MD Rafsun Sheikh

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Summary

Forward-looking professional with over 8 years of expertise in military communications and the development of advanced software solutions to enhance organizational efficiency. Driven by a passion for research and innovation, focuses on cutting-edge technologies, including analytical programming, Natural Language Processing (NLP), Custom Large Language Models (LLMs), and digital payment systems. With hands-on experience in implementing machine learning solutions across diverse applications, brings a team-first mindset, extensive project management experience, and a strategic approach to problem-solving. Background in artificial intelligence, machine learning, deep learning, advanced NLP, and blockchain uniquely positions him to contribute effectively to academic and research environments.

Research Interests

- Machine Learning and Deep Learning
- Natural Language Processing (NLP)
- Computer Vision and Image Processing
- Blockchain Development
- Human Computer Interaction

Publication

An Efficient Transfer Learning Model for Predicting Forged (Handwritten) Signature   2021

2021 International Conference on Computer, Communication, Chemical, Materials and Electronic Engineering (IC4ME2)
https://ieeexplore.ieee.org/abstract/document/9768440 | doi: 10.1109/IC4ME253898.2021.9768440

- Developed K-Nearest Neighbors, Support Vector Machine, Decision Tree, Random Forest and Neural Network models for predicting forgery in handwritten signature.
- A dataset was created containing 300 images of signatures that were taken into papers and converted to digital images through photograph.
- As outcome, the transfer learning based neural network model showed the highest accuracy of 96.7%.

Five Significant Issues of Digital Payment Systems – A Content Analysis   2024

Journal of Finance and Data Science
(Publication under review)

- Identified five vital issues along with other key issues in digital payment system faced by FinTech industries.
- Four prominent electronic databases were sourced for categorization and analysis published from January 2017 – June 2024.
- A total of 111 articles on issues of digital payment systems were selected for relevant content analysis.

Towards Designing an Intelligent Quantification: AI-driven Automation for Assessing Global University Ranking   2024

The Journal of Higher Education
(Manuscript Submitted for Publication)

- Developed an predictive artifact for measuring and predicting several operational factors of the higher education institutions which play important impacts in the Times Higher Education World University Rankings (THE-WUR).
- The artifact produces around 95% accurate assessments for the variables.
- The design case context could provide valuable insights for higher education decision-makers, managers and policymakers.

Google Scholar Profile – MD Rafsun Sheikh

Education

Bachelor of Science in Computer Science and Engineering   2017 – 2022, Dhaka, Bangladesh

Military Institute of Science and Technology, Bangladesh University of Professionals | CGPA 3.47 out of 4.00

- Thesis Component title: "An Efficient Transfer Learning Model for Predicting Forged (Handwritten) Signature" | Achieved 95% marks
- Key Courses: GPA 4.00 in Thesis, Computer Architecture, Computer Interfacing, Digital System Design, Digital Logic Design, Design Science Systems, Computer Network, Computer Architecture, Software Engineering, Mathematical

Analysis for Computer Science, Data Structure and Algorithms, Human-Computer Interaction, Pattern Recognition, and Object Oriented Programming.

Experience

Acting Company Commander | Division IT Officer | Platoon Commander | Quarter Master | Communication Liason Officer | Second-in-Command, Radio Platoon | Officer Cadet   2015 – 2024

Bangladesh Army

- Led the planning and execution of large-scale IP network deployments at the 10 Infantry Division, ensuring robust connectivity and security for mission-critical operations, including communication and IP network solutions for remote sites, and optimized operational efficiency and connectivity.
- Participated in the development and implementation of several digital systems, including **"Digidak"**, a comprehensive military digital correspondence system utilized for the dispatch and management of all official letters, correspondence and payments within Bangladesh Army, **"Barta"**, a secure military communication application and **"Army Command Management System (ACMS)"**, an advanced system used for real-time monitoring of military movements and strategic operation planning.
- Oversaw the setup and resolution of issues in classified networks, security solutions, early warning and monitoring systems, and bolstering security and surveillance capabilities.
- Acted as the communication liaison officer for Tiger MLRS's long-range missile firing and kept constant comm with Air Traffic Control (ATC), Bangladesh Air Force RADAR control and Bangladesh Navy for the Air and Sea Clearance of the firing path using high and low-band encrypted wireless communication.

Teaching Experience

Cybersecurity aspects in daily life   October, 2023

10 Infantry Division, Ramu Cantonment. Cox's Bazar

- Conducted classes on Cybersecurity awareness to Officers, Soldiers and their families throughout October Cybersecurity Awareness Month, in 2023.
- Total number of participants were 5000+ persons.
- Outcome: Cyber attacks incidents report reduced by 67% compared to previous year.

Hands-on-training on Artificial Intelligence and Machine Learning   March - April, 2023

10 Infantry Division, Ramu Cantonment. Cox's Bazar

- Conducted hands-on-training on Artificial Intelligence and Machine Learning to technical military Officers.
- Total number of participants were 75 persons.
- Outcome: Trained Officers developed small machine-learning projects each at the end of the course.

Conferences / Talks

Paper Presentation on "An Efficient Transfer Learning Model for Predicting Forged (Handwritten) Signature"   December, 2021

2021 International Conference on Computer, Communication, Chemical, Materials and Electronic Engineering (IC4ME2)
Rajshahi University, Rajshahi, Bangladesh

Courses / Certification

Signals Officers Basic Course   May 2022 – October 2022

Signal Training Center and School, Bangladesh Army
Grade achieved: 73%

Industrial Training   February 2021 – March 2021

IPvision Canada, Inc, Dhaka, Bangladesh

- Played a crucial role in developing RingID, a social media platform, conducted development, testing, and debugging tasks while gaining valuable insights into software development and user interface design.

Online Certifications

- **Cisco Certification: Cyber Security** | 4 months
- **Stanford University Course: Machine Learning** | 4 Months
- **Google Training: Managing Machine Learning Projects with Google Cloud** | 2 months
- **Amnesty International Training: Digital Security and Human Rights** | 1 month
- **Fortinet Certification: NSE 1 Network Security Associate** | 2.5 months
- **Fortinet Certification: NSE 2 Network Security Associate** | 3 months

- **DeepLearning.AI Course: Generative AI with Large Language Models** | 2 months
- **Kiron.pro Course: Python for Data Science** | 3 months
- **Cognitive Class Course: Data Analysis with Python** | 2 months

Achievements

Led US$1.4 Million Surveillance and Security Establishment Project February 2022 – December 2023
Cox's Bazar, Bangladesh
- As the Project Officer, spearheaded the planning, execution, and management of a high-stakes surveillance and security project within the 81 km long "Forcibly Displaced Myanmar Nationals" Camps.
- Led a team of 120+ engineers and technicians to deploy over 2000 strategically positioned surveillance cameras across the remote and hilly terrain.
- Due to absence of electricity, implemented innovative engineering to run the complete project using decentralized renewable energy and innovative networking system to ensure robustness and reliability.

Revolutionized Network Architecture for the 10 Infantry Division   March 2023 – August 2023
Cox's Bazar, Bangladesh
- As the Project Officer, redesigned the existing network architecture using innovative optical fiber and microwave transmission infrastructure to enhance efficiency and reliability.
- Redesigned the network architecture to facilitate the simultaneous operation of two distinct transmission lines: one dedicated to residential internet and other as a secure communication medium for the Bangladesh Army intranet, which enables seamless shifting capabilities within the network with reduced hassle.

Open-source Contribution

ptmodels   2022
Open-source Python Package
- ptmodels is an innovative open-source Python package developed to streamline complex data processing and image classification tasks.
- The package simplifies the training and evaluation process of computer vision tasks using pre-trained models on user-specific datasets.
- The package can be installed using "pip install ptmodels". Details about the package can be read here.

Interests / Skills

- Certified Basic Parachute Jumper, completed 5 static-line parachute jumps from an altitude of 3,000 feet including a night jump.
- Participated in Inter-division Cultural Competition, 2023 as Bengali Poetry Reciter and secured 6th position.
- Participated in Inter-division Basketball Competition, 2019 as Team Captain, 9 Infantry Division.
- Participated actively in National Tree Plantation Campaign Week from 2009 – 2023.

Technical Skills
- **Programming Language:** C, C#, C++, Python, Javascript, Solidity
- **ML Libraries:** Sci-kit Learn, Numpy, Pandas, Scipy
- **DL Libraries:** Tensorflow, Keras, OpenCV
- **Other Libraries:** Matplotlib, Seaborn, Streamlit
- **Frameworks:** Django, Hardhat
- **IDE:** VS Code, Jupyter Notebook, Google Colab, Keras Notebook, Codeblocks, Remix

Volunteer Experience

Blanket Distribution to distressed people during winter   January 2024
Financial Contribution, Project Kombol, Give Bangladesh Foundation
- Contributed financially for the blanket distribution to distressed and poor people in Chuadanga District, Bangladesh during winter, 2024.

Social Service during Covid-19 period as "In Aid of Civil Power"   April 2020 – October 2021
Operation Covid Shield, Bangladesh Army
- Distributed relief goods, emergency supplies, protective gears to more than 15,000 families and medical service providers as a member of Bangladesh Army.
- Ensured social distancing, promoted awareness, provided emergency medical transport to Savar, Bangladesh (highly Covid-19 affected area).
- News Links: The Business Standard, U.S. Embassy in Bangladesh, Al Jazeera

Nation Building after Cyclone Amphan   **May 2020 – July 2020**

Volunteer

- Distributed emergency supplies, providing medical aid, and supported search and rescue operations.
- Assisted in cleanup, debris removal, establishing temporary shelters, and offered psychosocial support to affected communities, engaged in infrastructure repair, livelihood support, and education initiatives, fostering resilience and aiding long-term recovery.
- News Links: An Overview, The Daily Star, IFRC

References

Lieutenant Colonel Muhammad Nazrul Islam, PhD
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Note: Thesis supervisor of my Bachelor's degree studies.

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Note: Commanding Officer, 7 Signal Battalion.