MD ASHIKUR RAHMAN

mdashikur.rafi@gmail.com | https://www.linkedin.com/in/mdashikrah/ | https://ashikrafi.github.io/ | +880 1675964080

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
- Computer Vision
- Natural Language Processing

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, etc.
Programming/Database	C/C++, R, Python; Databases (MySQL, MS SQL Server, PostgreSQL, MongoDB)
Cloud Platform & GPUs	Compute Engine, Cloud Storage, Cloud Functions (GCP), Azure DevOps (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

This project addresses the limitations of single-viewpoint 3D reconstruction by combining images from multiple angles to produce precise and detailed 3D meshes. Using Python, we are implementing multi-view image fusion techniques to validate the method's theoretical accuracy.

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

In this project, we have designed a deep neural network for salient object detection, achieving a novel "Image Background Removal" solution. The model delivers 96.23% accuracy (HCE metric) at its best and 81.47% in worst-case scenarios across diverse products. To date, ~2.6M images have been processed globally, with a daily throughput of 8,000-11,000 images. 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.

✓ **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 — Sept.'23 – Nov.'23

This project employs SeamlessM4T, an advanced multimodal AI model designed for translating both speech and text, and integrates the powerful capabilities of Llama 2 to identify and extract key contextual phrases. In Bangladesh, this system has been deployed for testing in a customer service provider to enhance and optimize their operational processes.

- ✓ **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 in deep learning and computer vision SOTA areas, e.g., 3D reconstruction and object segmentation.
  - Collaborating with mathematics professors at East West University (EWU) to address complex mathematical challenges.
  - Leading intra-departmental meetings, managing projects, and making strategic decisions to streamline development processes and ensure timely, 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:
  - Developed and deployed nearly 7-8 ERP modules, including key modules like Purchase, Inventory, and Audit.
  - Designed a monolithic-based architecture to ensure scalability and seamless integration across modules.
  - Built a real-time scheduler for large-scale data synchronization on the ~5TB distributed databases.
  - Optimized SQL queries to significantly enhance performance on the 5TB databases, ensuring efficient data handling.
  - Led technical and non-technical team meetings, advancing clear communication and alignment on project goals.
  - Supervised the end-to-end development process, ensuring timely delivery and successful/unsuccessful deployment.

- ✓ **Proggasoft**
  Software Engineer Mar.'15 – Aug.'16
  Key Contributions:
  - Developed a Contest Platform for Programmers (https://devskill.com) using ASP.NET MVC, adhering to SOLID principles and robust design practices

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