Sami Sadat

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LinkedIn | GitHub | Portfolio

RESEARCH INTEREST

Computer Vision, AI in Robotics, Artificial Intelligence, Machine Learning, Robotics

EDUCATION

BRAC University Feb 2020 - November 2024
Bachelor of Computer Science and Engineering *Dhaka, Bangladesh*
CGPA: 3.83/4.00

RESEARCH EXPERIENCE

GLE-SSD-VR: Fusing GLENet-VR and SE-SSD for Point-Cloud 3D Object Detection in UGVs (Submitted in CVPR 2026)
3D Object Detection, LiDAR Point Clouds, Autonomous UGVs, Undergraduate Thesis
Supervised by Dr. Md. Golam Rabiul Alam

Proposed a fusion-based 3D detection framework that combines GLENet-VR context modeling with SE-SSD detection heads to improve robustness for unmanned ground vehicle perception in real-world conditions. Emphasized accuracy–efficiency trade-offs for real-time deployment through systematic benchmarking and ablation studies, and prepared the work toward a CVPR-style submission (GLE-SSD-VR).

Deep Learning–Based CCTV Surveillance: Automatic Smoking Detection in Fire-Exit Zones
Computer Vision, Object Detection, Edge AI, CCTV Analytics (Preparing for submission)
Supervised by Dr. Md. Khalilur Rahman

Developed a real-time CCTV pipeline for smoking vs. non-smoking detection; collected 2,708 raw samples across 20 scenarios and expanded the dataset to 8,124 images via augmentation. Benchmarked YOLOv8/ YOLOv11/ YOLOv12 and refined the model, achieving 78.90% recall and 83.70% mAP@50. Validated edge feasibility via multithreaded deployment on Jetson Xavier NX (52–97 ms latency).

RESEARCH PROJECTS

BRACU ALTER (formerly BRACU Dichari) – Autonomous Rescue Robot 2022 – 2023
Robotics, Computer Vision, Sensor Fusion, Perception & Mapping, Edge AI
Led the AI/perception pipeline for BRACU's rescue robot, integrating LiDAR and Intel RealSense depth sensing for autonomous perception and mapping. Developed and deployed object detection, victim detection, and navigation-support modules on NVIDIA Jetson Xavier, optimizing inference latency and robustness under compute constraints for real-time rescue scenarios.

Enigma Systems (KIBO RPC / Astrobee) 2021 – 2022
Robotics, ROS, Vision-Based Control, Space Robotics
Programmed the Astrobee robot under the KIBO RPC framework for autonomous navigation in microgravity. Developed vision-based control routines and ROS nodes enabling real-time decision-making inside the ISS simulator environment.

BRACU Mongol-Tori (Mars Rover Prototype) 2021 – 2022
Autonomous Navigation, Obstacle Avoidance, Robotics
Designed AI-driven navigation and obstacle-avoidance modules for a Mars rover prototype. Integrated autonomous control components with hardware-in-the-loop testing to validate mission-ready performance.

WORK EXPERIENCE

Research Assistant Feb 2026 – Present
Department of CSE, BRAC University *Supervised by Dr. Farig Sadeque*
(Samsung R&D Collaboration)
Industry-sponsored research with Samsung R&D Bangladesh (SRBD) on stop-motion effect generation and

video restoration. Built segmentation–inpainting pipelines for foreground/background separation; improved robustness to shadows, illumination shifts, motion blur, and temporal artifacts via ablations and benchmarking.

Junior Software Engineer (AI/ML) Oct 2025 – Jan 2026
TechnoNext Software Ltd.
Developed and deployed ML systems (recommenders, passport OCR, AI search). Owned end-to-end pipelines from data preprocessing to API deployment, optimizing for scalable, low-latency inference.

AI & Computer Vision Intern Jun 2025 – Oct 2025
Samsung R&D Institute Bangladesh
Collaborated with the Medical Research team on AI-driven healthcare solutions. Supported diagnostic/predictive modeling and contributed to data processing, model deployment, and system integration for digital health platforms.

Delivery Associate (ML/CV) Jan 2025 – Jun 2025
Quantigo AI
Integrated ML/CV models into production pipelines; curated and optimized large-scale image/video datasets for training and evaluation.

Student Tutor 2022 – 2024
Department of CSE, BRAC University
Mentored 100+ students in Algorithms and Statistics through labs and consultation, contributing to measurable improvements in course performance.

PERSONAL PROJECTS

Multimodal RAG for Image–Text Retrieval GitHub
CLIP, FAISS, RAG
Developed a multimodal retrieval pipeline over images and PDFs using CLIP embeddings with FAISS indexing; incorporated lightweight re-ranking to improve query relevance.

Document AI for Structured Entity Extraction GitHub
OCR, Layout-aware Transformers
Built an OCR + layout-aware extraction pipeline (LayoutLM/Donut-style) for noisy documents (e.g., invoices/forms), leveraging spatial cues and post-processing to improve entity quality.

Multimodal Personal Knowledge Base GitHub
Embeddings, Vector DB
Implemented an embedding-based knowledge base supporting semantic search across text, diagrams, and code snippets via unified indexing and retrieval.

HONORS & AWARDS

- **Best Thesis Award, BRAC University** Summer 2024
- **Best Crew Award, KIBO RPC 3 organized by JAXA** 2022
- **Qualified in the RoboCup Rescue League** 2023
- **Qualified in European Rescue League** 2022
- **Vice Chancellor's List, BRAC University** 2021 – 2024
- **Dean's List, BRAC University** 2021 – 2024

SKILLS

Programming Languages: Python, Java, C++, HTML, CSS
Frameworks: TensorFlow, PyTorch, LangChain, MERN, Spring
Tools: Scrapy, Pyspider, ROS, MySQL
Devices: LiDAR Sensor, Jetson Xavier, Arduino, Raspberry Pi, IP Camera, Intel RealSense Depth Camera

TEST SCORES

TOEFL iBT Score: 98/120 (Listening: 29, Reading: 23, Writing: 25, Speaking: 21)