

Md Sadman Hafiz

Vision Researcher | AI/ML Enthusiast

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WORK EXPERIENCE

International Islamic University Chittagong (IIUC)

Lecturer, Department of Computer Science and Engineering

Sept 2025 – Present

Chittagong, Bangladesh

Dynamic Solution Innovators Limited

Junior Software Engineer Intern

Nov 2024 – May 2025

Mohakhali DOHS, Dhaka, Bangladesh

- Engineered full-stack e-commerce platform **ekhonni.com** implementing NextAuth authentication and Role-Based Access Control (RBAC)
- Developed question setter module frontend for **QWIZ** project with dynamic category/criteria selection, reducing question setting time around 40%
- Built transformer-based semantic search and duplicate detection module using vector databases, improving search accuracy by around 35%

Advanced Machine Intelligence Research Lab, AIUB

Research Assistant

Aug 2023 – Present

Dhaka, Bangladesh

- Contributed to 5+ research projects leading to 2 publications in Q1 journals and 4 journals overall, and a book chapter
- Mentored 4 student teams through workshops and weekly sessions, resulting in 3 journal submissions and a conference submission

EDUCATION

B. Sc. (Engg.) in Software Engineering

IICT, Shahjalal University of Science and Technology, Sylhet, Bangladesh

2025

CGPA: 3.77 out of 4.00

Higher Secondary Certificate

Sonar Bangla College, Burichang, Cumilla

2018

GPA: 5.00 out of 5.00 (Golden)

Secondary School Certificate

Hatimara High School, Monohorganj, Cumilla

2018

GPA: 5.00 out of 5.00

PUBLICATIONS

Journal Articles

- Tauhidul Islam, **Md. Sadman Hafiz**, Jamin Rahman Jim, Md. Mohsin Kabir, & M.F. Mridha (2024), “A systematic review of deep learning data augmentation in medical imaging: Recent advances and future research directions.” *Healthcare Analytics*, 100340. DOI: [10.1016/j.health.2024.100340](https://doi.org/10.1016/j.health.2024.100340) (Cited 170+ times)
- Md Mohsin Kabir, **Md. Sadman Hafiz**, Shattik Bandyopadhyay, Jamin Rahman Jim, and M. F. Mridha (2024), “Tea leaf age quality: age-stratified tea leaf quality classification dataset.” *Data in Brief* 54, 110462. DOI: [10.1016/j.dib.2024.110462](https://doi.org/10.1016/j.dib.2024.110462) (Cited 10+ times)
- Anam, Iftekhar, Naiem Arafat, **Md. Sadman Hafiz**, Jamin Rahman Jim, Md Mohsin Kabir, and M. F. Mridha (2024), “A systematic review of UAV and AI integration for targeted disease detection, weed management, and pest control in precision agriculture.” *Smart Agricultural Technology*, 100647. DOI: [10.1016/j.atech.2024.100647](https://doi.org/10.1016/j.atech.2024.100647) (Cited 40+ times)
- Rafi, Fahamidur Rahaman, Nafeya Rahman Heya, **Md. Sadman Hafiz**, Jamin Rahman Jim, Md Mohsin Kabir, and M. F. Mridha (2025), “A systematic review of single-cell RNA sequencing applications and innovations.” *Computational Biology and Chemistry*, 108362. DOI: [10.1016/j.compbiolchem.2025.108362](https://doi.org/10.1016/j.compbiolchem.2025.108362) (Cited 7+ times)

Book Chapters

- Hafiz, M. S., Anwar, A., Shin, J., Rafiq, J. I. (2025) “Improving Agronomic Disease Detection and Classification: The Superiority of Hybrid Inception-Xception Ensemble Model for Rice Leaf Disease Classification”. In *Machine Vision in Plant Leaf Disease Detection for Sustainable Agriculture* (pp. 57-67). Singapore: Springer Nature Singapore. DOI: [10.1007/978-981-96-4520-6](https://doi.org/10.1007/978-981-96-4520-6)

- “Digital Twins in Remote Operation: Advances, Requirements and Enabling Technologies” – Submitted to *IEEE Access*
- “DeepAQNet: A Lightweight Explainable CNN Framework for PM_{2.5} based AQI Estimation” – Under review at *Heliyon*
- “An Explainable Deep Learning Framework for Accurate SNMP MIB Alert Detection” – Submitted to *PLOS One*
- “Machine Learning and Deep Learning in Facial Emotion Recognition: A Systematic Review” – Under review at *The International Journal of Information Management Data Insights*
- “Deep Learning-Driven Aspect-Based Sentiment Analysis of Bangladeshi Hotel Reviews” – Under review at *International Conference on Quantum Photonics, Artificial Intelligence & Networking*
- “A Systematic Review of Machine Learning, Deep Learning and Ensemble Applications for Parkinson’s Disease Detection” – Under review at *Computer Methods and Programs in Biomedicine*

PROJECTS

Ekhonni.com – Full-Stack Product Bidding Platform | [GitHub](#)

Tech Stack: Next.js, NextAuth, TypeScript, Redis, TailwindCSS, ShadCN, SWR

- Engineered a full-stack e-commerce platform with NextAuth authentication and Role-Based Access Control (RBAC)
- Optimized data fetching using SWR, reducing page load time by 40% and improving user experience

DeepAQNet: Real-time Air Quality Monitoring with Smartphone Imagery | [GitHub](#)

Tech Stack: PyTorch, Transformers, Flask, OpenCV, XAI (SHAP), Scikit-learn

- Developed a CNN-Transformer hybrid model for PM_{2.5} AQI prediction from smartphone images
- Implemented Explainable AI (XAI) using SHAP for model interpretability and feature importance visualization

Semantic Search & Duplicate Detection with Vector Databases | [GitHub](#)

Tech Stack: Transformers, Pinecone, PGvector, Flask, FastAPI

- Designed semantic search engine using Transformer embeddings and Pinecone vector database with 85% search relevance
- Implemented duplicate detection system reducing manual review time by 60% for QWIZ platform

QWIZ – Intelligent Interview Question Management System | *Proprietary Project – Dynamic Solution Innovators*

Tech Stack: React, InertiaJS, ShadCN, Laravel, PostgreSQL

- Developed question setter dashboard with dynamic category selection and criteria filtering for 1000+ questions
- Implemented preset modification system reducing question setup time by 50% for HR teams
- Integrated with semantic search module for intelligent question recommendation and duplicate prevention

ACHIEVEMENTS

- **1st Runner Up**, National AI Olympiad 2025 (organized by DIU, DIPTI, and Prothom Alo) 2025
- Qualified for HULT PRIZE Melbourne Regional Summit, Australia 2022
and **4th** in HULT PRIZE OnCampus Final | [Certificate](#)
- **3rd Place**, Innovation Cohort 1, SUST Innovation Hub 2024
Startup idea: ‘InterviewMate.AI’ (secured 50,000 pre-seed funding)
- Qualified for 2nd Round, DU Code Samurai (among 410+ teams) 2024
- Special Category Prize, Innovation Project Showcasing Fair, SUST 2024
- **10th Place**, bdapps National Hackathon 2022 (Sylhet Regional) 2022

PROBLEM SOLVING

- Solved **800+ problems** on [LeetCode](#), [Codeforces](#), and other platforms.

SKILLS

Languages: C, C++, Java, Python, TypeScript

Backend and Databases: Flask, Node.js, Express.js, MySQL, PostgreSQL, Pgvector, Pinecone, Redis

Frontend: HTML, Next.js, TailwindCSS

Version Control and DevOps: Git, Github, Docker

Machine Learning Libraries and Tools: NumPy, Pandas, Scikit-learn, Seaborn, Matplotlib, TensorFlow, Keras, PyTorch, Folium, SciPy, OpenCV, NLTK, Transformers, spaCy

Tools and Miscellaneous: Trello, OpenProject, PostMan, Figma, Anaconda, Android Studio etc

EXTRACURRICULAR ACTIVITIES

- **Campus Manager**, University Innovation Hub, SUST Jan 2024 - Oct 2024
 - Coordinated weekly training sessions for multiple cohorts of 50 students each
 - Organized four major events with 100+ guests each at the University Innovation Hub
- **Team Captain**, Departmental Sports Teams Aug 2023 - May 2025
 - Led volleyball and cricket teams in inter-departmental tournaments

COURSES AND WORKSHOPS

- 16-week Startup Mentoring Sessions at the University Innovation Hub, SUST, and secured seed funding for the startup, 'InterviewMate.AI'
- Supervised Machine Learning: Regression and Classification, from Coursera | [Certificate](#)
- Introduction to Computer Vision and Image Processing, from Coursera | [Certificate](#)
- Applications of Machine Learning and Deep Learning in Climate Science and Disaster Management Research, Organized by Research Society | [Certificate](#)
- Vector Databases for Embeddings with Pinecone, from DataCamp | [Certificate](#)
- Introduction to Embeddings with the OpenAI API, from DataCamp | [Certificate](#)
- Working with the OpenAI API, from DataCamp | [Certificate](#)

VOLUNTEERING EXPERIENCE

- **Data Annotator**, Search Engine Pipilika 2022
 - Annotated and categorized web data to improve search engine relevance and accuracy
- **Student Volunteer**, SUST Admission Office 2022
 - Assisted in admission process coordination for 5,000+ prospective students
- **Souvenir Coordinator**, SUST SWE Technovent 2023
 - Managed souvenir inventory and distribution for a 800+ participant tech festival

REFERENCES

Dr. M. Firoz Mridha, Ph.D.

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American International University-
Bangladesh (AIUB)
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