Alif Ashrafee

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Education

PhD **Rochester Institute of Technology**, Imaging Science — Rochester, NY, USA, Aug 2023 – present
- CGPA: 3.94/4.00
- Research Focus: Computer Vision, Continual Learning and Adaptation, Concept Drift

BSc **Islamic University of Technology**, Computer Science — Dhaka, Bangladesh, Jan 2018 – May 2022
- CGPA: 3.85/4.0
- Machine Learning Instructor and Executive Secretary for university Computer Society

Selected Publications

Holistic Continual Learning under Concept Drift with Adaptive Memory Realignment — Under Review at TMLR
Alif Ashrafee, Jedrzej Kozal, Bartosz Krawczyk

AttResDU-Net: Medical Image Segmentation Using Attention-based Residual DU-Net — June 2023
Alif Ashrafee, Akib M. Khan, Fahim S. Khan, Md. Bakhtiar Hasan, Md. Hasanul Kabir
10.1109/IJCNN54540.2023.10191528 (IJCNN 2023)

Real-time Bangla License Plate Recognition for Low Resource Video Applications — Jan 2022
Alif Ashrafee, Akib M. Khan, Mohammad Sabik Irbaz
10.1109/WACVW54805.2022.00054 (WACV Workshops 2022)

Work Experience

Machine Learning and Computer Vision Lab, Graduate Research Assistant — Rochester, NY, USA, May 2024 – present
- Developing physics-informed continual learning framework for correcting shift-variant lens aberrations in real optical systems, in collaboration with Naval Research Laboratory (sponsored by the Office of Naval Research)
- Implementing physics-based DL pipeline for satellite material characterization from unresolved hyperspectral signatures, combining simulated and telescope data with physical constraint-based spectral unmixing
- Designing meta-learned parameter-efficient fine-tuning framework for addressing class imbalance in continual learning using adapters on pre-trained large vision models

Rochester Institute of Technology, Graduate Teaching Assistant — Rochester, NY, USA, Aug 2023 – May 2024
- Courses: Machine Learning for Image Analysis, Imaging Science Fundamentals

RedDot Digital, Axiata Ltd., Software Engineer — Dhaka, Bangladesh, June 2022 – July 2023
- Won Star Performer and Project of the Year (2022) awards
- Developed full-stack ERP platform features using React, Next.js, and Redux with role-based access control
- Integrated RESTful APIs with dynamic data consumption, authentication and authorization workflows
- Built a real-time facial-recognition-based employee attendance system using deep face embeddings

bKash Ltd., Cloud Engineering Consultant — Dhaka, Bangladesh, Oct 2021 – Mar 2022
- Developed scalable microservices on AWS and Dockerized deployments using Terraform and Kubernetes

Selected Projects

End-to-End License Plate Recognition Web Application
- Real-time Flask application with 2-stage detection pipeline for processing video streams, Google Vision API for OCR, and MySQL for storage

Skin Lesion Segmentation using Conditional GANs
- Conditional GAN with Double U-Net generator and PatchGAN discriminator, achieving 89.7% Dice coefficient on ISIC2018 dataset

Q-Learning Game Agent
- Trained RL agent for 2D platformer using experience replay and reward-based policy optimization

Technical Skills

Programming Languages: C, C++, Python, Java, JavaScript

Machine Learning Frameworks: PyTorch, TensorFlow, Keras, OpenCV, Numpy, Pandas, Scikit-learn, Google Earth Engine

Web & Deployment: React, Nextjs, Flask, Django, PostgreSQL, MySQL, AWS (EC2, S3, VPC, ECR), Docker, Terraform, Ansible, Git