Sk Sabit Bin Mosaddek

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Research Interest

Computer Vision, 3D Scene Understanding, 3D Recostruction, Deep Learning, Computer Graphics

Education

Stony Brook University August 2025 – Present
Ph.D. in Computer Science
Advisor: Dr. Akshat Dave | **Photon Intelligence Lab**

Bangladesh University of Engineering and Technology (BUET) April 2019 – July 2024
B.Sc.Engg. in Computer Science and Engineering ***Degree with Honors***
Thesis Advisor: Dr. Anindya Iqbal

Research Experience and Publications

Advancing Agricultural Field Segmentation Using Deep Learning Jun 2024 - Dec 2024
Research Project, Computer Vision

- Identifying crop types using agricultural field segmentation and determining the harvesting stages of crops. Additionally, NDVI range is calculated for those fields. The dataset, our team has created, consists of Drone, Planet, Sentinel and Landsat images.
- **Tools and Technology:** Python (Pytorch, Rasterio, OpenCV), Segment Anything Model
- **Supervisor :** Dr. M. Sohel Rahman, Professor, CSE, BUET, Dr. Sara Nowreen, Professor, IWFM, BUET

Advancing Code Review and Code Refinement Automation Using LLMs July 2023 - Nov 2024
Undergraduate Thesis ***ArXiv*** *(Co-First Author)*

- Designing prompts augmenting static program metadata (function call graph) and natural language summary, and qlora fine-tuning to improve code review comment and code refinement generation tasks
- **Research Poster Presentation in 10th NSysS 2023**, Poster
- **Tools and Technology:** Python (Pytorch), TreeSitter, OpenAI GPT API, CodeT5, CodeLlama, Llama 3
- **Supervisor :** Dr. Anindya Iqbal, Professor, CSE, BUET, Dr. Toufique Ahmed, IBM Research (Past: PostDoc, UC Davis)

Faster and Improved CD-MAWS with Suffix Automata Jan 2024 - Apr 2024
Research Project, Suffix Automata, BioInformatics ***Accepted*** *at WALCOM 2025*

- Introduced a refined *CD-MAWS* method for phylogeny estimation, significantly reducing computational complexity from $\max(O(m^n), O(m^n \log n))$ to $\max(O(m^n), O(mnk))$ while maintaining tree quality, through a revised cosine distance calculation method, binary encoding of MAWs, and the adoption of suffix automata for MAW generation.
- **Supervisor** : Dr. M. Saifur Rahman, Professor, CSE, BUET

Work Experience

Teaching Assistant, Stony Brook University August 2025 – Present
Department of Computer Science *Stony Brook, USA*
Course: CSE 307 - Principles of Programming Languages

Full-time Lecturer, Brac University July 2024 – July 2025
Department of Computer Science and Engineering *Dhaka, Bangladesh*
Courses Taught : Computer Graphics, Algorithms, Data Structures, Programming Language-II Work Profile

Junior Backend Developer Intern (Part-time), Tallykhata January 2024 – May 2024
contributed to developing experimental projects of company *Dhaka, Bangladesh*

Competitive Programming Trainer, Bangladesh University of Professionals July 2023 – December 2023
Trained students at BUP to help develop a better algorithmic problem solving skill *Dhaka, Bangladesh*

Machine Learning Intern (Part-time), RedDot Digital Limited May 2023 – June 2023
Contributed to developing an Android App for Client-side verification of National ID Card images *Remote*

Honors and Awards

Chairman Fellowship for 2 years (2025-2027), Stony Brook University

Dean's list award and **University merit scholarship** recipient in 2019-2024

RISE-BUET Internal Student Research Grant for undergrad thesis, Details

Notable Programming Contest Achievements

Asia West Champion (Overall 26th) in International Collegiate Programming Contest World Final 2022

2nd Runner-up in International Collegiate Programming Contest Asia West Continent Final Contest, 2021

Grandmaster in Codeforces, max rating : 2403 , Top 1% worldwide, Top 0.01% in country

221th in Meta Hackercup Round 3, 2021, **286th** in Google Code Jam Round 3, 2021

ICPC Asia Dhaka Regional contest, 2022 : **Champion**, 2021 : **1st Runner-up**

Champion, Inter University Programming Contest, RUET 2022

1st Runner-up, Inter University Programming Contest: AUST 2022, SUST 2023

Voluntary Work

BUET IUPC Organizer July 2023
Problemsetter, Judge and Organizer of BUET Inter University Programming Contest 2023

BDOI Judge May 2023
Problemsetter and Judge of Bangladesh National Olympiad of Informatics 2023

Academic Projects

Face aging and de-aging using generative adversarial networks *Python* Source Code

- A **computer vision project** for face aging and de-aging using generative adversarial networks (GANs) with a focus on preserving identity and facial attributes, under the supervision of Ajmain Yasar Ahmed, Lecturer, CSE, BUET.

ML Algorithm, FNN, PCA and EM *Python* Source Code

- Implemented FNN from Scratch, Adaboost algorithm with Logistic Regression, PCA & clustering with EM algorithm on gaussian mixture models from scratch.

Ray Tracing & Raster Based Pipelines *C++, OpenGL* Source Code

- A project regarding computer graphics. Z-buffer, Ray Casting and Ray Tracing are implemented to render 3D objects.

XV6 Operating System - System Call, Scheduling, Memory Management *Bash, C* Source Code

- Designed a few system calls, managed process scheduling with the lottery algorithm, and implemented paging and copy-on-write for memory management.

C Compiler *C, Lex, Yacc, Assembly* Source Code

- Built a simple compiler from scratch in compiler sessional using yacc, c, assembly etc.

Technical Skills

Languages	:	C, C++, Python, Java, Javascript, Bison, Flex, Bash, Assembly, MySQL, LaTeX
Frameworks	:	SpringBoot, React.js, Node.js, Docker, NS2, xv6, Git, Wireshark, Oracle, PostgreSQL
Libraries	:	TensorFlow., SciPy, PyTorch, NumPy, Matplotlib, OpenCV, OpenGL, Pandas, Scikit Learn
Soft Skills	:	Problem Solving (Solved 3000+ problems), Teamwork

References

Dr. Akshat Dave Stony Brook University
Assistant Professor, Computer Science *dave@cs.stonybrook.edu*
PhD Advisor

Dr. Anindya Iqbal Bangladesh University of Engineering and Technology
Professor, Computer Science and Engineering *anindya@cse.buet.ac.bd*
Undergrad Thesis Advisor