SAWRADIP SAHA

DHAKA, BANGLADESH

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Passionate about **Machine Learning** since my 2nd year of Bachelor's Degree, I have **independently** mastered major concepts in the field and continuously stay updated with advancements in ML and DL. Adept at **self–motivated learning** and **problem–solving**, my participation as well as achievements in ML competitions and AI research showcase **strong teamwork skills** and expertise in **Computer Vision**, **Predictive Analysis**, **Speech Analysis**, and **NLP**.

EDUCATION

Bangladesh University of Engineering and Technology, Dhaka *[May 2018 – May 2022]*
BSc in Mechanical Engineering
- Strong basics in **Mathematics** and **Numerical Methods** in addition to Core Mechanical Engineering
- **CGPA** 3.47/4.00

Notre Dame College, Dhaka *[Jan 2015 – June 2017]*
Higher Secondary Certificate(Batch of 2017)
- Strong Basics in Science Background subjects like **Math** and **Physics**
- **GPA** 5.00/5.00

COURSERA
Deep Learning Specialization
- Learned basics of **ML, DL, Neural Networks**, **Data Analysis** and **Visualization.**
- *Certificate*

COMPETITIONS AND ACHIEVEMENTS

IEEE Video and Image Processing Cup 2021 *[1st Position]*
- Developed an **In–bed Human Pose Estimation System.**
- Our **Team Samaritan** achieved the 1st Position and was awarded with a prize money of $5000.
- **Skills Gained**: Image Processing, Computer Vision, Pose Estimation
- *Winner Announcement*

Deep Learning Sprint – Bengali.ai + BUET CSE *[2nd Position]*
- Developed a **Bengali Automatic Speech Recognition System**
- Our **Team Ekush** achieved the 2nd Position and was awarded with a prize money of 60000 Taka.
- **Skills Gained:** Bengali Speech Recognition, Speech Analysis, Large scale DL Training
- *Winner Announcement*

IEEE Video and Image Processing Cup 2022 *[3rd Position]*
- Developed a system for **Detection of fully Synthetic and partially manipulated Images.**
- Our **Team Sherlock** that I co-mentored achieved 3rd Position and awarded with a prize money of $1500.
- **Skills Gained:** Fake Image Detection, GAN Detection, Leadership and Mentorship
- *Winner Announcement*

Robi Datathon 2.0 *[Among Top 10]*
- Worked on **Analysis and Visualization of Large Tabular Data**
- From more than 2,800 participants from 11 countries, top 10 Teams were selected for further stage.
- **Skills Gained:** Big Data Analysis, Time–series Analysis, Data Storytelling
- *Competition Website*

OPEN SOURCE CONTRIBUTIONS

PYTORCH
Deep Learning Framework
- Added documentation to official Pytorch repository
- *PR Link*(Added Docs)

SKORCH
Scikit–Learn porting of PyTorch
- Updated and Fixed all tutorial notebooks
- *PR Link*(Modified Notebooks)

OPENVINO TOOLKIT
Model Optimization and Deployment
- Added Tutorial Notebooks on Object Detection and Text Spotting
- *PR Link*(YOLOx), *PR Link*(Text Spotting)

WORK EXPERIENCE

ACI Limited   *[June 2023 – Present]*

Machine Learning Engineer

- *Large-scale Data analysis, DL model development and deployment strategies to optimize Production and Distribution*

MAGICMIND   *[Nov 2022 – June 2023]*

Machine Learning Engineer (Remote)

- *Developed an LLM-based automatic structured story-generation pipeline as part of a project intended to automate Video-game creation*

GOOGLE SUMMER OF CODE(GSoC 2023) Project[April 2023 – Present]

GSoC is an international program organized by **Google** that offers students the opportunity to work on **open-source projects** during the summer for a period of about **3 months.**

Organization: **OpenVino Toolkit, Intel** (Model Optimization and Deployment Toolkit)

Project Name: *Showcase performance of PyTorch Image Models (timm) with OpenVINO*

- Integrating PyTorch IMage Models (**TIMM**) library with OpenVINO.
- Applying advanced **model optimization** techniques such as **Quantization**, **Token Merging** etc
- GSoC Apprlication Pre-requisite *PR* **Link**

TECHNICAL SKILLS

- **Programming Languages:** Python(Advanced, 4+ years Experience), C#, Java(Intermediate), C++
- **Domain Basics:** ML/DL Basic Concepts, Data Structure & Algorithms, MLOps, Statistics, Numerical Methods
- **Data Analysis & Visualization:** Numpy, Pandas, Matplotlib, Seaborn, OpenCV, Librosa, Pillow etc.
- **ML/DL Frameworks:** PyTorch(Advanced), Tensorflow, Scikit-learn, JAX etc.
- **Database:** SQL Database(MySQL), NoSQL Database(MongoDB) Vector Database(Weaviate)
- **Post-training Skills :** Model Optimization, Quantization, TOken MErging, MLOps, Deployment etc
- **Currently Learning:** LLM Finetuning and Optimization, Prompt Engineering, Cloud Computing(Azure)

AI RESEARCH EXPERIENCE

A SIAMESE BASED ONE SHOT LEARNING NETWORK WITH A WATERMARK ENHANCEMENT TECHNIQUE FOR HISTORICAL WATERMARK RECOGNITION

2022 IEEE Region 10 Symposium (TENSYMP)

- *This paper presents a one-shot classification pipeline for **historical watermark identification**, utilizing a **Siamese network** architecture with an EfficientNetB0 backbone and a contrasting loss function to distinguish between similar and dissimilar watermark images, achieving improved performance compared to existing **one-shot classification** methods.*
- *DOI:10.1109/TENSYMP54529.2022.9864543*

HUMAN SLEEPING POSE ESTIMATION IN DOMAIN MISMATCH CONDITION USING SEMI-SUPERVISED AND TRANSFER LEARNING SCHEMES

SSRN Electronic Journal

- *This paper proposes a deep learning framework using statistical and GAN-based **image augmentation** techniques for 2D pose estimation of bed-ridden patients from **infrared images**, overcoming the s**carcity of annotated data** and achieving significant improvemt with **self-supervised learning**.*
- *DOI:10.2139/ssrn.4372887*

References are available upon request.