

# TAMANNA KAWSER CHOWDHURY

Chattogram, Bangladesh | tamanna.kawser218@gmail.com | +880 1827053373 | Portfolio

## EDUCATION

**Premier University, Chattogram, Bangladesh** 2020 – 2024

Bachelor of Science (Engineering) in Computer Science and Engineering

- **CGPA:** 3.66 / 4.00
- **Thesis:** “Deepfake Image Detection Using CNN” — Implemented two custom CNN architectures for detecting GAN-generated faces, demonstrating an accuracy–efficiency trade-off (higher-capacity model → higher accuracy; **lightweight model** → greater efficiency). (Supervisor: Asst. Prof. Tanni Dhoom)
- **Relevant Coursework:** Machine Learning, Artificial Intelligence, Software Development, Database Management System

**Girls' College, Chittagong** 2017 – 2019

Higher Secondary Certificate (H.S.C.) — Science

**City Govt. Girls' High School, Chittagong** 2012 – 2017

Secondary School Certificate (S.S.C.) — Science — GPA: 4.95 / 5.00

## RESEARCH INTERESTS

- **Artificial Intelligence for Accessibility & Inclusive HCI** — developing AI-powered assistive technologies and intuitive human–computer interfaces to empower users with visual and other disabilities
- **Natural Language Processing & Conversational AI** — building robust NLP and dialogue systems that interpret ambiguous or spoken user commands for assistive applications
- **Efficient / Lightweight Machine Learning for Mobile Devices** — creating on-device ML models optimized for mobile and low-resource hardware environments
- **Multimodal AI (Vision + Language)** — integrating visual and linguistic signals to develop intelligent assistants that understand complex multimodal inputs

## SKILLS SUMMARY

- **Programming Languages:** Python, C
- **Machine Learning & Computer Vision:** CNNs, transfer learning, hyperparameter tuning, model training (checkpointing)
- **Data Pipelines & Augmentation:** Image preprocessing, on-the-fly augmentation, data optimization, pipeline engineering
- **Evaluation & Analysis:** Accuracy, F1-score, Precision, Recall, ROC-AUC, confusion matrix, learning curves
- **Frameworks & Libraries:** TensorFlow, Keras, scikit-learn, OpenCV, NumPy, Matplotlib, Seaborn
- **Tools & Platforms:** Google Colab (GPU), Git & GitHub, LaTeX
- **Software Testing (familiar):** Manual & API testing (Postman, Newman), Jira, Scrum
- **Software Development (familiar):** Node.js, React, HTML, CSS, JavaScript, MySQL, SQL
- **Soft Skills:** Strong written & verbal communication; collaborative team contributor
- **Language Skills:** English (proficient), Bengali (native)

## ACADEMIC PROJECTS

### **Undergraduate Thesis | Deepfake Image Detection Using CNN**

Supervised by: Asst. Prof. Tanni Dhoom, Dept. of CSE, Premier University

- Designed and implemented reliable deepfake (StyleGAN) detectors to generalize under real-world variation, optimizing for limited computational resources on **Google Colab**
- Developed two custom **CNN** architectures ( $\approx 39M$  and  $\approx 7M$  parameters) and **fine-tuned a ResNet50 model**, building a full resource-aware training pipeline including **image preprocessing** ( $256 \times 256$  resize, normalization), **on-the-fly augmentation** (flips, rotations, crops, Sobel edges), and **data optimizations** (caching, shuffling, prefetching)
- Achieved test **accuracies** of 94.07% (CNN-1), 91.75% (CNN-2), and 95.91% (ResNet50) on a balanced test set of  $\approx 2,500$  images, sampled from a total subset of  $\approx 15,000$  images from the 140k Real & Fake Faces dataset
- Delivered 4 runnable Colab notebooks, thesis report, and presentation slides; **prepared a manuscript currently under internal review**
- Collaboration: **Solely developed the CNN-1, CNN-2, and ResNet50 pipelines; collaborated with a peer who implemented a MobileNetV1 model for comparative analysis and ran the StyleGAN psi cross-validation**

### **Deep Learning Project | Handwritten Digit Recognition Using CNN (MNIST) | [CODE LINK](#)**

- Built and adapted a digit recognition system for both MNIST and noisy real-world digit photos
- Designed and trained a Sequential **CNN** (Conv2D → Conv2D → Flatten → Dense), used a 10% validation split, and implemented a **preprocessing** pipeline for real images (grayscale, thresholding, Canny, contour extraction, resize & pad)
- Training **acc** 99.75%, Validation **acc** 98.17%, Test **acc** 97.65%; Mean **F1-score** 97.65%
- Model outputs confidence scores and generalizes effectively to real-world digit images

### **Full-Stack Project | Student Enrollment Management System | [CODE LINK](#) | [OUTPUT LINK](#)**

- Built a web-based enrollment system with separate admin and student panels
- Designed a relational database by writing **SQL** queries to create tables for students, admins, courses, sessions, and requests, ensuring data integrity and preventing duplication
- Implemented course/session management, role-based login, and enrollment approval workflows
- Successfully managed multiple users and course enrollments in a test environment, demonstrating full workflow functionality and reliability

## PERSONAL PROJECTS

### **API Testing | API Testing with Postman & Newman | [PROJECT LINK](#) | [API DOCUMENTATION LINK](#)**

- Designed and implemented comprehensive API test cases for a mock student enrollment management system using **Postman**, performing CRUD operations with detailed assertions (status codes, headers, response time, schema)
- Utilized data-driven testing via CSV input and dynamic environment variables to chain requests (create → update → delete)
- Automated test runs using **Newman** CLI, generated HTML reports, and published interactive API documentation via Postman's Documenter
- Set up and managed a mock REST API using json-server

### **Manual Testing | Student Enrollment System | [PROJECT LINK](#) | [CODE LINK](#) | [OUTPUT LINK](#)**

- Created test scenarios for both Admin and Student panels, covering all the functionalities
- Developed detailed test cases, RTM, test execution results, and bug reports for the registration functionality of the admin panel
- Familiar with FRS documents and test plan documents

### **Scrum Workflow Implementation Using Jira | [VIDEO LINK](#)**

- Performed Agile **Scrum** activities using **Jira**
- Created a project in Jira, added users, and managed backlog by defining epics and user stories with assigned story points
- Managed sprints: added user stories, started the sprint, and created sub-tasks
- Demonstrated the sprint lifecycle by moving stories through Scrum board states: To Do, In Progress, and Done

### **Full-Stack Project | Store Report Generator App | [LINK](#)**

- Developed a full-stack application using **HTML**, **CSS**, **JavaScript**, **React**, **Node.js**, and **MySQL**
- Utilized an API to fetch data and store it in a **MySQL** database
- Implemented a feature to generate reports listing top purchasers by total amount spent

### **Portfolio Website | [LINK](#)**

- Developed a fully responsive portfolio website showcasing frontend development skills in **HTML**, **CSS**, and **Bootstrap**
- Designed and implemented key pages: home, about, projects, and contact
- Demonstrated the ability to create functional and visually appealing user interfaces

## **EXTRACURRICULAR ACTIVITIES**

### **HackerRank — Problem Solving | [LINK](#)**

**2020 – Present**

- Rating: 5★ (879.33 pts)

### **Ada Lovelace NGPC 2022 | [LINK](#)**

**2022**

- Participant (Team: PUC\_Bipolar)

### **ICPC Asia Dhaka Regional Site Online Preliminary Contest | [LINK](#)**

**2021**

- Participant (Team: PUC\_Bipolar)

## **REFERENCES**

- **Tanni Dhoom** — Assistant Professor  
Dept. of CSE, Premier University, Chattogram, Bangladesh  
Thesis supervisor | tanni.dhoom@puc.ac.bd
- **Syed Md. Minhaz Hossain** — Associate Professor & Chairman  
Dept. of CSE, Premier University, Chattogram, Bangladesh  
Academic referee | minhaz.hossain@puc.ac.bd