Rayan Alam

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PROFILE

A passionate Computer Science student at American International University-Bangladesh with strong foundational knowledge in drone systems, machine learning, artificial intelligence, and computer vision. Well-versed in real-time object detection, deep learning architectures and autonomous navigation. Possesses a solid understanding of AI-driven systems, embedded technologies, and intelligent automation.

EDUCATION

American International University-Bangladesh | Dhaka 1229 ***September 2021 - Present***
Bsc in Computer Science and Engineering
Current CGPA: 3.80 Out of 4.00

Rajbari Govt College | Rajbari Sadar, Rajbari ***2018-2020***
Higher Secondary Certificate Examination
Subjects: Science
CGPA: 4.33 Out of 5.00

Rajbari Govt. High School | Rajbari Sadar, Rajbari
Secondary School Certificate Examination ***2013-2018***
Subjects: Science
GPA: 4.39 Out of 5.00

Skills

Artificial Intelligence & Machine Learning
Machine Learning, Deep Learning, Computer Vision (Image Processing, Object Detection using CNNs and YOLO)

Robotics & Automation:
Robotics, Robot Operating System (ROS), Autonomous Systems, Drone Technology

Programming Languages
Python, C++, C#, Java

Web Development
Laravel, HTML, CSS

App Development
Flutter

Databases
MySQL

Computer Science Fundamentals
Data Structures, Algorithms

ACHIEVEMENTS

- **Gold Medal (Champion)** – 7th WICE 2025 Bangladesh National Round for *AeroHarvest: Aerial Crop Yield Prediction*, representing AIUB as Team Leader; selected for the international round in Malaysia.
- Achieved **2nd Runner-up** in **Robo Soccer** at the **AIUB CS Fest 2024**, demonstrating advanced robotics and teamwork skills.
- Successfully completed **IT Essentials: PC Hardware and Software** through the **Cisco Networking Academy** program, gaining comprehensive knowledge of computer hardware and software systems. (2021)
- Participated in the **Bangladesh Robot Olympiad 2018**, gaining valuable experience in robotics and competitive innovation.
- Awarded Best Young Inventor at the **Digital Innovation Fair 2018** for outstanding creativity and innovative contributions in technology.
- Secured 1st Place in the **District Science Fair 2017**, showcasing exceptional innovation and scientific aptitude.

Academic Project

1. **Weapon Detection Using Drone**
   - Developed a drone-based system for real-time weapon detection using advanced computer vision techniques.
   - Deployed the YOLO object detection model in the cloud to process aerial footage captured by the drone.
   - Enabled live streaming and real-time inference for immediate threat detection, enhancing surveillance capabilities in open environments.

2. **Aerial Crop Yield Prediction System**
   - Developed a drone-based system to capture aerial footage of rice fields.
   - Created a custom dataset and trained a YOLO model to detect rice panicles and predict yield.
   - Provides data-driven insights to aid farmers and agricultural planners in yield management.

3. **Autonomous Factory Robot with Hazard Detection**
   - Developed a smart robot using Raspberry Pi and ROS (Robot Operating System) for autonomous navigation with SLAM (Simultaneous Localization and Mapping) and real-time obstacle avoidance.
   - supporting efficient material transport in industrial environments.
   - Supports both autonomous and manual control modes via a mobile app, with real-time monitoring for improved operational flexibility.

4. **Smart Blind Assistant System**

   Created an innovative system combining a **smart glass** and a **smart stick** to assist visually impaired individuals:

   Smart Glasses:
   - Python code processed the footage using YOLO to detect objects and uploaded the object name and confidence level to a Flask API server.
   - Developed a Flutter Android app that fetched object names from the server and converted them to speech for the user via Bluetooth earphones.

   Smart Stick:
   - Buzzer alerts when objects are within 30 cm.
   - Real-time GPS data is uploaded to a local server, allowing relatives to navigate the blind person's location.

5. **Safe and Secure Eco-Monitoring IoT Smart Home System**
   - Developed a smart home automation system using Arduino and NodeMCU for enhanced safety, energy efficiency, and convenience.
   - Integrated features include password-protected door access, gas and fire detection with buzzer alerts, and automatic watering of home potted plants based on soil moisture levels.
   - Built a Flutter-based mobile app to remotely control home appliances and display real-time alerts and status updates such as fire/gas detection and door activity.

6. **University Course Registration System**
   - Developed a C# desktop application for a University Course Registration System with a SSMS database backend.

7. **Crowdfunding Web Application**
   - Developed a web-based crowdfunding platform using PHP, HTML, CSS, and MySQL.

8. **Robo Soccer**
   - Designed and built a robot capable of playing soccer.

9. **Lexical Analyzer – Compiler Design Project**
   - Developed a lexical analyzer using C++.
   - Capable of tokenizing input code and identifying programming language constructs to support subsequent stages of compilation.

Clubs & Community Service

- Crew Member of Software Team at **AIUB Robotic Crew**