Ryan Azim Roup

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Experience

Tech Intern — Krishi Shwapno [Certificate] Mar 2026 – Jun 2026

- Developed Python Selenium automation to transfer and submit data from spreadsheets into internal web dashboards, replacing repetitive manual entry.
- Automated browser-based workflows involving page navigation, form interactions, field validation, and data submission across internal systems.
- Tested and refined reusable automation scripts to handle recurring operational tasks and common data-entry issues.

Freelance Web Developer — Self-Employed Nov 2024 – Feb 2025

- Built functional, responsive websites for clients using modern web development technologies.

Private Tutor — Self-Employed Jan 2023 – Dec 2023

- Provided academic support and explained technical and academic concepts clearly to students.

Projects

Bangladesh Crop Intelligence Assistant

Next.js 14, FastAPI, Vector RAG System , ChromaDB, Supabase/PostgreSQL, Groq, Web Speech API [Live Site]

- Built a RAG pipeline using ChromaDB to index 24,000+ agricultural research chunks from BRRI, BARI, DAE, and FAO publications.
- Prevented AI hallucinations by combining vector search, a Supabase database covering 139 rice varieties and 30 agro-ecological zones, and a live web search fallback.
- Enabled multilingual support across English, Bangla, and Banglish using custom prompts and guardrails to deliver accurate, context-aware farming advice.
- Integrated voice search via the Web Speech API, allowing farmers and users to easily ask questions hands-free in both Bangla and English.

Uncertainty-Aware Federated Multimodal Dual-Task Learning for Privacy-Preserving Skin Lesion Diagnosis

Undergraduate Thesis | Python, PyTorch, Swin Transformer, Attention U-Net, Federated Learning, Machine Learning [Research]

- Developed a privacy-preserving federated learning framework for skin lesion diagnosis, enabling training across distributed datasets without sharing sensitive patient data.
- Built a multimodal learning pipeline combining dermoscopic images with patient metadata for improved skin lesion classification.
- Implemented a dual-task framework for simultaneous lesion segmentation and disease classification, providing more focused visual information for diagnosis.
- Integrated uncertainty estimation to identify less-confident predictions and improve the reliability of automated skin lesion diagnosis.

GhauGhau — Pet Adoption Platform

Next.js, Node.js, Tailwind CSS, MongoDB [Live Site]

- Built pet listings with search and filtering by species, age, breed, size, personality, and location.
- Implemented pet profiles, adoption applications, favorites, and adoption-status tracking.
- Developed an admin dashboard for managing pets, users, applications, and platform activity.
- Implemented authentication and role-based access control using Clerk.
- Developed a responsive, user-friendly interface to simplify the process of discovering and adopting pets.

Road Rash with Obstacles — RoadRash3D

Python, OpenGL [Source Code]

- Developed a 3D car-obstacle game with shooting mechanics to destroy enemy and obstacle cars, and enemy vehicles that follow the player's vehicle.

One-Scoop — Ice Cream Business Website

HTML, CSS, JavaScript [Live Site]

- Designed and developed the frontend of a website for an ice cream business.

Education

BRAC University [Degree] Jan 2022 – Feb 2026
Bachelor of Science in Computer Science and Engineering GPA: 3.75 / 4.00

Academia — A-Levels 2021 | GPA: 5.00 / 5.00

Academia — O-Levels 2019 | GPA: 4.50 / 5.00

Technical Skills

Programming: Python, JavaScript, TypeScript, C, Verilog, Assembly Language
Web Development: Next.js, React, Node.js, FastAPI, Tailwind CSS, HTML, CSS, JavaScript
Databases: MongoDB, MySQL, PostgreSQL, Supabase
AI / ML: Machine Learning, Artificial Intelligence, LLM Applications, RAG, Prompt Engineering, Computer Vision, Federated Learning, Multimodal Learning
Automation & Tools: GitHub, Selenium, Web Automation, Data Automation, Clerk, ChromaDB
Soft Skills: Problem Solving, Adaptability, Communication, Teamwork, Leadership, Attention to Detail, Learning Agility, Working Under Pressure

Certifications & Achievements

Datathon — CUET CSE Fest 2025 — Certificate of Participation [Certificate]

Interests

Strategic and esports games (Chess, Valorant, Counter-Strike 2); traveling; motorcycling; pet care and welfare; robotics; microprocessors.