

# 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 this open-for-all **Deep Learning Competition** about **Document Layout Analysis**. Conducted two **workshops** as an **instructor** on topics of common competition practices, computer vision, and image segmentation. Took ownership, being involved in the competition's conception to execution.

## EDUCATION

### Bangladesh University of Engineering and Technology

*Bachelor of Science, Majoring in 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](mailto:ashikur@cse.buet.ac.bd)  
Relation: Advisor

Rifat Shahriyar  
Professor at CSE, BUET  
[rifat@cse.buet.ac.bd](mailto: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, Georgia Institute of Technology 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](#)

**Ray-Tracing** — *A rendering pipeline implementing ray tracing in OpenGL scenes*

- Language: **C++**
- Algorithms: **Phong Lighting Model**, **Recursive Reflection**
- Tool: **OpenGL**
- Github: [Ray-Tracing](#)

**Student Scheduler** — *An MVC JavaFX Schedule Management Software*

- Language: **Java**
- Libraries: **JavaFX**
- Database: **SQLite**
- Github: [Student Scheduler](#)

**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](#)

**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](#)

**DocumentQA** — *A langchain LLM document chatbot*

- Language: **Python**
- Libraries: **langchain**, **OpenAI**
- UI: **Chainlit**
- Database: **ChromaDB Vector Database**
- Github: [DocumentQA](#)

**Suntech** — *An e-commerce web application*

- Backend: **Flask**, **OracleDB**
- Frontend: **Jinja2**, **HTML**, **CSS**, **VanillaJS**
- Github: [Suntech](#)

**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](#)