SHUTONU MITRA

Falls Church, VA |(929) 682-7538 |Email: mshutonu@vt.edu| LinkedIn: in/shutonu-mitra | Portfolio: sm5190.github.io

Education

Virginia Tech | Falls Church, VA *August 2023 – May 2025*
Master of Engineering in Computer Science; GPA: 3.90/4.00 Courses: Machine Learning, ML with Big Data, Cloud Computing

Military Institute of Science & Technology | Bangladesh *February 2018 – May 2022*
Bachelor of Science in Computer Science; CGPA: 3.65/4.00

Experience

Selise Digital Platform *December 2022– March 2023*
Data Analytics Internship Dhaka, Bangladesh

- Implemented and optimized SQL and NoSQL databases, achieving a 35% performance enhancement through query tuning.
- Automated ETL processes and collaborated on troubleshooting, resulting in a 40% reduction in data pipeline defects.

Military Institute of Science & Technology *December 2021– February 2023*
Undergraduate Research Assistant Dhaka, Bangladesh

- **ML & AI-based research works** Applied ML algorithms to infer health (e.g. physiological indicators), behaviours (e.g., conversation), and spatiotemporal contexts from wearable and mobile sensors. Utilized Python, IBM Cloud, Firebase, MatLab and Arduino.
- **User Experience-based research works:** Supervised and conducted evaluation studies to evaluate the performance and 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 collecting, cleaning, predictive modelling, and visualizing data. Utilized Python, Django, Flask, Cloud, NoSQL, SQL, Java, JavaScript, PHP etc.

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

Projects

Malicious UPL Detection | Tensorflow, Pytorch, NLP, Neural Networks ***Git Repository***

- Engineered a real-time malicious URL detection system to identify phishing, malware, and defacement URLs. The project aims to enhance web security by identifying and blocking URLs that lead to malicious websites causing cyber threats by the proposed Convolutional neural network model with an F1 score of 97.67%.

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 an ML model built on real-time data from biomedical sensors. The system 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, Chatbot ***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.

Papertown | React, CSS, TypeScript, Restful API, MySQL, JDBC, Tomcat ***Git Repository,View Site***

- Implemented a bookstore web application featuring a React client with a single-page architecture, a Tomcat server, and a MySQL database, emphasizing accessibility, performance, and scalability considerations.

Twitter Opinion Mining | Tensorflow, NLP, Information Retrieval, Web Scraping ***Git Repository***

- Devised a sentiment analyzer with Bi-LSTM Recurrent Neural Network with an accuracy of 85% to reflect public opinion related to common mental health problems such as anxiety, depression, OCD, schizophrenia, PTSD etc. through time-series analysis from self-annotated data collected using public Twitter API.

Skills

Languages: Java, Python, C, C++, JavaScript, PHP, SQL, HTML 5, CSS 3, Bash.
Analytic Skill: Data visualization (Tableau, Python), Machine Learning, Neural Networks (Tensorflow, PyTorch), Natural Language Processing, IBM cloud, AWS.
Technologies: Android, Django, MySQL, Firebase, Git, Oracle, Latex, Figma, Open GL, MongoDB, React, Node JS, Rest API.