MD ASHIKUR RAHMAN

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

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

RESEARCH PROJECT HIGHLIGHTS

✓ **Efficient 3D Reconstruction: Combining Structure from Motion with 2D Images**
Contributors: Md Ashikur Rahman, Md Arifur Rahman, Faizul Hassan, Shafayat Ahmed Jun.'23 – Present

We aim to develop a project that combines Structure from Motion (SfM) with deep learning techniques to create highly detailed 3D models from 2D images, while also focusing on reducing the time complexity of the process. By optimizing the algorithms and leveraging the efficiency of deep learning methods, our goal is to significantly decrease the time required to generate 3D images, making the reconstruction process more efficient and accessible.

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

Our team has designed an advanced deep neural network for salient object detection, which has resulted in an efficient solution for "Image Background Removal." Our 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. Our team's invaluable contributions can be summarized as follows:

- Firstly, the model captures vast amount of contextual information for precise and accurate salient object extraction.
- Secondly, the model achieves increased depth through advanced pooling operations in RSU blocks, enhancing system performance with high accuracy. Specifically, the processing time for an image with a size of 257 MB is reduced to 2.27 seconds, excluding image uploading, when executed on NVIDIA A100 40GB on GCP.

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

Made significant contributions to the field by replacing LSTM with Tree-LSTM, resulting in enhanced performance for Named Entity Recognition (NER) tasks. Retrained the neural network from scratch and made the research work available on GitHub for team members to review. The following highlights our primary contributions to this research: [The detailed work is accessible on GitHub for team members to review].

- Successfully implemented a significant architectural enhancement by incorporating Tree-LSTM, resulting in a notable 7.23% improvement over the previous methods.
- Played a key role in the development of an algorithm that efficiently converts NeuroNER output to WebAnno input format.

PUBLICATIONS & WORKSHOPS - (Google Scholar)

- **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)

EMERGING IDEAS: A SHOWCASE OF WORK-IN-PROGRESS RESEARCH

- We are a dedicated research team consisting of three members, eagerly seeking to submit our manuscript titled "Nested U-Structure like Pure Transformer for Medical Image Segmentation" to a renowned academic journal. Our groundbreaking approach leverages a nested U-structure, inspired by the pure transformer architecture, to tackle the challenging task of medical image segmentation. Our preliminary findings exhibit exceptional potential in advancing the field of medical image analysis.

EMPLOYMENT

✓ **The KOW Company**

Lead, Artificial Intelligence (Image Processing Lab) Jan.'23 – Present

Key Contributions:

- Conducting research on CV techniques, including 3D reconstruction, object detection, image segmentation, and retouching.
- Proactively seeking opportunities for continuous improvement through cutting-edge research.
- Collaborating closely with teammates to find optimal solutions and address challenges related to AI projects.
- Managing end-to-end AI projects, ensuring timely completion and delivering exceptional results.

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

Key Contributions:

- Implemented state-of-the-art machine learning models, resulting in significant improvements in object recognition and image segmentation tasks.
- Conducted comprehensive experiments and benchmarking to validate the effectiveness and efficiency of developed neural architectures

✓ **Smart Technologies (BD) Ltd**

Sr. Software Engineer Sep.'15 – Dec.'19

Key Contributions:

- Architected and implemented a scalable Microservices architecture for a large-scale ERP system encompassing 19 modules, capable of efficiently handling 2TB dataset in SQL Server.
- Developed a Real-Time Large Scale Data Synchronization Scheduler utilizing ASP.NET MVC 4 and SSMS.

✓ **Proggasoft**

Software Engineer Aug.'14 – Aug.'15

Key Contributions:

- Performed extensive debugging and troubleshooting to resolve simple & complex technical issues.
- Developed a Contest Platform for Programmers - https://devskill.com/

TECHNICAL SKILLS

Machine Learning	Supervised and Unsupervised Learning, Linear Models etc.
Familiar ML Techniques	Regression, Decision Tree, Naive Bayes, KNN, SVM, Random Forest, Gradient Decent.
Computer Vision	Deep Network Architecture: - U2-Net, Mask R-CNN etc.
Programming/Analytics	C/C++, Python, & C#; Database: - (MySQL, MS SQL Server)
Cloud Platform & GPUs	Google Cloud Platform; GPUs: NVIDIA A100 80GB/40GB
Software & Tools	LaTeX, PyCharm, Google Colab; NVIDIA DALI,
Python & ML Framework	FastAPI, PyTorch, TensorFlow, Keras
Version Control	GitHub, Bitbucket

AWARDS AND SCHOLARSHIPS

- 2021: APICTA 2021 - The Asia Pacific ICT Alliance Award-2021 (FINALIST)
- 2021: Basis National ICT Awards-2020 (CHAMPION)
- 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, ranking among the top 1% globally
- Problem Solving (Basic) – Completed comprehensive training on HackerRank
- Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning – Coursera
- Neural Networks and Convolutional Neural Networks Essential Training - LinkedIn