Khondker Salman Sayeed

4th year Undergraduate Student in CSE, BUET

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EXPERIENCE

CSE BUET NLP Lab —*Undergraduate Research Assistant*
JAN 2023 - PRESENT

Researching **multimodal** deep learning and **vision-enhanced large language models** for an undergraduate thesis in multimodal transformers. Curated a large **dataset** of newspaper articles, images, and summaries to improve the **abstractive summarization** task by including image data along with the article.

Northwest Power Generation Company — *Machine Learning Intern*
MARCH 2023 - JUNE 2023

Worked with the powerplant maintenance team to develop a **Multi-Layer Perceptron** and an **LSTM** model to analyze the powerplant performance level and failure prediction. Analyzed powerplant sensor data to employ data-cleaning and **feature engineering** techniques that allowed the machine learning model to predict with better accuracy.

DLSprint 2.0 2023 — *Organizer and Instructor*
JUNE 2023 - AUGUST 2023

Served as an organizer of DLSprint 2.0 2023, an open-for-all **Deep Learning Competition** about **Document Layout Analysis.** Conducted two **workshops** as the secondary **instructor** on topics of common competition practices, computer vision, and image segmentation.

EDUCATION

Bangladesh University of Engineering and Technology
Bachelor of Computer Science and Engineering
APRIL 2019 - PRESENT

- Current CGPA: **3.9/4.0**
- University **Merit Scholarship** Recipient (4/6 Semesters)
- University **Dean's List** Scholarship Recipient (All Semesters)
- Member of IEEE Computer Society
- Member of IEEE Signal Processing Society

Notre Dame College — *HSC*
JULY 2016 - SEPTEMBER 2018

- GPA: **5/5**
- HSC Talent-pool **Scholarship** Recipient

St. Joseph Higher Secondary School — *SSC*
JAN 2008 - MAY 2016

- GPA: **5/5**
- SSC Talent-pool **Scholarship** Recipient
- Executive Member of Scintilla Science Club

PROGRAMMING LANGUAGES

Python
C/C++
Java
Typescript

FRAMEWORKS/LIBRARIES

ExpressJS, React, NextJS
Flask, FastAPI,
TailwindCSS, MUI
Pytorch, Tensorflow

LANGUAGES

Bangla (Native)
English (Fluent)

INTERESTS

Physics
Football (Misnomer: Soccer)
Video Games

REFERENCES

AKM Ashikur Rahman
Professor at CSE, BUET
ashikur@cse.buet.ac.bd
Relation: Advisor

Rifat Shahriyar
Professor at CSE, BUET
rifat@cse.buet.ac.bd
Relation:
Thesis Supervisor

AWARDS

DLSPRINT 2022 — *Champion*

Hosted by Bengali.AI, Sponsored by Optimizely
JULY - SEPTEMBER 2022

- Task: **Speech Transcription** on the **Bengali Common Voices** Dataset
- Model: **wav2vec2**
- Kaggle: DL Sprint - BUET CSE Fest 2022 | Kaggle
- Team Name: **YellowKing**, Account: Salman Khondker
- Github: DLSprint2022-Champion
- Paper: Applying wav2vec2 for Speech Recognition on BN-CV

IEEE Video and Image Processing Cup — *Champion*

Hosted by IEEE Signal Processing Society at Kuala Lumpur Malaysia (ICIP2023)

AUGUST - OCTOBER 2023

- Task: **Biomarker Prediction** from retina OCT scans
- Model: **MaxVit, EVA02-ViT, InceptionNet, ResNet**
- Competition Page: 2023 IEEE SPS Video and Image Processing (VIP) Cup
- Team Name: **Synapse**
- Paper: Ophthalmic Biomarker Detection Using Ensembled Vision Transformers -- Winning Solution to IEEE SPS VIP Cup 2023

EEE DAY 2023 Datathon — *1st Runners Up*

Hosted by BUET EEE, Apurba Technologies Ltd.
FEB - MARCH 2023

- Task: **Grammatical Error Detection** on an in-house dataset
- Model: **T5** Transformer
- Kaggle: Apurba presents Bhashabhrom: EEE DAY 2023 Datathon | Kaggle
- Team Name: **Schadenfreude**, Account: Salman Khondker
- GitHub Link: Bangla-GED
- Paper: Bangla Grammatical Error Detection Using T5 Transformer Model

AI For Bangla 2.0 - 2023 — *Honorable Mention*

Hosted by EBLICT, Bangladesh Computer Council
DEC 2022 - MARCH 2023

- Task: First word-level **Bangladeshi Sign Language Dataset** collection
- Model: **3DCNN, Image-RNN, STGCN**
- Host Page: EBLICT Facebook
- Team Name: **Silent Sentinels**
- GitHub Link: BdSL40

PROJECTS

Mobile-Doc — *A telemedicine web application*
- Backend: **FastAPI, MongoDB, Redis, BigQuery**
- Frontend: **React, MUI**
- Deployment: **Netlify**
- Link: Pokedoc
- Github: Pokedoc

Sub-C Compiler — *A compiler for a subset of the C programming language*
- Tools: **Flex** (Lexer), **GNU Bison** (Parser)
- Language: **C, C++**
- Github: Sub-C Compiler

Suntech — *An e-commerce web application*
- Backend: **Flask, OracleDB**
- Frontend: **Jinja2, HTML, CSS, VanillaJS**
- Github: Suntech

Ray-Tracing — *A rendering pipeline implementing ray tracing in OpenGL scenes*
- Language: **C++**
- Algorithms: **Phong Lighting Model, Recursive Reflection**
- Tool: **OpenGL**
- Github: Ray-Tracing

Enhanced xv6 OS — *Implementing Copy-On-Write and Memory Page-Replacement in the xv6 OS*
- Language: **C**
- Implemented **Copy-On-Write** and **Paging** to the barebones xv6 OS
- Implemented a custom process scheduler (**Lottery Scheduling**) in the OS
- Implemented multiple new **system calls** for processes
- Github: xv6 With Paging

twitt3r — *A Twitter clone using the t3-stack*
- Framework: **NextJS**
- Stack: T3 (**Typescript**, **trpc**, **TailwindCSS**)
- Persistence: **PlanetScale**, **Prisma ORM**
- Deployment: **Vercel**
- Link: twitt3r
- Github: twitt3r

Student Scheduler — *An MVC JavaFX Schedule Management Software*
- Language: **Java**
- Libraries: **JavaFX**
- Database: **SQLite**
- Github: Student Scheduler

DocumentQA — *A langchain LLM document chatbot*
- Language: **Python**
- Libraries: **langchain, OpenAI**
- UI: **Chainlit**
- Database: **ChromaDB Vector Database**
- Github: DocumentQA