MD ASHIKUR RAHMAN

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EDUCATION

American International University-Bangladesh — Jan.'11 – Feb.'15
B.Sc. in Computer Science and Engineering
CGPA: 3.87 Out of 4.00 (Class Ranking: Among Top 3%)
Thesis: Sentiment Analysis and Fact Extraction from RSS Feeds: An In-depth Analysis — Advisor: Prof. Dr. Tabin Hasan

RESEARCH INTERESTS

- Machine Learning and Optimization
- Neural Networks
- Natural Language Processing
- Computer Vision

TECHNICAL SKILLS

Machine Learning	Supervised and Unsupervised Learning, Linear Models
Familiar ML Techniques	Regression, Random Forest, Decision Trees, Principal Component Analysis, Naive Bayes, K-Nearest Neighbors, Support Vector Machines, Gradient Descent, etc.
Familiar CV/NLP Architecture	VGG, ResNet, YOLO, U-Net, Mask R-CNN, EfficientNet Word2Vec, BERT, Transformer-XL
Programming/Database	C/C++, R, Python; Databases (MySQL, MS SQL Server, PostgreSQL, MongoDB)
Cloud Platform & GPUs	Google Cloud Platform (GCP), Microsoft Azure
Software & Tools	Trello, JIRA, LaTeX, PyCharm
Python & ML Framework	FastAPI, PyTorch, TensorFlow, Matplotlib, etc.
Version Control & Others	GitHub, Bitbucket, Docker

KEY RESEARCH PROJECTS

✓ **Enhancing Mesh Generation through Multi-View Image Fusion**
Contributors: *Md Ashikur Rahman*, Md Arifur Rahman, Faizul Hassan, Shafayat Ahmed — Apr.'23 – Present

To overcome the drawbacks of reconstructing objects from a single viewpoint, this research project studies the combination of images from various angles to generate more precise and intricate 3D meshes. Utilizing data from different viewpoints, the proposed method theoretically improves the quality of the resultant models. Currently, we are implementing multi-view image fusion techniques using Python to validate the theoretical accuracy of the reconstructions.

✓ **Exploring Collaborative Learning for Generalized Virtual Try-On with GP-VTON**
Contributors: Md Arifur Rahman, Zakir Hossain, *Md Ashikur Rahman* — Jan.'23 – Feb' 24

This research project aims to improve the accuracy of the GP-VTON framework for Image-based Virtual Try-On technology. This involves developing a new warping module and training strategy to enhance its performance.

✓ **Revolutionizing Contextual Key Phrase Spotting and Insights Extraction from Audio Conversations**
Contributors: *Md Ashikur Rahman*, Kazi Sohrab Uddin, Md Nahiyan, Mahmuda Akter — Sept.'23 – Nov.'23

This project utilizes SeamlessM4T, a multimodal AI model designed for translating speech and text, and leverages the capabilities of Llama 2 to identify and extract key contextual phrases. In Bangladesh, this system has been deployed within a telecommunications company to enhance and streamline their operational processes.

✓ **Deep Network Architectures for Object Detection and Segmentation** (National ICT Award Winning Project)
Contributors: *Md Ashikur Rahman*, Md Arifur Rahman, Nazmin Nahar — Apr.'21 – Feb.'23
Project Link: https://retouched.ai/

In this project, we have designed a deep neural network for salient object detection, which has resulted in a novel solution for "Image Background Removal." The solution achieves a high accuracy of 96.23% using the Human Correction Efforts (HCE) metric at its best and maintains a commendable accuracy of 81.47% even in worst-case scenarios a for a wide range of products.

Our contributions can be summarized as follows:

- Firstly, the model captures vast amount of contextual information for precise and accurate salient object extraction.
- Secondly, we have improved model depth using advanced pooling in RSU blocks, achieving high accuracy and reducing processing time for a 257 MB image to 2.27 seconds on NVIDIA A100 40GB (GCP), excluding upload time.

✓ **Named Entity Recognition (NER) on the N2C2 Dataset: Obesity Challenge Factors** (Voluntary Research Project)
Contributors*: Md Ashikur Rahman*, Thanh Thieu Jul.'20 – Sep.'20

Enhanced Named Entity Recognition (NER) task performance by implementing Tree-LSTM over traditional LSTM. Retrained the neural network and shared the research on GitHub for peer review. The following highlights our primary contributions to this research: [The detailed work is accessible on GitHub for team members to review].

- Optimized architecture with Tree-LSTM, achieving a 7.23% performance improvement over previous methods.
- Developed an algorithm to efficiently convert NeuroNER output into WebAnno input format

PUBLICATIONS & WORKSHOPS - (Google Scholar)

- (Under Review) *Md Ashikur Rahman*, Md Arifur Rahman. "AdvHSNet: An Approach Using Self-Attention Mechanism for Hate Speech Detection." Submitted a Q1-ranked journal.
- *Md Ashikur Rahman,* Md Arifur Rahman and Juena Ahmed Noshin. Automated Detection of Diabetic Retinopathy using Deep Residual Learning. International Journal of Computer Applications 177(42):25-32, March 2020.
- NVIDIA GTC - Accelerating Data Engineering Pipelines – Nov 2021 (INSTRUCTOR-LED WORKSHOP)

EMPLOYMENT

✓ **The KOW Company**
Lead, Artificial Intelligence (Image Processing Lab) Jan.'23 – Present
Key Contributions:

- Conducting research on DL/CV techniques, including 3D reconstruction, object detection, image segmentation.
- Collaborating closely with teammates and professors from the Department of Mathematics at East West University (EWU) to develop optimal solutions and address complex challenges
- Managing end-to-end projects and overseeing team operations to ensure effective collaboration, timely completion, and the delivery of high-quality results

Machine Learning Engineer (Image Processing Lab) Jul.'20 – Dec.'22
Key Contributions:

- Implemented deep learning models, resulting in significant improvements in object recognition and segmentation tasks.
- Conducted A/B testing to assess the performance and effectiveness of different model variations or algorithms.

✓ **Smart Technologies (BD) Ltd**
Sr. Software Engineer Sep.'16 – Dec.'19
Key Contributions:

- Designed a scalable microservices architecture for ERP modules, including Purchase, Inventory and File Transfer
- Developed a Real-Time Large Scale Data Synchronization Scheduler

✓ **Proggasoft**
Software Engineer Mar.'15 – Aug.'16
Key Contributions:

- Developed a Contest Platform for Programmers - https://devskill.com/

AWARDS AND SCHOLARSHIPS

- 2021: Finalist, APICTA 2021 - The Asia Pacific ICT Alliance Award
- 2021: Champion, BASIS National ICT Awards 2020
- 2015: Academic Award (Magna Cum Laude)
- 2012-2014: Merit Scholarship & Tuition Fee Waiver, AIUB

ONLINE COURSES & CERTIFICATION [Available for public viewing via the provided link]

- Problem Solving (Advanced) – GOLD Badge Level on HackerRank
- Problem Solving (Basic) – Completed comprehensive training on HackerRank