Shreya Adrita Banik

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Research Interests: Natural Language Processing, Machine Learning, Image Processing

Experience

- **Adjunct Lecturer** *Jun 2025 – Sept 2025*
  CSE Department, BRAC University Dhaka
  – Taught Algorithms, Digital Logic Design and Digital Systems Disign/Robotics, reinforcing theoretical concepts through practical application. Mentored 150+ students, offering over 6 hours of weekly academic consultation and individual support

- **Product Development & Research Intern** *Apr 2025 – Jun 2025*
  Grameenphone Ltd. Dhaka
  – Worked on AI integration and development of Payment Orchestration Layer of different digital platforms of Grameenphone Ltd under Digital Platform, Payment and Partnership Department

- **Teaching Assistant/Student Tutor** *2022 – 2025*
  CSE Department, BRAC University Dhaka
  – Provided academic support to students taking Data Structures, Programming Language I and II, Numerical Methods course. Mentored 100+ students by giving consultation 15 hours each week

- **Math Instructor and Content writer** *2021 – 2022*
  UDVASH Academic and Admission Care Dhaka
  – Taught General Math for Secondary School Certificate Exam candidates. Helped to create English Version Chemistry teaching content

Education

- **Bachelor of Computer Science and Engineering** *Jun 2021- Jan 2025*
  BRAC University, Dhaka CGPA: **3.98/4.00**

- **Higher Secondary Certificate Exam** *2020*
  Viqarunnisa Noon School & College, Dhaka GPA: **5.00/5.00**

- **Secondary School Certificate Exam** *2018*
  Mohammadpur Preparatory School & College, Dhaka GPA: **5.00/5.00**

Technical Skills

Languages: Python, Java, C/C++, Bison/Flex, Bash, MySQL, Javascript, HTML+CSS
Frameworks: PyTorch, ReactJS, Git, LaTeX, Wireshark
Libraries : Sklearn, Pandas, Matplotlib, Seaborn
Web Dev Tools: Nodejs, VScode, Git, Github
Relevant Coursework: Data Structures & Algorithms, Operating Systems, Object Oriented Programming, Natural Language Processing, Image Processing, Database Management System, Software Engineering.

Honors & Awards

- **Vice Chancellor's List**
  For obtaining a GPA of 4.0 in 10 semesters at BRAC University.

- **Merit-Based Scholarship**
  Received 75-100% waiver on tuition fees at BRAC University.

- **Dhaka Board General Scholarship (HSC)**
  Scholarship granted for outstanding performance in the higher secondary education qualification exam of Bangladesh.

- **Dhaka Board General Scholarship (SSC)**
  Scholarship granted for outstanding performance in the secondary education qualification exam of Bangladesh.

Competitions & Achievements

- **BRACU All Girls Intra University Programming Contest** *2023*
  5th Position
- **BRACU Intra University Programming Contest** *2022*
  Best All Girls Team
- **National Girls' Programming Contest** *2022*
  66th Position

Research Experience

- **Analyzing Political Bias in Media Discourse: A Computational Approach Using NLP to Examine Israel-Palestine Coverage** *2024*
  Natural Language Processing, Computational Social Science, Undergraduate thesis

  Co-developed a computational framework to analyze political bias in media coverage of the Israel-Palestine conflict under the supervision of Dr.Farig Sadeque. My contributions include constructing and annotating a high-quality dataset of 15,000+ articles across 7 bias categories to enable supervised multi-class classification. In addition, various NLP techniques were applied that incorporate geographic context, to examine bias, sentiment, and polarization patterns in media discourse. Furthermore, state-of-the-art LLMs (BERT, RoBERTa, LLaMA fine-tuned using QLoRA) for compute-efficient optimization, and GPT-4o was employed for data augmentation to address class imbalance. Furthermore, systematic error analysis was conducted on false positives and false negatives to identify model limitations and guide improvements. Our model achieved weighted F1 score of 0.7741 and accuracy of 0.7717 across 7 classes. (under preparation for conference submission)

Academic Projects

- **Movie Review Sentiment Analyzer** *Link*
  Natural Language Processing
  – Built a neural network classifier for IMDB reviews using Pandas, Keras, GloVe embeddings, and LSTMs (uni/bidirectional) for sentiment analysis. Conducted prior-art research on NLP models and documented findings to optimize model performance.
- **Sports Image Classification** *Link*
  Image Processing
  – Built a deep learning model from scratch using CNN architecture in TensorFlow to classify 100 sports categories
- **FitHoba, Diet Planner Website with AI Integration** *Link*
  MERN Stack
  – Developed a full-stack meal planner and diet tracking website that customizes meal and workout plans based on users' BMI, dietary preferences, and calorie goals. Integrated AI models (Mistral AI and Gemini) with prompt engineering for intelligent meal and workout generation.

Extra-Curricular Activities

- **Classical Music Singer** Shurer Dhara *2013-2018*
  – Trained and performed classical music, specializing in the works of Rabindranath Tagore.
- **General Member** IT Department, Robotics Club of BRAC University *2023*
  – Designed and created visually engaging digital posters for the club's social media platforms
- **Competitive Programming** *2022-2023*
  – Took part in various competitive programming contests like BRACU Intra University Programming Contest 2021, 2022, BRACU All Girls Intra University Programming Contest 2023, National Girls' Programming Contest 2022, SEC Inter University Junior Programming Contest 2022