MD. NAZRUL HUDA SHANTO

 Portfolio 📞 +14055646370 🔗 Linkedin Ⓡ ResearchGate
✉ mshanto@okstate.edu GitHub Facebook

EDUCATION

Oklahoma State University **Stillwater, Oklahoma, USA**
Master of Science -Computer Science; GPA: 3.9/4.0 *JAN 2024 - DEC 2025*

EXPERIENCE

AI Instructor–RET, U.S. National Science Foundation **May 2025 - Present**
Stillwater, Oklahoma
- Instructed seven K–14 educators in AI by developing hands-on tutorials and guiding research projects on Python, Data Analysis, Machine Learning, and Transformers, enabling downstream impact on ~ 200 students.

Graduate Research Assistant − Oklahoma State University **JAN 2024 - APR 2025**
Supervisor: *Dr. Sharmin Jahan*, Assistant Professor, *Oklahoma State University* *Stillwater, Oklahoma*
- Invented the first self-protective AI-driven service mesh architecture, leveraging a dataset of 1.2 million+ traffic logs for anomaly detection with Kubernetes, Istio, and Docker.
- Implemented Flask APIs to detect malicious activities across 6 services using Scikit-Learn, integrating Explainable AI (LIME) to analyze attack causes and dynamically adjust configurations of affected services.

Junior Software Engineer–Tirzok Private Ltd. **February 2023 - December 2023**
Dhaka, Bangladesh
Project: *Mortgage Management System.* **Client**: *Kramasoft* **Tasks**: *Automatic Document Validation*
- Led an ML-powered document validation system, implementing document classification and intelligent page trimming models with key field extraction, achieving 45x faster processing than manual validation using Scikit-Learn, AWS Textract, AWS Lambda, ECR, Spring Boot, PostgreSQL, and RabbitMQ.

Project: *Government-Citizen Interaction Portal.* **Client**: *Confidential* **Tasks**: *Citizen Portal, Role Management.*
- Engineered RESTful APIs for a Government-Citizen Interaction Portal using Node.js and MongoDB, improving government services for 80,490 citizens, while designing a robust Role Management System with JWT authentication to ensure secure and tailored access control.

Project: *Payroll and Tax Management System.* **Client**: *Payconz.* **Tasks**: *Multi Currency Convertion.*
- Implemented a Flask-based currency conversion API supporting 5 currencies with PostgreSQL, enabling real-time multi-currency payroll processing while incorporating APIs to generate detailed currency history reports for previous months.

Undergraduate Research Assistant–BRAC University **Remote**
Lab: Computing for Sustainability and Social Good (C2SG) Lab *October 2020 - January 2023*
Supervisor: *Jannatun Noor*, Director of Data Science, *United International University.*
Consultant: *Prof. Dr. A. B. M. Alim Al Islam,* Professor, *Bangladesh University of Engineering and Technology.*
- Designed and deployed a novel HCI4D research framework in remote regions (Andharmanik and Ruma), using SPSS-based regression and descriptive analysis to identify educational barriers and co-develop Indigenous Primary Education content in three local languages.
- Improved progressive JPEG performance by reducing load time by 54% and size by 27%, validated via SSIM and COCO Dataset; simulated blockchain network with 50 Nginx VMs to detect and mitigate 66.7% of DDoS attacks using proxy-based memory management.

PUBLICATIONS

- J. Noor, **M. N. H. Shanto,** J. J. Mondal, M. G. Hossain, S. Chellappan and A. B. M. A. A. Islam," Orchestrating Image Retrieval and Storage over a Cloud System", in *IEEE Transactions on Cloud Computing* (**IEEE TCC**), doi: 10.1109/TCC.2022.3162790, March, 2022. [**Q1, Impact Factor: 5.938**] [PDF]

- **M. N. H. Shanto,** J. Noor, M. G. Z. A. Husna, and A. B. M. A. A. Islam, "Darkness under The Lamp: Shedding Light over Digital Divide And Its Consequences in The Little-Known Indigenous Communities Living over mountains in Bangladesh," [**Accepted for major revission in CSCW 2025**]. [PDF] *[Nominated for the second round (top 48.1%) in* **CHI '24***]*

- F. F. Khan, N. M. Hossain, **M. N. H. Shanto**, S. B. Anwar and J. Noor, "Mitigating DDoS Attacks Using a Resource Sharing Network" in *2022 9th International Conference on Networking, Systems and Security (NSysS),* doi: 10.1145/3569551.3569560 [PDF]

- N. Rashid, J. Saha, R. I. Prova, N. Tasfia, **M. N. H. Shanto,** J. Noor. (2022)."Towards Devising a Fund Management System Using Blockchain." in *International Journal of Computer Science & Information Technology (IJCSIT), 12 (18), 225-238.* doi: 10.5121/csit.2022.121820 [PDF]

Technical Skills

Languages: Java, Python, JavaScript, SQL.
AWS Tools: Textract, Lambda, ECR, Opensearch, AmazonMQ, Secret Manager, S3, HTTP APIs.
Backend Frameworks: Node.js, Django, SpringBoot, Flask
Machine Learning Platforms/Frameworks: TensorFlow, PyTorch.
Python Libraries: Scikit-learn, Fitz, OpenCV, Pandas, Matplotlib, Tkinter, Seaborn, Numpy.
Developer Tools: Git, Heroku, HTML/CSS, Bootstrap, Linux
Cloud and DevOps Tools: Kubernetes, Docker, VirtualBox, Istio

Projects

Devising Faster Video Streaming Architecture with Low Bandwidth Video Compression Techniques | [Link]

- This project is a part of the Research Proposal. Compared live video streaming codecs (H.264, H.265, VP9) using FFmpeg libraries; evaluated quality with SSIM, PSNR, and VMAF, and fine-tuned real-time settings to simulate live streaming conditions.

BRACU-ResearcherHub | *Django, Bootstrap, PostgreSQL*[Link]

- Developed a social platform for BRAC University researchers to create and join research labs, fostering collaboration through comments and shared interests; built with Django (backend) and HTML, CSS, Bootstrap (frontend).

Imago | *Tkinter, Opencv* [Link]

- Built a photo editing application with features like filters, cropping, and rotation using OpenCV for image processing and Tkinter for the GUI.

Presentations

- Presented "Mitigating DDoS Attacks Using a Resource Sharing Network" in **9th International Conference on Networking, Systems and Security (9th NSysS 2022)**, on 20th December, 2022.
- Presented poster "Orchestrating Image Retrieval and Storage over A Cloud System" **8th International Conference on Networking, Systems and Security, December 21-23, 2021 (8th NSysS 2021)**

Extracurricular

- **Cricketer:** I am the founding captain of a major cricket team in stillwater, oklahoma. I play as a bowling all rounder. [Link]

- **Acting:** I have worked in several Bangladeshi *TVC, OVC*. Recently, I acted in a *TV series* for an *OTT* platform called *Hoichoi*. One of my biggest projects is a *TVC for Airtel* (most popular telecommunications company in Bangladesh).

- **Videography:** I love making cinematic videos. You can find some of my works *here*

- **Singing:** Performed live shows as a vocal artist in *university programs*