

Afifa Zain Apurba

Dhaka, Bangladesh

Email: afifapurba06@gmail.com

Phone: +8801909171234

LinkedIn: <https://linkedin.com/in/afifa-zain-apurba>

GitHub: <https://github.com/apurba12122020>

Profile

Highly motivated Computer Science and Engineering graduate with strong expertise in Artificial Intelligence, Machine Learning, Computer Vision, and Data Analytics. Published researcher in IEEE Access and international indexed journals. Experienced in AI model development, explainable AI (XAI), and IT audit practices. Passionate about applying data-driven methodologies to solve real-world problems across healthcare, automotive safety, and public health domains.

Technical Skills

Programming: Python, SQL, C

AI/ML: Machine Learning, Deep Learning, CNN, YOLO, Ensemble Learning, Explainable AI (LIME)

Data Tools: Pandas, NumPy, Scikit-learn, Jupyter Notebook, Power BI, MS Excel

Technologies: Git, VS Code

Core Concepts: Data Structures, Algorithms, Probability & Statistics, Optimization

Soft Skills: Analytical Thinking, Research Writing, Communication, Team Collaboration

Research Experience

Kidney Cancerous Tumor Prediction using CNN

Designed and trained a Convolutional Neural Network (CNN) for medical image classification. Improved diagnostic performance through preprocessing, augmentation, and hyperparameter tuning. Evaluated model performance using validation metrics and cross-validation.

Advertising Impact on Health Awareness using Explainable AI

Developed a stacking ensemble machine learning model achieving 94% accuracy. Applied LIME for model interpretability and insight generation. Conducted statistical analysis on structured survey datasets.

Publications

- **Error-Tolerant Multimodal Vision-Language Models for Endodontic Triaging: A Cross-Sectional Study.**

International Journal of Dentistry (Wiley, Indexed Journal).

This research proposes robust multimodal AI models integrating vision and language components to improve clinical endodontic triaging under noisy diagnostic conditions.

DOI: <https://doi.org/10.1155/ijod/4148741>

- **Fusion of Image Filtering and Knowledge-Distilled YOLO Models for Root Canal Failure Diagnosis.**

International Journal of Dentistry (Wiley, Indexed Journal).

This study proposes an AI-driven endodontic triaging framework integrating image filtering with knowledge-distilled YOLO models for improved diagnostic accuracy.

DOI: <https://doi.org/10.1155/ijod/4148741>

- **Advanced Driver Behavior Analysis and Intelligent Vehicle Safety Modeling Using Machine Learning.**

Vehicles (MDPI, Scopus Indexed).

DOI: <https://doi.org/10.3390/vehicles7030089>

- **Predicting Adolescent Concern Over Unhealthy Food Ads Using Explainable AI.**
IEEE Access (SCI Indexed).
DOI: <https://doi.org/10.1109/ACCESS.2025.3560998>
 - **Educational Tours and Practical Learning in Food Processing: A Case Study.**
DOI: <https://doi.org/10.31232/osf.io/dqg8j>
 - **Machine Learning Models for Calorie Burn Estimation.**
DOI: <https://doi.org/10.32896/jmedtech.v4n2.33-45>
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Professional Experience

IT Audit Associate (Internship)

ACNABIN Chartered Accountants

Jan 2025 – Jul 2025

- Conducted IT General Controls (ITGC) review including access control, change management, and system security evaluation.
 - Supported internal IT audit engagement at Walton Group.
 - Evaluated internal control effectiveness and identified risk exposure.
 - Prepared audit documentation and assisted in presenting findings to senior auditors.
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Projects

Rent NSU Platform

Developed a web-based rental platform for students using HTML, CSS, and JavaScript. Designed secure login features and responsive UI.

Education

Bachelor of Science in Computer Science and Engineering

North South University, Dhaka

2019 – 2025

Higher Secondary Certificate (HSC) – 2018

Secondary School Certificate (SSC) – 2016

Leadership & Volunteer Experience

Volunteer, NSU Robotics Club – Organized technical workshops and competitions.

Teaching Assistant, Coding Bootcamp – Mentored students in C programming fundamentals.

Languages

English – Proficient (IELTS 7.5)

Bangla – Native

Reference

Dr. Riasat Khan

Associate Professor & Undergraduate Coordinator (EEE/ETE)

North South University

Email: riasat.khan@northsouth.edu

Phone: +8801879992680