Muhammed Humam Hossain

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EDUCATION

B.Sc. in Textile Engineering **March 2022 - Present**
Department of Yarn Engineering
Bangladesh University of Textiles, Dhaka, Bangladesh
Expected Graduation Date March 2026
CGPA: 3.31

Higher Secondary Certificate (HSC), Science **2018 - 2020**
Notre Dame College, Dhaka, Bangladesh
GPA: 5.0

Secondary School Certificate (SSC), Science **2016 - 2018**
National Ideal School, Dhaka, Bangladesh
GPA: 5.0

PROJECTS

Industrial Environmental Quality & Hazard Detection System | LINK

YE-302: Application of Computer in Yarn Manufacturing

- Developed a comprehensive sensor network using **Arduino Mega 2560** as the MCU, integrating multiple environmental sensors (MQ gas sensors, DHT22 humidity & temperature sensor, DSM501A particulate matter sensor, flame sensor) for real-time hazard detection with integrated user interface including OLED display, control buttons, LEDs, and buzzer for independent operation.
- Developed complete web infrastructure with **Django** REST API backend using **SQLite** database for data ingestion and timestamped storage, **React** frontend featuring real-time monitoring dashboard with interactive charts and hazard analysis capabilities, and end-to-end data pipeline utilizing **ESP8266 WiFi module** as a communication bridge between the standalone hardware device and web infrastructure, enabling seamless data transmission via AT commands over UART and processing sensor readings from Arduino HTTP POST requests through API validation to live client-side visualization updates.

Cortex Robotics Astrobee Robot Object Detection & Localization Software | LINK

Developed by Team Cortex Robotics as part of the 5th Kibo RPC Bangladesh Regional Round 2024

- As team lead, I directed the development of **Java-based Android applicaton** for NASA's Astrobee, a free flying robot in zero gravity, operating in the ISS Kibo module. The system integrates **OpenCV computer vision & image processing** techniques with a fine-tuned **YOLOv8 model** trained using **PyTorch** to autonomously patrol, locate, and detect objects across different regions. The robot provides real-time guidance to astronauts for target object identification.
- Directly contributed to **data analysis** using **Pandas, Matplotlib, and Scikit-learn** to optimize path planning, evaluate process times, improve model performance, identify edge cases, and minimize mission completion time and conducted comprehensive validation through **ROS** simulation testing, utlizing data analysis.

SKILLS

- **Programming & Development:** Python, C/C++, Java, Pandas, Django, SQLite, React, Arduino, ESP32
- **Data Science & CAD Tools:** OpenCV, Scikit-learn, Matplotlib, PyTorch, EasyEDA, Fusion 360, AutoCAD
- **Productivity & Documentation:** LaTeX, Notion, Microsoft Office (Word, Excel, Powerpoint, Access)
- **Languages:** English (Fluent), Bengali (Native)

AWARDS

First Runner Up - 5th Kibo RPC Bangladesh Regional Round 2024

- Achieved runner-up position out of 150+ teams in the Bangladesh preliminary round of the JAXA 5th Kibo RPC competition.