

SHUTONU MITRA

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Education

Virginia Tech | Falls Church, VA
Master of Engineering in Computer Science
Course-work: Machine Learning, ML with Big Data, Web Development

August 2023 – May 2025

Military Institute of Science & Technology | Dhaka, Bangladesh
Bachelor of Science in Computer Science; CGPA: 3.65/4.00

February 2018 – May 2023

Professional Experience

Selise Digital Platform

December 2022– March 2023

Data Analytics Intern

Dhaka, Bangladesh

- Streamlined and processed data from various sources, conducted complex analysis on them and generated visualizations.
- Developed ML models, data tools, prototypes and data pipelines to manage data from both SQL and NoSQL databases.

Research Experience

Military Institute of Science & Technology

December 2021– February 2023

Student Researcher, Advisor: Muhammad Nazrul Islam

Dhaka, Bangladesh

- ML & AI based research works:** Devised ML models from real-time data of biomedical sensors for detection of potential risks of Cardio Vascular disease. Utilized Python, IBM Cloud, Firebase, Matlab and Arduino.
- User Experience-based research works:** Supervised and conducted evaluation studies to evaluate the performance and the usability of the developed systems by collecting and analyzing both quantitative and qualitative data. Used Python, R, Tableau, Excel, Question Pro and Google forms.
- Designing and Developing tools and Applications:** Designed and developed android and Web applications for the Cardio Vascular Disease and Postpartum Depression detection systems. Utilized Python, Django, Flask, Cloud, NoSQL, SQL, Java, JavaScript, PHP etc.

Military Institute of Science & Technology

July 2021– March 2022

Undergraduate Thesis, Advisor: Muhammad Shahjahan Majib

Dhaka, Bangladesh

- Research in NLP and Social Media Analytics:** Formulated detection and classification models with Neural Networks (RNN-BiLSTM) utilizing pretrained embeddings (Google Bert, Word2Vec, GloVe) for detection and classification of cyberbullying from the self-annotated and web-scraped public tweets. The highest achieved accuracy (F1 score) is 87.7%.

Publications

[1] S. Mitra, T. Tasnim, M. A. R. Islam, N. I. Khan and M. S. Majib, "A Framework to Detect and Prevent Cyberbullying from Social Media by Exploring Machine Learning Algorithms," 2021 International Conference on Computer, Communication, Chemical, Materials and Electronic Engineering (IC4ME2), 2021, pp. 1-4, doi: 10.1109/IC4ME253898.2021.976845

[2] Islam, M.N., Raiyan, K.R., **Mitra, S.** et al. Predictis: an IoT and machine learning-based system to predict the risk level of cardiovascular diseases. BMC Health Serv Res 23, 171 (2023). <https://doi.org/10.1186/s12913-023-09104-4>

Skills

Languages: Java, Python, C, C++, JavaScript, PHP, SQL, HTML 5, CSS 3, Shell Scripting, Bash.

Analytic Skill: Data visualization (Tableau, Python and R), Machine Learning, Neural Network (Tensorflow, PyTorch), Natural Language Processing, Image Processing, Computer Vision, Google Cloud, IBM cloud.

Technologies: Android, Django, MySQL, Firebase, Git, Oracle, Latex, Figma, Open GL, MongoDB, React, Node JS, Rest API.

Projects

Predictis | Machine Learning, IoT, Android, Cloud

[Git Repository](#)

- Created and validated an android application that predicts its user's future possibility of having Cardio-vascular diseases using ML model built on real-time data from biomedical sensors. The system that can classify its users into three risk levels (high, moderate and low risk of having CVD) with an F1 score of 80.4% and two risk levels (high and low risk of having CVD) with an F1 score of 91%.

PPD Coach | Android, Graphic Design, NLP

[Git Repository](#)

- Invented an innovative Android application, utilizing graphical-scenery and multimodal screening techniques, to detect Postpartum Depression (PPD) in Bangladeshi mothers, which demonstrated about 80.8% improvement in PPD screening.

ASMA | HTML, CSS, JavaScript, PHP, Oracle

[Git Repository](#)

- Implemented a database system with complete interactive User Interface for modern day salon management with effective employee, customer, inventory, accounts and salon services management.