**Nazib Abrar**

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***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](https://github.com/abrar-nazib/cortex-health-api) (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**](https://github.com/abrar-nazib/cortex) **(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**](https://www.coursera.org/account/accomplishments/specialization/T6GAYS73CU62)

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