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
- 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 ERP modules using .NET, including key modules like Human Resource Management, Inventory Management, Procurement Management, Fixed Asset Management, Audit Management, Sales and Distribution, Pricing and Discount Management, and Predictive Analytics.
  - Designed a .NET-based monolithic 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