Shakhawat Hossain

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Education

Daffodil International University **Dhaka, Bangladesh**

B.Sc. in Computer Science and Engineering *CGPA: 3.60/4.00 (Jan. 2020 – Dec 2023)*

Relevant Coursework: *Data Structure, Data Mining and Machine Learning, Big Data and IoT, Artificial Intelligence, Numerical Methods, Algorithms, Object Oriented Programming, Programming and Problem Solving*

Undergraduate Major: *Artificial Intelligence*

Undergraduate Thesis: *Graph-Based Automatic Breast Tumor Classification Through Ultrasound Imaging Using Radiomics Features.*

Research Interests

- Machine Learning
- Deep Learning
- Artificial Intelligence
- Computer Vision
- Health Informatics
- Medical Imaging
- Image Preprocessing
- Pattern Recognition
- Generative Artificial Intelligence

Experience

University of Queensland **Brisbane, Australia**

Research Assistant *May 2024 – Present (Remote)*

- At the AI and Digital Health Technology Lab, I developed a cutting-edge brain glioma grading system utilizing hybrid graph networks. This advanced model, trained on radiomic biomarkers extracted from 3D MRI scans, employs LIME to ensure accurate and interpretable grading, delivering clinically reliable outcomes.

HawkEyes Digital Monitoring Limited **Dhaka, Bangladesh**

AI Engineer *Jan 2024 – Present*

- **Data Handling:** Performed data validation and cleaning to ensure dataset reliability, and maintained consistent labeling quality across projects for developing robust AI.
- **Computer Vision:** I led computer vision projects focused on advanced image recognition, classification, segmentation, and object detection. By leveraging algorithms like YOLO, UNet, custom CNN-LSTM, and OpenCV.
- **Generative AI:** Developed Lip Sync video model, AI-powered HDML employee information system, and interactive chatbot designed for automated responses.
- **OCR:** Designed and implemented OCR pipelines to extract handwritten diverse text from scanned memo images.

Projects

BAT Bangladesh | *Instance Segmentation, OOB Detection, Warp Perspective, Sequence Generation, Sorting*

- Led the analysis of cigarette displays for regional campaigns using image processing, developing sequence analysis algorithms to ensure compliance with merchandising standards. This work improved the accuracy of audits and optimized campaign management for BAT.

Unilever Bangladesh | *Python, YoloV8, FastAPI, Asynchronous programming, Logging*

- Implemented an AI-based trade merchandiser platform for Unilever Bangladesh with an accuracy rate of 98.00%.
- The system features a user-friendly dashboard for seamless management of trade merchandising activities, ensuring efficient inventory control, meticulous task execution, and centralized digital recording, analysis, and reporting.

CardioCare | *ML, FlaskAPI, HTML, Tailwind*

- Developed a heart failure prediction model using machine learning, served via a Flask API with a responsive HTML and Tailwind CSS front-end.

ChessCrack | *OpenCV, UNet, YoloV8, Stockfish, NumPy, JS*

- This project develops an intelligent system that automates the analysis of a physical chessboard image to predict the best move. It uses a YOLO-based model to detect and classify chess pieces, converts the board state into a FEN string, and then passes it to the Stockfish engine to determine the optimal move. The system is integrated into a web application via a Flask API, allowing users to upload a chessboard image and receive a move recommendation.

OfficeVision | *FaceRecognition, Uvicorn, Llama, Langchain, Streamlit, Huggingface*

- Implemented an advanced image recognition solution to accurately identify employees from images, enabling efficient and automated retrieval of employee details such as roles, contact information, and department.

Technical Skills

Languages: Python, C++, HTML/CSS, MySQL
Data Analysis and Visualization: NumPy, Pandas, Matplotlib, Seaborn
Associated Frameworks: TensorFlow, PyTorch, Scikit-learn, Keras, OpenCV, Transfer Learning, Hugging Face
Tools: Git, GitHub, Jupyter Notebook, Visual Studio Code, Latex, Colab, Roboflow
Development Tools: FastAPI, FlaskAPI, RestAPI, MLOps, LLM, NLP

Publications

1. Md. Aiyub Ali, **Md. Shakhawat Hossain**, Md.Kawsar Hossain, Subhadra Soumi Sikder, Sharun Akter Khushbu, Mirajul Islam, "AMDNet23: Hybrid CNN-LSTM Deep Learning Approach with Enhanced Preprocessing for Age-Related Macular Degeneration (AMD) Detection", Intelligent Systems with Applications journal, Elsevier. *https://doi.org/10.1016/j.iswa.2024.200334*

2. Md. Aiyub Ali, **Md Shakhawat Hossain**, Taslima Ferdaus Shuva, Muhammad Ali Abdullah Almoyad, Nabil Anan Orka, Md. Tanvir Rahman, Risala Tasin Khan, M. Shamim Kaiser, and Mohammad Ali Moni. "RGNN3D: A Hybrid Radiomic Graph Neural Network for 3D MRI Glioma Grading" IEEE Transactions on Biomedical Engineering. [In Review]

References

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