Md. Akmol Masud

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About Me

I am an ICT graduate passionate about leveraging machine learning, computer vision, and big data analytics to drive advancements in healthcare and beyond. My academic background has equipped me with the skills to develop innovative solutions across diverse domains. I actively pursue side projects in cryptography and web technology, constantly expanding my expertise and versatility.

Research Interests

I aim to explore new semi-supervised learning approaches for big data in medicine, physics, and astronomy, where labeled data is scarce. My research will use abundant unlabeled data to enhance machine learning models in these domains, potentially unlocking valuable insights and advancing scientific understanding.

Publications

[1] Md Abrar Jahin, Md Akmol Masud, MF Mridha, Zeyar Aung, and Nilanjan Dey. Kacq-dcnn: Uncertainty-aware interpretable kolmogorov-arnold classical-quantum dual-channel neural network for heart disease detection. *arXiv preprint arXiv:2410.07446*, 2024.

[2] Md Abrar Jahin, Md. Akmol Masud, Md Wahiduzzaman Suva, M. F. Mridha, and Nilanjan Dey. Lorentz-equivariant quantum graph neural network for high-energy physics. 2024.

[3] Md Abrar Jahin, Md. Akmol Masud, M. F. Mridha, and Nilanjan Dey. Quantum rationale-aware graph contrastive learning for jet discrimination. 2024.

Research Experience

- **Undergraduate Thesis:** Completed a thesis on mosquito classification, creating a novel dataset and developing a custom model using transfer learning techniques with applications in public health.
- **Alzheimer's Disease Research:** Enhanced datasets for Alzheimer's disease diagnosis through innovative augmentation techniques, improving model performance.
- **Machine Learning Applications:** Applied a variety of machine learning classifiers and conducted comprehensive exploratory data analysis (EDA) to extract insights from complex datasets.
- **Cryptography Enhancement:** Developed a novel technique that combines cryptography with steganography, enhancing data security through secure information embedding.
- **Data Preprocessing Expertise:** Gained extensive experience in preprocessing diverse datasets, including categorical, image, audio, and ECG data, ensuring readiness for machine learning applications.

GitHub Portfolio: Explore my projects on GitHub
Kaggle Profile: View my competition entries on Kaggle

Education

Institute of Information Technology, Jahangirnagar University — Dhaka, Bangladesh
B.Sc. in ICT; CGPA: 3.29/4.0 (8th semester: 3.6) — July 2024

Academic Transcript: View Full Transcript

Thesis: MosQNet-SA: An Explainable Convolutional-Attention Network for Mosquito Classification with Potential Application as a RESTful API for Dengue and Malaria Risk Mapping

Projects

- **Exploring PseudoRGB for Alzheimer's Image Augmentation**
Evaluated the effectiveness of the PseudoRGB technique as a novel image augmentation method for Alzheimer's disease detection, comparing its performance against traditional augmentation strategies.

- **Comprehensive Data Analysis and Machine Learning on Heart Disease Dataset**
Performed extensive EDA and implemented ML classifiers on a heart disease dataset to benchmark performance metrics [1].

- **AES Encryption with LSB Steganography**
Combined image steganography with AES cryptography to create a secure information embedding method.

- **Land Cover Data Processing for Haywood County, Tennessee**
Implemented Felzenszwalb's segmentation technique to process and analyze 2023 land cover raster data of Haywood County, Tennessee.

Achievements

- 37th place in the CUET ETE Day 2023 ML Competition (NLP and DL) *12 Nov 2023 - 23 Nov 2023* Ranked 37th out of 200+ participants, showcasing problem-solving skills in NLP and deep learning under tight deadlines.
- 63rd place in the DL Enigma 1.0 - SUST CSE Carnival 2024 (Computer Vision) *20 Jan 2024 - 10 Feb 2024* Secured 63rd place in a competitive event, focusing on model tuning, optimization, and large-scale dataset processing for computer vision tasks.
- Duke of Edinburgh Leadership Award (Bronze Standard) *28 Feb 2027* Recognized for leadership, teamwork, and project management through the Duke of Edinburgh's Award program.

Affiliation

- **IEEE JU Student Branch** *Feb 2022 – Aug 2024*
  Media and Communications Lead & Membership Development Lead
  Managed member engagement and communications, increasing branch visibility and event participation.
- **E-Business & Entrepreneurship Club, JU** *Mar 2019 – Jun 2022*
  Executive
  Coordinated events promoting entrepreneurship and fostering collaboration in business innovation.
- **IIT-JU Sports Club** *Jan 2024 – Present*
  President
  Led a team of 50 members, organizing sports events and initiatives to promote student well-being.

Technical Skills

- **Programming Languages:** Python, JavaScript, C++, Java
- **Frameworks & Libraries:** TensorFlow, OpenCV, Scikit-Learn, Django, FastAPI
- **Machine Learning & AI:** Deep learning, computer vision, model optimization, explainable AI
- **Tools & Platforms:** Linux, Docker, Git, FastAPI, Jupyter Notebooks
- **Coding Platforms:** LeetCode for algorithmic problem solving

Extracurricular Activities

- 1st place, 110m hurdles, 47th Annual Athletics Competition, JU Certificate