

MD ASHIKUR RAHMAN

mdashikur.rafi@gmail.com | <https://www.linkedin.com/in/mdashikurah/> | <https://ashikrafi.github.io/> | +880 1675964080
Shantinagar-1217, Dhaka, Bangladesh

EDUCATION

American International University-Bangladesh Jan.'11 – Feb.'15
B.Sc. in Computer Science and Engineering – CGPA: 3.87/4.00 (Top 3%), WES-Equivalent GPA: 3.94/4.00
Thesis: Sentiment Analysis and Fact Extraction from RSS Feeds: An In-depth Analysis Advisor: Prof. Dr. Tabin Hasan

RESEARCH INTERESTS

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

TECHNICAL SKILLS

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|--------------------------------------|--|
| • Machine Learning: | Supervised & Unsupervised Learning, Linear Models |
| • ML Techniques: | Regression, Random Forest, PCA, Gradient Descent, SVMs |
| • Deep Learning & NLP Architectures: | CNN, RNN, LSTM, Transformer, Attention Mechanism |
| • Generative AI & LLMs: | LangChain, OpenAI API, AI Agents |
| • Programming Languages: | Python, C/C++ |
| • ML Frameworks & Tools: | PyTorch, TensorFlow, FastAPI, Docker |
| • Research & Productivity Tools: | Zotero, Connected Papers, Notion, Weights & Biases |
| • Cloud: | GCP, Azure, GitHub, Bitbucket |
| • Databases: | MySQL, PostgreSQL, MongoDB |
| • Collaboration & Writing: | Git, Trello, JIRA, LaTeX |

KEY RESEARCH PROJECTS

- ✓ **Beyond Attention Maps: Toward More Interpretable Multimodal Reasoning in VLMs**
Contributors: *Md Ashikur Rahman*, Abdullah Ibne Hanif Areean May'25 – Present
 - The challenge of generating interpretable reasoning in VLMs remains difficult because traditional Chain-of-Thought prompting due to the lack of capturing fine-grained visual information. Recent work such as ICoT (CVPR) demonstrates the efficiency of interleaving visual, signal and textual tokens during reasoning. However, these methods still depend heavily on attention maps for region selection which are often noisy, lack semantic grounding and reduce interpretability. So, we are working to incorporate more reliable, semantically aligned visual regions into the reasoning steps to tackle the challenge
- ✓ **Addressing Efficiency, Detail, and Scalability Challenges in 3D Generative Models**
Contributors: *Md Ashikur Rahman*, Md Arifur Rahman, Faizul Hassan, Shafayat Ahmed Apr.'23 – Present
Project Link: <https://holosnap.ai/>
 - Large-scale 3D generative models face challenges such as high computational cost, coarse geometry from fixed latent grids, dataset bias and slow inference. To tackle these, we are working to provide solutions including distillation, quantization, and mixed-precision techniques to improve efficiency, also multi-scale and adaptive latent grid designs with refinement modules to recover fine geometric detail
- ✓ **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 – Nov'22
Project Link: <https://retouched.ai/>
 - Developed a deep neural network for salient object detection, achieving up to 96.23% accuracy (HCE metric) and processing 4.28M images globally with a daily throughput of 8,000-11,000 images
 - Improved accuracy by 17% and cut processing time by 30%, handling a 257 MB image in 2.27 s using deeper networks and advanced pooling in RSU blocks
- ✓ **Collaborative Learning for Generalized Virtual Try-On with GP-VTON**
Contributors: Md Arifur Rahman, Zakir Hossain, *Md Ashikur Rahman* Jan.'23 – Feb' 24
 - Improved GP-VTON by integrating a novel warping module and optimized training methodology, resulting in 19% improvement in image alignment, 6% in pose estimation, and 11% in garment fitting accuracy
 - Hardware integration issues limited scalability and commercial viability despite technical improvements

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

This project increased NER performance on the dataset by implementing a Tree-LSTM model, achieving a 7.23% performance boost over LSTM, and using an algorithm to convert NeuroNER output into WebAnno format, streamlining annotation

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
- (Under Review) Submitted to a Q1-ranked journal, the research “AdvHSNet: An Approach Using Self-Attention Mechanism for Hate Speech Detection” proposes improvements of 8.30% in precision, 7.5% in recall and 8% in F1 score
- NVIDIA GTC - Accelerating Data Engineering Pipelines – Nov 2021 (INSTRUCTOR-LED WORKSHOP)
- Attended ICLR 2025 (Singapore) as an Industrial Researcher - International Conference on Learning Representations

WORK EXPERIENCE

- ✓ **The KOW Company**
Lead, Artificial Intelligence Jan.'23 – Present
Key Contributions:
- Conduct research in deep learning, large language models (LLMs), and computer vision SOTA areas, e.g., Chain of Thought (CoT), Contextual Drift, 3D Reconstruction and Pose Estimation
 - Read research papers from top conferences such as CVPR & NeurIPS to identify research gaps and project limitations
 - Collaborate with mathematics professors at EWU to deepen understanding of linear algebra and differential geometry
 - Lead 8-10 intra-departmental meetings and 2-3 client meetings with world-renowned partners per month, manage 4 research projects with 20+ team members, improving overall project efficiency through process optimization
- Senior Machine Learning Engineer Jul.'21 – Dec.'22
Key Contributions:
- Developed customer segmentation and cluster-based territory mapping, improving healthcare marketing efficiency by 15%
 - Improved training algorithms for object detection and segmentation, increasing accuracy by 11.23%
 - Read research papers from top conferences such as CVPR & NeurIPS to identify research gaps and project limitations
- Machine Learning Engineer Jul.'20 – Jun.'21
Key Contributions:
- Developed deep learning models that improved object recognition and segmentation
 - Conducted A/B testing to assess the performance of different model variations or algorithms
- ✓ **Smart Technologies (BD) Ltd**
Senior Software Engineer Sep.'16 – Dec.'19
Key Contributions:
- Developed ERP modules in .NET (HRM, Inventory Management, Procurement Management, Audit Management, Sales and Distribution, Discount Management, Predictive Analytics), achieving 70-75% automation and 45% faster report visualization
 - Designed a .NET-based monolithic architecture for scalability, low latency, high throughput, and large concurrent users
 - Implemented & optimized SQL queries to improve performance on the 5TB databases
- ✓ **Proggasoft**
Software Engineer Mar.'15 – Aug.'16
Key Contributions:
- Contributed to <https://devskill.com> development using ASP.NET MVC, applying SOLID principles and design patterns

AWARDS AND SCHOLARSHIPS

- 2021: Finalist, AICTA 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

CERTIFICATIONS & ONLINE LEARNING [Available for public viewing via the provided link]

- Hands-on Practice in Solving Advanced Algorithms - Achieved Gold on HackerRank
- Completed comprehensive training in basic data structure & algorithm techniques on HackerRank