Sudipta Mondal

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LinkedIn GitHub Google Scholar Portfolio Webpage

Summary

Prospective Ph.D. candidate with a strong interest in AI, Machine Learning, and NLP, currently pursuing an M.Sc. in Computer Science and Engineering at Brac University, with ongoing independent research alongside thesis work. My objective is to drive impactful innovation in AI and NLP through advanced research, ultimately pursuing a career in academia or industry research to mentor and inspire the next generation of scholars.

Academic Preparation

Brac University **Summer 2023 – Present**
Master of Science in Computer Science and Engineering
CGPA : 3.88/4.00 *(all coursework completed, thesis in progress)* *Dhaka, Bangladesh*

Thesis Topic: *Self-Supervised Learning (domain to be determined)*
Supervisor: Md. Golam Rabiul Alam, PhD

Brac University **2016 – 2021**
Bachelor of Science in Computer Science and Engineering
CGPA: 3.49/4.00 *(last 60 credits: 3.61)* *Dhaka, Bangladesh*

Undergraduate Thesis: Implementation of Real-Time Learning on Homomorphically Encrypted Visual Inputs
Supervisor: Muhammad Iqbal Hossain, PhD

Research Interest

Machine Learning, Deep Learning, Natural Language Processing, Trustworthy AI, Self-Supervised Learning

Publications

- Anan, Ramisa, Tasnim Sakib Apon, Zeba Tahsin Hossain, Elizabeth Antora Modhu, **Sudipta Mondal**, and MD Golam Rabiul Alam. "Interpretable bangla sarcasm detection using bert and explainable ai." In 2023 IEEE 13th annual computing and communication workshop and conference (CCWC), pp. 1272-1278. IEEE, 2023.
  DOI: 10.1109/CCWC57344.2023.10099331

Submitted Articles

[Accepted] A Smart Tutor Avatar for Mimicking Characters of Bangla Sign Language **ICREST'25**
Conference date: 11-12 January 2025 Location: Dhaka, Bangladesh

- Developed a smart avatar tutor that mimics 49 Bangla Sign Language (BSL) characters using image processing and machine learning to analyze hand gestures, providing real-time feedback and enhancing learning outcomes for the hearing-impaired community

[Under Review] A Comprehensive Audio Dataset for Emotional Context Analysis in Advertisements
Submitted at Data in Brief

- [Preprint]: Developed a dataset of 1,000 audio clips and emotional statements to assess ad effectiveness, providing a standardized resource for testing classification algorithms on audio data for emotion recognition
  Mendeley Data DOI: 10.17632/svr3fzk2nt.4

Present Research Projects

[In Preparation] A Systematic Review on the use of AI and ML for Sentiment Analysis
Credited as first author

- Conducted a systematic review comparing AI and machine learning approaches for sentiment analysis, highlighting key insights, research directions, and limitations for future study

[In Preparation] Explainable Flight Fare Prediction using Machine Learning and LIME
Contribution: literature review, experimentation design, writing, and editorial support

- [Project Link]: Utilized multiple machine learning models to predict flight fare trends using historical data, incorporating PCA for dimensionality reduction and LIME to explain feature influence

Explainable Fake News Classification using Support Vector Machine and Model-Agnostic Explanation
Contribution: data preprocessing, experimentation design, result analysis, draft preparation

- [Project Link]: Compared multiple ML models using CountVectorizer and TF-IDF to identify the most effective method for fake news detection, applying LIME to explain the predictions of the best-performing SVM model and analyzing why SVM outperformed other models

Academic Projects

[Group] Classify Interpretable Twitter Hate Speech using LIME | *CSE711: Symbolic Machine Learning-I*

- [Project Link]: Conducted a comparative performance analysis of machine learning models and incorporate explainability for better understanding

[Individual] Deep Learning Based Online Sexism Detection | *CSE712: Symbolic Machine Learning-II*

- [Project Link]: Developed a neural network using Word2Vec embeddings to detect and categorize sexist language, achieving F1 scores of 0.77 for detection and 0.43 for categorization

[Group] Social Media Rumor Detection using Machine Learning | *CSE718: Petri Net Theory and Modeling of Systems*

- [Project Link]: Built a machine learning system for detecting social media rumors by applying two feature extraction methods for data vectorization, training multiple classification models, and identifying SVM as the top-performing model

Technical Skills

Language: Python, Java
Developer Tools: PyCharm, Jupyter Notebook, Google Colab, VS Code
Operating Systems: Linux, Windows
Machine Learning Frameworks: Tensorflow, Scikit-learn, Keras, PyTorch
Others: Git, SQL, Latex

Certificates & Awards

VC's List, Dean's List and Merit Scholarship Award, Brac University

* Earned a position on the **VC's List** for the Spring 2020 semester with a 4.00 GPA
* Earned a place on the **Dean's List** for two semesters with a 3.80 and 3.87 GPA
* **Merit Scholarship Based on BracU Academic Results** for the Master's Degree (M.Sc.) in Spring & Summer 2024

Online Course Certificates

Data Analyst with Python | *DataCamp*
Course duration: 36 hours **Aug 2024**

Crash Course on Python | *Coursera*
Course duration: 39 hours **Mar 2023**

Standardized Test Scores

IELTS: **Overall 7.5** (Listening 8.0; Reading 9.0; Writing 6.5; Speaking 6.5)

Community Service

President
Brac University Film Club **2019-2020**

Volunteer
12th & 13th Convocation of Brac University **2017 & 2019**

Public Relations Coordinator
HULT Prize at Brac University **2018**