ASHRAF-UL-ALAM

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EDUCATION

Rajshahi University of Engineering & Technology (RUET), Rajshahi, Bangladesh　　　2019-2024

Bachelor of Science in Computer Science and Engineering　　　*CGPA: 3.44 out of 4.00*

- **Relevant Coursework:** Neural Networks & Fuzzy Systems, Data Mining, Artificial Intelligence, Digital Image Processing, Database Systems, Parallel and Distributed Processing, Digital Signal Processing, Data Structure, Object Oriented Programming, Computer Algorithms, Applied Statistics & Queuing Theory.

EXPERIENCE

Young Learners' Research Lab　　　March 2023 - May 2024

Research Assistant　　　*Lab Head and Supervisor: Md. Azmain Yakin Srizon*

- Key responsibilities included designing optimized CNNs for medical image analysis, constructing OCR datasets, and developing algorithms for extracting handwritten Bengali text. Additionally, published two conference papers in Taylor & Francis and IEEE.

STANDARDIZED TEST SCORES

International English Language Testing System (IELTS)　　　October 2024

Overall 7.0 — *(Listening: 8.0, Reading: 6.5, Writing: 7.0 & Speaking: 6.5)*

PUBLICATIONS

Journals :

[1] **Ashraf Ul Alam**, S. M. Hasan, S. P. Islam, and M. P. Uddin, "PRODIA: A probability distribution alignment framework for unsupervised domain adaptation in medical image segmentation," *Computers in Biology and Medicine*, Under Review.

Conferences :

[1] **Ashraf Ul Alam**, S. P. Islam, S. M. Hasan, A. Y. Srizon, M. F. Faruk, M. Al Mamun, and M. R. Hossain, "Optic Disc and Cup Segmentation via Enhanced U-Net with Residual and Attention Mechanisms," *2024 6th International Conference on Electrical Engineering and Information & Communication Technology*, IEEE, 2024, pp. 329–334, doi: 10.1109/ICEEICT62016.2024.10534436.

[2] S. P. Islam and **Ashraf Ul Alam**, "Advancing Ophthalmology through Transfer Learning and Channel-Wise Attention for Retinal Disease Classification," *2024 6th International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT)*, IEEE, 2024, pp. 313–318, doi: 10.1109/ICEEICT62016.2024.10534342.

Book Chapters :

[1] S. Das, **Ashraf Ul Alam**, S. P. Islam, A. Y. Srizon, "BanglaOngko: A New Dataset for Accurate Bengali Mathematical Expression Detection Utilizing YOLOv8 Architecture," *Data Driven Applications for Emerging Technologies, 2nd International Conference on Big Data, IoT and Machine Learning (BIM 2023)*, Taylor and Francis, pp. 43-57, Accepted.

UNDERGRADUATE THESIS

KD-UDA: Knowledge Distillation-based Unsupervised Domain Adaptation for Improved Medical Image Segmentation

Tensorflow, Keras, CNN, Transfer Learning, U-Net

- Developed the KD-UDA framework, using Knowledge Distillation to enhance segmentation model performance on diverse medical imaging datasets without labeled data from new domains, significantly improving performances for both 2D retinal fundus images and 3D MRI data (BraTS2021).

PROJECTS　　　🐙 github.com/ashraf-ul-alam-amit

Cycle Thief Detection from Realtime Footage using YOLOv5 and DeepSORT

OpenCV, YOLOv5, DeepSORT, KD-Tree, Face_Matcher

- Developed a real-time cycle thief detection system utilizing YOLOv5 for object detection, DeepSORT for tracking, KD-Tree algorithm for efficient nearest neighbor search, and Face_Matcher for facial recognition from live CCTV footage.

NeuroSeg3D: 3D Attention U-Net for Accurate Brain Tumor Segmentation

3D U-Net, Residual Blocks, Spatial Attention

- Developed the NeuroSeg3D architecture, enhanced with residual blocks and spatial attention modules, to achieve accurate brain tumor segmentation, and demonstrated the model's performance on the BraTS 2021 dataset.

Optimizing Feature Representation of Deep Neural Networks for Enhanced Deepfake Detection
Tensorflow, Keras, CNN, Attention Mechanism, Transfer Learning

- Utilized a VGG16 feature extractor with a channel attention mechanism to enhance feature representation and improve classification accuracy. An ablation study with ResNet50 demonstrated the effectiveness of the attention mechanism.

Chronic Kidney Disease Prediction using Machine Learning
Python, Flask API, HTML, CSS || Course No: CSE 3200 (Software Development Project II)

- Performed comprehensive exploratory data analysis and feature engineering to enhance the accuracy of a CKD prediction model. Deployed the model using Flask API and designed a web interface with HTML and CSS for CKD risk assessment.

Maternal and Child Health Care
HTML, CSS, PHP, MySQL, Java, Firebase Database || Course No: CSE 3100 (Web Based Application Lab/Project)

- Developed a responsive website for Maternal and Child Health Care featuring due date calculations, immunization schedules, personalized notifications, and a query posting feature. Additionally, created a mobile app using Android Studio and Firebase with the same features.

TECHNICAL SKILLS AND INTERESTS

Research Areas	:	Computer Vision, Domain Adaptation, Object Detection, NLP, LLM, Transfer & Conventional Learning
Programming	:	Python, C, C++, Java, PHP
Frameworks	:	TensorFlow, Scikit-Learn, Keras, OpenCV, PyTorch, Bootstrap
Web & Databases	:	HTML, CSS, PHP, MySQL
Technologies	:	Flask, Android Studio, LaTeX, Git

REFERENCES

S. M. Mahedy Hasan *(Undergraduate Thesis Supervisor)*
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