

# Tanvir Ahmed

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## Skills

**Languages:** Python, C, C++, Java, JavaScript, Dart, PHP, SQL

**AI / ML & Libraries:** TensorFlow, PyTorch, scikit-learn, Keras, OpenCV, Mediapipe, NumPy, Pandas, Selenium, Tkinter, Matplotlib, Seaborn.

**Web / Mobile / Tools:** Flutter, Firebase, HTML, CSS, Bootstrap, Tailwind CSS, JavaScript, PHP, Git, GitHub, VS Code, Figma, Google Colab, Kaggle, Tinkercad, Zapier, Make.

**Concepts & Domains:** Machine Learning, Deep Learning, Computer Vision, Image/Video Processing, NLP, Object Tracking, IoT, Automation, Human-Computer Interaction, Data Visualization, Big Data.

## Work Experience

### Student / Researcher (Freelance & Academic Projects)

2022–Present

#### Independent Projects & Research

- Built and implemented applied ML and automation projects during B.Sc.; collaborated with supervisors on data set curation, model design, and end-to-end apps.
- Engaged in dataset publication, model evaluation, and iterative deployment in the cloud/desktop for small-scale users.
- Designed and implemented diverse academic, personal, and client projects, applying practical ML and software engineering skills to real-world problems.

## Education

### Daffodil International University

2022–2025

B.Sc. in Computer Science and Engineering

**Relevant Coursework:** Object-Oriented Programming, Databases, Discrete Mathematics, Data Structures and Algorithms, Operating Systems, Computer Networks, Machine Learning and Data Mining, Image Processing, Computer Graphics, System Design, Software Engineering, Information Security, Statistics and Probability.

### Cantonment College Jashore

2018–2020

Higher Secondary Certificate (HSC)

**GPA: 5.00**

### Nabojibon Institute Satkhira

2016–2018

Secondary School Certificate (SSC)

**GPA: 5.00**

## Project Work

### Smart Home Automation System — Mobile App and Voice Controlled

2024–2025

ESP32, Arduino (C++), Flame Sensor, MQ-5, DHT11, LDR

- Built a smart home IoT automation system enabling remote control of lights, TV, fan, and AC via mobile app and voice assistants (Google Assistant, Amazon Alexa).
- Implemented real-time sensor monitoring (temperature, humidity) with dynamic UI updates.
- Developed timer and scheduler features supporting auto-shutdown (e.g., power-off after 20 minutes) and custom daily routines.
- Designed a rule-based automation engine allowing users to create automated behaviors and configurable triggers.

### Edu-Buddy — AI Student Assistant

2023–2024

Python, SpeechRecognition, Google TTS, SQLite, Tkinter

- Voice-activated assistant for reminders, study schedules, and quick access to educational resources.
- Modular intent parsing and dialog flow; integrated TTS and speech recognition for desktop use.

### AgroKart BD — Cross-Platform Marketplace

2024–2025

Flutter, Dart, Firebase, HTML/CSS/JS, PHP, SQL

- Developed a mobile app (Flutter) and a responsive web portal connecting farmers directly with consumers.
- Implemented user authentication, product listings, cart and backend order management (PHP & SQL).

### Hand Gesture Virtual Mouse

2023–2024

Python, OpenCV, Mediapipe, PyAutoGUI

- Real-time gesture-controlled cursor with click, scroll, and drag using multi-landmark detection.
- Optimized frame pipeline for low-latency interaction on consumer hardware.

<b>Cross-Platform Task Manager</b> <i>Python, psutil, Tkinter</i>	2023–2024
<ul style="list-style-type: none"> <li>• Lightweight tool to monitor processes, CPU/memory usage, and perform safe terminations across platforms.</li> <li>• Boost and optimize the device for more than 10-12% of performance.</li> </ul>	
<b>Automatic Water Dispenser</b> <i>IR Sensor, Transistor Switching, DC Pump</i>	2023–2024
<ul style="list-style-type: none"> <li>• Designed a touchless water dispenser</li> <li>• Calibrated IR sensor sensitivity and optimized circuit stability for real-time detection.</li> </ul>	
<b>Automation Tool for Local Garment</b> <i>Python, Selenium, Tkinter</i>	2024–2025
<ul style="list-style-type: none"> <li>• GUI app to upload Excel and auto-fill web forms with dynamic field mapping, reducing manual entry and errors.</li> </ul>	
<b>Bangladesh Crime Map &amp; News Aggregator</b> <i>Node.js, Express, Axios/Cheerio, Leaflet.js, Chart.js</i>	2024–2025
<ul style="list-style-type: none"> <li>• Real-time crime tracking platform aggregating data from 18+ national news sources using web scraping with intelligent fallback mechanisms.</li> <li>• Developed a bilingual, responsive dashboard with geospatial mapping (Leaflet.js), dynamic filtering, and automated classification of 10+ crime categories across Bangladesh.</li> </ul>	

## Research & Publications

<b>Plant Leaf Disease Recognition Dataset</b> <i>Mendeley Data: Plant Leaf Disease Recognition Dataset</i>	2023–2024
<ul style="list-style-type: none"> <li>• Curated and published 20000+ annotated plant leaf images (zucchini, hibiscus, gourd, papaya) to support CV research.</li> </ul>	
<b>Deep Learning Models for Multi-Class Plant Leaf Disease Classification</b> <i>CNN, Image Classification</i>	2023–2024
<ul style="list-style-type: none"> <li>• Trained Multiple CNNs achieving validation accuracy exceeding 97% using augmentation and tuning.</li> </ul>	
<b>Truth in Pixel: Deepfake Detection</b> <i>Computer Vision, Deep Learning</i>	2024–Present
<ul style="list-style-type: none"> <li>• Working on pixel-level inconsistency detection and robust artifact-based pipelines for manipulation detection.</li> </ul>	
<b>Exploiting Transformer Architectures for Domain-Specific Text Categorization: The m-BERT Perspective</b> <i>Transformer Learning, Deep Learning, Natural Language Processing</i>	2024–2025
<ul style="list-style-type: none"> <li>• Achieved benchmarking accuracy on this research among all existing works.</li> </ul>	

## Awards and Certificates

### Selected Achievements

- First Position — District Level Science Fair (Innovation Category)
- 9th Position — Retract science fair at Jashore University of Science and Technology (college-level).
- Published dataset (Mendeley) and multiple ML project contributions