*
- Job Type: Full-Time (40 Hours / Week)
- Supervisor: Dr. Muhammad Nur Yanhaona
- Currently working on identifying framing media bias in news articles and extracting and linking events using Machine Learning and NLP

**Undergraduate Teaching Assistant**  *Oct 2022 – Aug 2023*
*Department of Computer Science and Engineering, Brac University*
- Job Type: Part-Time (15 Hours / Week)
- Course Taught: Algorithms
- Responsibilities: Gave consultations to students, Took labs of student and assisted them, Graded copies of students

## PROJECTS

**Explainable Detection of Online Sexism using NLP** | *NLP Project-1*
- Classified online texts as sexist or non-sexist using CNN, biLSTM, GRU

**Sentiment Analysis using NLP** | *NLP Project-2*
- Classified IMDB reviews as positive or negative using Naive Bayes, Logistic Regression, LSTM

**Exploring Traditional CNNs with Different Activation Functions and Convolutional Layers** | *Neural Network Project*
- Identified images using CNN with different activation, filters, kernel, stride and compared

**Wine Quality Prediction using ML** | *Artificial Intelligence Project*
- Predicted quality of wine using Random Forest Classifier, Logistic Regression, Naive Bayes Classifier, SVM

**DisasterGuard - Home Security System using Arduino and Sensors** | *Computer Interfacing Project*
- Created a device using sensors and arduino for home security system
- Detects earthquake, gas leakage, smoke and intruder and alerts users through SMS and buzzer

**Parking Management System Website** | *Software Engineering Project*
- Created parking management that shows parking information, total revenue and generates parking slip
- Used CSS, HTML, PHP, MySQL. Unit Tested using PHPUnit. Followed MVC design pattern

**Pet Care Website** | *System Analysis and Design Project*
- Created pet care system with food, medicine, grooming and cleaning, veterinarian and adoption services
- Used CSS, HTML, PHP, MySQL, JavaScript

**Network Infrastructure using Packer Tracer** | *Computer Networks Project*
- Designed a network topology using Cisco Packet Tracer
- Implemented VLSM, Web Server, DNS Server, Email Server, DHCP, Static-Floating-Dynamic Route

**A 4-bit ALU performing operations implemented using Verilog HDL** | *VLSI Design Project*
- Constructed a 4-bit ALU to perform RESET, XOR, SUB, NAND, ADD using Quarus and Verilog HDL

## SKILL SET

**Coursework**: Data Structures and Algorithms, Machine Learning, Natural Language Processing, Neural Networks, Computer Networks, Database Management System, Computer Interfacing, Software Engineering

**Programming Languages**: Python, Java

**Other Languages**: MATLAB, x86 Assembly, Bash, Verilog, LaTeX

**Web Programming**: HTML, CSS, PHP, JavaScript, MySQL

**Libraries**: Tensorflow, PyTorch, Transformers, Keras, Scikit-learn, Pandas, NumPy, Matplotlib, NLTK

**Language Proficiency**: Fluent in English and Bengali

## ACHIEVEMENTS

- Brac University **Performance Based 100% Scholarship** for having CGPA 4.0/4.0
- Brac University **Vice Chancellor's List** for 10 times during Bachelor's for achieving a GPA of 3.90-4.00
- Outstanding Cambridge Learner Awards for **World Highest Marks (100%)** in AS Level Mathematics
- The Daily Star Award for **A Level Outstanding Results** for having a minimum of 3 A's in A level

## EXTRACURRICULAR ACTIVITIES

**Event Manager in Brac University Indoor Games Club**

*Brac University*
- Arranged player bidding for tournaments
- Member of BracU Basketball Team (Center Position)

**Event Manager in Brac University Computer Club**

*Brac University*
- Managed events and participated in Competitive Programming Contests

## VOLUNTARY WORK

**Durnibar Foundation** | *Non-profit Charity Organization*
- Led a group of volunteers to collect money for winter clothes and distribute them to the poor

## REFERENCE

**Dr. Farig Yousuf Sadeque**
*Assistant Professor, Brac University*
farig.sadeque@bracu.ac.bd

**Shoaib Ahmed Dipu**
*Lecturer, Brac University*
shoaib.ahmed@bracu.ac.bd