Nazib Abrar

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EDUCATION

BSc in Mechatronics Engineering March 2022 - Present
Rajshahi University of Engineering & Technology

EXPERIENCE

Junior Software Developer (Part Time) | FronTech Limited: January 2024 - Present
Research & Development Intern | FronTech Limited: June 2023 – December 2023

- 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.
- Developed the back end of an Event Management System using **Django.**
- Maintained a **VPS** server automating database back-ups and implemented live video streaming in **RTMP** and **HLS** protocol.
- Created well-documented libraries in ***C++*** for JRC Board (an ESP32-based microprocessor development board) to ensure compatibility with Arduino shields.

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. Used ***PostgreSQL*** as the database.
- Trained three YOLO-v8 models using ***PyTorch*** for disease diagnosis from medical images (e.g., X-RAY and CT scan reports).

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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