ALIF ASHRAFEE

Website | Email | LinkedIn | GitHub | Scholar

EDUCATION

ROCHESTER INSTITUTE OF TECHNOLOGY (RIT)
PhD in Imaging Science
CGPA: 3.90 / 4.00 (2023 – Present)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
B.Sc. in Computer Science
CGPA: 3.85 / 4.00 (2018 - 2022)

KEY COMPETENCIES

- Image Processing
- Machine Learning
- Deep Learning
- Computer Vision
- Web Development
- DevOps & Cloud Infrastructure

TECHNICAL SKILLS

- Programming Languages: C | C++| Java | JavaScript | Python
- ML libraries & frameworks: Numpy | Pandas | TensorFlow | Tensorboard | Keras | PyTorch | OpenCV | Matplotlib | Scikit-Learn | XGBoost | LightGBM
- Web frameworks: WordPress | Material UI | jQuery | React | Redux | Flask | Django
- DB: MySQL | Oracle | PostgreSQL
- Cloud & Deployment: AWS | Ansible | Terraform | Docker | Kubernetes | CI/CD
- UI/UX: Figma, Adobe XD, Photoshop, Illustrator

HONORS AND AWARDS

- Star Performer and Project of the Year, Q3 2022, Red.Digital
- Dhaka Ai Traffic Detection Challenge: Top 10
- Climate Startup Launchpad: National round 2nd runner up

LEADERSHIP EXPERIENCE

- Machine Learning Instructor & Executive Secretary, IUT Computer Society
- Anchor & Student Rep, IUTCS

PUBLICATION AND RESEARCH

MEDICAL IMAGE SEGMENTATION USING ATTENTION-BASED RESIDUAL DU-NET
Applied color constancy pre-processing algorithm for reducing augmentations, used attention gates and residual connections to retain more relevant spatial features. Achieved state-of-the-art results in 3 benchmark datasets (IJCNN 2023)

REAL-TIME BANGLA LICENSE PLATE RECOGNITION SYSTEM FOR LOW RESOURCE VIDEO-BASED APPLICATIONS
Contributed a benchmark Bangla license plate image and video dataset. Used a 2-stage detection module consisting of Cascade Classifier and MobileNet-SSD, and temporal frame separation strategy. Achieved real-time (27.2 FPS) detection performance on a single-threaded Intel Core-i5 CPU with only 8GB of RAM (WACV Workshops, 2022)

RETHINKING COOKING STATE RECOGNITION WITH VISION TRANSFORMERS
Conducted comparative analysis and ablation studies on pre-training and data-augmentation effects on several variants of the Vision Transformer on the Cooking State Recognition Dataset and obtained state-of-the-art 95% accuracy (ICCIT, 2022)

WORK EXPERIENCE

GRADUATE RESEARCH ASSISTANT (PRESENT)
Research Assistant for Professor Bartosz Krawczyk at the Continual Learning and Enhanced AI Research (CLEAR) Lab at the Center for Imaging Science at RIT. My current research domain is continual and lifelong machine learning in data stream scenarios under the influence of concept drift. Currently, I am also leading a group project on task poisoning and adversarial robustness in continual learning.

GRADUATE TEACHING ASSISTANT (FALL 2023 – SPRING 2024)
IMGS-389: Machine Learning for Image Analysis
IMGS-111: Imaging Science Fundamentals

SOFTWARE DEVELOPER | RED.DIGITAL, AXIATA LTD. (JUN 2022 – JUL 2023)
Worked on enterprise ERP and E-commerce websites using React, Nextjs, and Redux. Worked on critical features such as CRUD functionalities, API consumption, Authentication, Data tables, and Role-based access.

CLOUD ENGINEERING CONSULTANT | BKASH LTD. (OCT 2021 – MAR 2022)
Got familiar with Linux environments, scalable cloud-native micro-services (Docker and Kubernetes), AWS services (EC2, S3, ECR, DynamoDB, API Gateway, VPC, Route 53, and more), and infrastructure provisioning languages (Terraform, Ansible)

RESEARCH INTERN | PIONEER ALPHA (JAN 2021 – AUG 2021)

PROJECTS

LICENSE PLATE RECOGNITION WEB APP
Developed a web-app leveraging a flask backend to detect, isolate, and store license plates from video. Used Google Vision API for OCR and database for storing best results

SKIN LESION SEGMENTATION USING C-GAN
Applied Conditional GANs based on Image-to-Image translation with a DoubleU-Net as the generator and patchGAN as the critic to segment skin lesions. Achieved a DSC of 89.7% surpassing the DSC of standalone Double U-Net 89.62% with the help of a critic

CAT LEARNS TO JUMP BUILDINGS
Reinforcement learning technique to teach a cat agent to jump across buildings on its own based on past experience, rewards, and penalties using Q-Learning method

CONSTRUCTION & RAW MATERIALS SOLUTIONS
A full-stack website using HTML, CSS, Bootstrap, JS, jQuery, and Django backend integrated with Oracle DB. The website contained login & sign-up modules with validation along with dynamic search and filtering algorithms