Nazib Abrar

+8801952789398 | abrarnazib@gmail.com

github.com/abrar-nazib
linkedin.com/in/abrar-nazib

EDUCATION

Rajshahi University of Engineering & Technology
BSc. in Mechatronics Engineering *(Expected Graduation: March 2026)*
Courses: Object-Oriented Programming, Software Engineering, Electronics, Sensors and Instrumentations
Current CGPA: 3.22 *(as of the second semester)*

EXPERIENCE

Research & Development Intern | FronTech Limited: May 2023 – Present
- Developed the back end of a Transportation Tracker System utilizing an ESP32 device, providing GPS data to a **NodeJS**-based web application. This initiative attracted significant investor investment.
- Created well-documented libraries in **C++** for JRC Board (an ESP32-based microprocessor development board) to ensure compatibility with Arduino shields.
- Authored educational materials for JRC board users.

Software Developer | Team Ogrodoot: January 2023 – May 2023
- Implemented Meta's Segment Anything model to segment Mars terrain, contributing to Team Ogrodoot's 11th position globally in the ***International Rover Design Challenge***.
- Designed the inverse kinematics controller for the robotic arm of the Mars rover using ***Python's*** arithmetic libraries such as *Numpy*.

PROJECTS

CORTEX-Health: An AI Assistant for Medical Practitioners (PyTorch, FastAPI, OpenCV)
- Developed a ***FastAPI***-based API server to facilitate communication between an Android application (built with Flutter) and machine learning models.
- Trained three YOLO-v8 models using ***PyTorch*** for disease diagnosis from medical images (e.g., X-RAY and CT scan reports).
- Programmed an API server with a ***PostgreSQL*** database for efficient data collection and storage.

CORTEX Robotic Arm Controller Software (PyQT, OpenCV, Matplotlib)
- Created ***Python***-based software for controlling robotic arms using forward and inverse kinematic algorithms.
- Developed a GUI with ***PyQT*** to control and simulate robot movement with a 3D ***Matplotlib*** graph.
- Designed a custom hardware stabilization algorithm, increasing load-carrying capacity by 5%.
- Implemented computer vision-based environmental awareness and object detection using ***OpenCV***.

Leadership and Awards

Secretary of Programming Dept | Notre Dame Information Technology Club
- Led programming-related affairs, including contests and tutoring sessions for junior members.

First Runner-Up - Phitron Show Your Project Contest
- Won the project showcase competition with CORTEX Robotic Arm Controller Software.

Champion - DRMC Tech Carnival
- Won the Line Follower Robot racing competition using "Thunder," an LFR controller software developed with ***C++.***

Certificates

Machine Learning Specialization   September 2023
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