Md. Nazrul Huda Shanto

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Education

BRAC University **Dhaka, Bangladesh**

Bachelor of Science -Computer Science; GPA: 3.36/4.0 *May 2018 - May 2022*

Grade A Obtained Relevant Courses: *Mathematics (II & III & IV), Statistics, Programming Language (I & II), Operating Systems, Software Engineering, Algorithms, Independent Study (Cloud Computing), Database Systems, Automata and Computability.*

Other Relevant Courses: *Data Science for Practitioners, Data Structures, Computer Architecture, Discrete Mathematics, Programming for the Internet, System Analysis and Design.*

Experience

***Junior Software Engineer*–Tirzok Private Ltd.** **Dhaka, Bangladesh**

February 2023 - Present

Project: *Mortgage Management System.* **Client**: *Kramasoft* **Tasks**: *Automatic Document Validation*

- Implemented classifiers to identify document types, enhancing the system's ability to handle diverse document formats.
- Engineered a specialized document trimmer employing advanced classifiers to intelligently remove irrelevant pages from documents
- Developed robust data extraction processes using AWS Textract for various document types, ensuring the retrieval of crucial field values with precision.
- Built RESTful APIs using Spring Boot and PostgreSQL to facilitate auto validation processes.
- Integrated AmazonMQ (RabbitMQ) for seamless internal communication and Deployed in AWS Lambda using ECR.

Project: *Government-Citizen Interaction Portal.* **Client**: *Confidential* **Tasks**: *Citizen Portal, Role Management.*

- Crafted RESTful APIs for the citizen portal using Node.js and MongoDB.
- Architected a robust Role Management System using JWT authentication, Node.js, and MongoDB, ensuring secure and tailored access control.

Project: *Payroll and Tax Management System.* **Client**: *Payconz.* **Tasks**: *Multi Currency Convertion.*

- Developed a Flask-based currency conversion API integrated with PostgreSQL, facilitating real-time multi-currency payroll processing.
- Implemented APIs to generate comprehensive currency history reports for preceding months.

***Undergraduate Research Assistant*–BRAC University** **Remote**

Lab: Computing for Sustainability and Social Good (C2SG) Lab *October 2020 - January 2023*

Supervisors: *Jannatun Noor*, Senior Lecturer, *Brac University;*
Prof. Dr. A. B. M. Alim Al Islam, Professor, *Bangladesh University of Engineering and Technology.*

- *Inaugurated a novel framework for HCI4D researchers to effectively approach HVECs in Andharmanik and Ruma. Executed Linear Regression with SPSS with different demographics to understand participants' needs.*
- *Performed descriptive analysis to find barriers in indigenous education in Bandarban District. Created multiple prototypes and finalized Indigenous Primary Education (IPE) that has educational content in three local indigenous languages; aiming to provide educational materials to indigenous children.*
- *Decreased user waiting time for progressive JPEG by 54%, and image size by 27% without compromising image quality. Tested the image qualities in SSIM; analyzed results from a custom-made dataset of 1200 images and COCO Dataset.*
- *Emulated a blockchain network with 50 Nginx VM servers and used proxy servers to detect the attack. Mitigated 66.7% of the DDoS attacks using memory management of only 50 VM's.*

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," in *CSCW 2024* **[Accepted for major revission]**. *[Nominated for the second round (top 48.1%) in **CHI '23**; received notification on November 8, 2022]*
- 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]
- J. Noor, T. Azhar, S. S. Karmakar, **M. N. H. Shanto,** F. E. Jannat, S. M. B. Hossain, and A. B. M. A. A. Islam, "Leveraging Pre-Primary Education of Indigenous Communities in Bangladesh through Participatory and Iterative Development of Online Resources.," in *Information Technology for Development*, **[Q1, Impact Factor: 4.261]** [***In Review.***]
- 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]
- **M. N. H. Shanto,** J. Noor, M. G. Z. A. Husna, and A. B. M. A. A. Islam, "Extrapolating Usefulness of Technology Systems by Exploiting Usage and Output Divide for HVECs." in *Information Technology for Development.* **[In Review]**
- 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 *8th International Conference on Networking, Systems and Security (NSysS 2021)*, doi: 10.13140/RG.2.2.16024.32008 *(Poster)*

Research Achievements

- Invited to attend **2022 ACM International Joint Conference on Pervasive and Ubiquitous Computing (Ubicomp'22)**, September 11—15, Atlanta, USA and Cambridge, UK.
- Received partial funds from **"Bangladesh University of Engineering and Technology"** to conduct fieldwork in Andharmanik.
- Received **US National Science Foundation under Grant 2014547** to pay additional page charges for publishing "Orchestrating Image Retrieval and Storage over A Cloud System" in *IEEE Transactions on Cloud Computing.*
- Invited to present our work in ICCCN 2021 Workshops by **The 30th International Conference on Computer Communications and Networks (ICCCN 2021)**, July 19 - 22, 2021, Athens, Greece.
- Invited to act as a speaker for **8th International Conference on Computer Science and Information Technology (CSTY 2022)**, October 29 - 30, 2022, Vienna, Austria. *(Joined Online)*

Presentations

- Participated and Presented a poster of "Orchestrating Image Retrieval and Storage over A Cloud System" **8th International Conference on Networking, Systems and Security, December 21-23, 2021 (8th NSysS 2021)**
- Participated and Presented "Towards Devising a Fund Management System Using Blockchain" **8th International Conference on Computer Science and Information Technology (CSTY 2022)** on 29th October, 2022.
- About to present " Mitigating DDoS Attacks Using a Resource Sharing Network" in **9th International Conference on Networking, Systems and Security (9th NSysS 2022)**, on 20th December, 2022.

Technical Skills

Languages: Java, Python, JavaScript, SQL.
Python Libraries: Scikit-learn, Fitz, OpenCV, Pandas, Matplotlib, Tkinter, Seaborn, Numpy.
AWS Tools: Textract, Lambda, ECR, Opensearch, AmazonMQ, Secret Manager, S3, HTTP APIs.
Backend Frameworks: Node.js, Django, SpringBoot, Flask
Developer Tools: Git, Heroku, VS Code, Pycharm, HTML/CSS, Bootstrap
Softwares: SPSS, Adobe Lightroom
Machine Learning Platforms/Frameworks: TensorFlow, PyTorch.
Technical Writing Tool: LaTeX
Operating Systems:: Linux (Ubuntu, Kali, CentOS, and Debian)
Virtualization tools: VMware, KVM, VirtualBox.

Projects

BRACU-ResearcherHub | *Django, Bootstrap, PostgreSQL* **May 2022**

- Social media for BRAC University researchers to find collaborators. Researchers can create separate research labs within specific research areas. If other researchers find the lab interesting; they can join and comment on the lab. An efficient way to find the next research collaborator.
- Used Django for backend and HTML, CSS and, Bootstrap for frontend.

Devising Faster Video Streaming Architecture with Low Bandwidth Video Compression Techniques | **Sep 2021**

- This project is a part of the Research Proposal. Compared different codecs for live video streaming.
- Used FFmeg's libx264 for H.264, libx265 for H.265, and libvpx-vp9 for VP9. To compare qualities, used SSIM, PSNR, and VMAF. Tuned the settings in real-time functionality to imitate live video streaming.

Imago | *Python, Tkinter, Opencv* **Feb 2022**

- Beautify your pictures by using filters, cropping, rotating, and lots of other features.
- Used Opencv to transform images and Tkinter to create the Graphical User Interface.

Tackling Sexual Harassment on Public Transport with Deep Neural Network | *Tensorflow, Pytorch* **April 2022**

- Used kaggle dataset "Car License Plate Detection" for training and testing.
- Used TensorFlow for object detection and Pytorch for converting the characters

Yellow Blog | *Django, PostgreSQL* **Feb 2022**

- An yellowish way to connect with your friends with constant updates.
- Django as backend; Bootstrap for frontend

Extracurricular

- **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).
- **Singing:** Performed live shows as a vocal artist in *university programs*, *wedding ceremonies*, *club programs*, *promoting facebook pages*, also for *local audiences*
- **Clubbing:** Served BRAC University Cultural Club as Assistant Secretary from Spring 2019 to Spring 2020.
- **Cricketer:** A pace bowling allrounder. Played in *RS (Residential Semester) Cricket Tournament.*