# 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:** Applied Statistics & Queuing Theory (Python), Neural Networks & Fuzzy Systems, Data Mining, Artificial Intelligence, Digital Image Processing, Database Systems, Parallel and Distributed Processing, Digital Signal Processing, Data Structure (C), Object Oriented Programming (C++, Java), Computer Algorithms

## PUBLICATIONS

**Optic Disc and Cup Segmentation via Enhanced U-Net with Residual and Attention Mechanisms**
*ICEEICT 2024 — IEEE Xplore DOI: 10.1109/ICEEICT62016.2024.10534436*

- Evaluated various pretrained models as U-Net backbones, validated across Drishti-GS, REFUGE, and RIM-ONE-R3 datasets, and finally, developed an enhanced U-Net with residual and attention mechanisms.
- **Award Nomination:** Nominated for Best Poster Award at ICEEICT 2024.

**BanglaOngko : A New Dataset for Accurate Bengali Mathematical Expression Detection Utilizing YOLOv8 Architecture**
*BIM 2023 — Taylor and Francis*

- Created and annotated the BanglaOngko dataset with Roboflow, developed an efficient algorithm integrating statistical concepts to accurately localize handwritten Bengali mathematical expressions, addressing YOLOv8's unsorted bounding box challenges.

**Advancing Ophthalmology through Transfer Learning and Channel-wise Attention for Retinal Disease Classification**
*ICEEICT 2024 — IEEE Xplore DOI: 10.1109/ICEEICT62016.2024.10534342*

- Developed a hybrid model merging EfficientNetB0 and InceptionV3 with channel-wise attention, improving discriminative ability by dynamically adjusting attention across channels, outperforming state-of-the-art models.

## 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.

**Chronic Kidney Disease Prediction using Machine Learning**
*Python, Flask API, HTML, CSS*

- 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 user-friendly web interface with HTML and CSS for CKD risk assessment.

**Maternal and Child Health Care**
*HTML, CSS, PHP, MySQL, Android Studio, Java, XML, Firebase Database*

- 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

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|---|---|---|
| **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** *(Undergrad Thesis Supervisor)*
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