

SHAOWNAK SHAHRIAR

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Summary

I am a Computer Science graduate from BRAC University with extensive experience in robotics and autonomous systems, having led high-impact projects like Mars Rovers, AUVs, and UAS missions. My background includes hands-on leadership in planning shift-based operations, managing hardware-software integration, and ensuring system uptime in real-time environments. I specialize in control systems, sensor fusion, and process optimization, with a proven ability to lead diverse teams and deliver under pressure. I am now eager to apply this operational and technical expertise to drive production efficiency, support maintenance, and contribute to BAT's vision of operational excellence.

Education

BRAC University, School of Data Science

Graduated in 2024

Bachelor of Science in Computer Science

Dhaka, Bangladesh

- **Notable Courses:** Quantum Computing, Artificial Intelligence, Neural Networks, Introduction to Robotics, Pattern Recognition, Software Engineering, System Analysis and Design

Experience

Dubotech

May 2024 – October 2024

Autonomous Systems Engineer

Dhaka, Bangladesh

- Operated AUVs from base station, coordinating testing cycles and ensuring system readiness.
- Reduced downtime by optimizing integration of Pixhawk, Jetson Orin Nano, and sensor modules.
- Enhanced real-time monitoring using GAN-based underwater video enhancement algorithms.

BRACU Duburi

June 2021 – April 2024

Sub-Team Lead, AI and Machine Vision

Dhaka, Bangladesh

- Led vision and control system development for autonomous underwater vehicle operations.
- Reduced failure rates through real-time diagnostics, sensor fusion, and proactive maintenance.
- Deployed YOLO/SSD models on embedded devices for object detection in real-time missions.
- Tuned PID controllers and ROS-based navigation to improve maneuverability and stability.

BRACU Mongol-Tori

January 2022 – August 2023

Senior Engineer, Autonomous Systems and AI

Dhaka, Bangladesh

- Built SLAM and mapping systems using LiDAR, IMU, and GPS for terrain navigation.
- Designed motor control strategies and ensured uptime across deployment phases.
- Integrated hardware-software systems using ROS for seamless robotic coordination.

Technical Skills

- **Operational Technologies:** Shift-based task scheduling, system diagnostics, runtime monitoring, process reliability
- **Embedded Systems & Integration:** Real-time control, PID tuning, hardware-software integration (Jetson, Pixhawk, ESP32)
- **Automation & Monitoring:** ROS, SLAM, sensor fusion (Kalman, Madgwick), real-time data tracking
- **Team & Process Leadership:** Cross-functional collaboration, downtime reduction, maintenance coordination
- **IT Tools:** Python, C/C++, Git, Linux, LaTeX, ERP (ASP.NET MVC), Django, MySQL

Projects

Leadership & Automation

- **BRACU RaptorX** (Dec 2023 – Dec 2024)
 - * Co-founded BRACU RaptorX as a UAS research group focused on developing autonomous aerial systems.
 - * Led the Autonomous & Navigation team to build Bangladesh's first autonomous VTOL quad plane.
 - * Oversaw full hardware-software integration, including flight controller calibration, telemetry, and sensor interfacing.
 - * Managed autonomous flight testing and iterative tuning to ensure system reliability and stability.
 - * Successfully deployed the drone in flood-affected areas for real-world rescue missions, reducing aerial survey time and improving situational awareness for emergency response teams.
- **Shurokkha Rescue Bot** (Nov 2023) – Designed and developed an autonomous robot for disaster response with real-time object detection, aerial mapping, and localization to simulate emergency recovery operations.
- **Gas Flow Controller System** (Sep 2023 – Oct 2023) – Built an IoT-based gas leak detection and safety system with automated shut-off valves, real-time alerts, and remote monitoring capabilities.

Systems & Control

- **MPU6050 Sensor Fusion with Kalman Filter** (Dec 2022) – Implemented a motion tracking system using sensor fusion and Kalman filtering for enhanced accuracy in system diagnostics. [GitHub](#)
- **Object Detection & Navigation with CV and Arduino** (Feb 2022) – Developed a simple autonomous navigation system using computer vision and Arduino for obstacle avoidance and basic mobility tasks. [GitHub](#)

Operations Software

- **ERP Software for E-commerce** (Dec 2024) – Developed a modular ERP platform using ASP.NET MVC for inventory, order, and customer management, with a focus on streamlining workflows and operational reporting. [GitHub](#)

Achievements

- Participated in **IMechE UAS Challenge 2024** – Bracu RaptorX, IMechE (Leicester, England)
- First Runner-up (Globally) at **ROBOSUB 2023** – Bracu Duburi, RoboNation (San Diego, California, USA)
- Participant in **University Rover Challenge (URC) 2023** – BRACU Mongol-Tori, The Mars Society (Utah, USA)
- 7th Position (Globally) in **International Rover Challenge (IRC) 2023** – BRACU Mongol-Tori, The Space Robotics Society (Bangalore, India)
- 3rd Position in **International Kibo Robot Programming Competition 2022 (Bangladesh Round)** – JAXA (Dhaka, Bangladesh)
- 3rd Position in **BRACU Intra University Programming Contest 2021** – BRAC University (Dhaka, Bangladesh)

Academic Thesis and Research

Point-Cloud-based 3D Object Detection for Autonomous Navigation in Unmanned Ground Vehicles

May 2023 – October 2024

- Our research focuses on improving 3D object detection for autonomous Unmanned Ground Vehicles (UGVs) by addressing the limitations of traditional 2D detection methods. We propose a two-stage pipeline that leverages point cloud data to generate 3D object proposals, followed by a fusion of GLENetVR and SE-SSD architectures for accurate detection. This hybrid approach enhances spatial understanding, improving object distinction and recognition in complex environments. Through extensive evaluations on benchmark datasets, our model demonstrates superior accuracy, surpassing both standalone SE-SSD and GLENetVR models, contributing to safer and more reliable UGV navigation.
- Awarded as the best thesis of the year 2024 by the Computer Science Department.

Research Mentorship

- **Smart Driver Safety System based on driver Drowsiness Detection, Car Lane detection and Depth estimation** (July 2023 – October 2023)
- **Breast Cancer Detection by fusing SSD MobileNet v2, VGG16 and ResNet with KNN, Random Forest and XGBoost** (November 2022 – December 2022)
- **Underwater waster detection on muddy water by fine tuning Yolo v5, v7 and EfficientDet-D0** (October 2023 – January 2024)

Other Notable Experiences

Robotics Instructor, BRAC University

May 2022 - August 2023

BRAC University

- * Worked as a robotics instructor for the course "Introduction to Robotics" offered at BRAC University for three consecutive semesters.
- * Served as a robotics instructor at the BRAC Hope Fest hosted by BRAC University in June 2023.

Robotics Club of BRAC University (ROBU)

January 2020 - December 2023

Senior Executive of Strategic Planning

- * Served as a robotics instructor for workshops such as "Basics of Robotics."
- * Conducted several workshops on "Introduction to Computer Vision" and "Introduction to Autonomous Systems."
- * Built and maintained strong connections within the robotics and academic community.

References

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Additional references available upon request.