

RESHAD UL KARIM

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OBJECTIVE

Computer Science undergraduate with a foundation in AI, machine learning, and computer vision, focused on advancing autonomous systems and delivering impactful AI-driven solutions through research and global competition contributions.

EDUCATION

BSc. in Computer Science and Engineering, BRAC University 09/2022 - Present
CGPA: 3.88/4.00 Completed Credits: 120

Higher Secondary Certificate, Notre Dame College, Dhaka 06/2019 - 02/2022
GPA: 5.00/5.00

TECHNICAL SKILLS

Programming Languages	Python, C/C++, JavaScript, SQL
ML/DL Frameworks	PyTorch, TensorFlow, Keras, Scikit-learn
Computer Vision	OpenCV, MediaPipe, YOLO, SegFormer, Vision Transformers
Deep Learning	CNNs, RNNs, LSTMs, Transformers, Transfer Learning
Hardware & Embedded	PCB Design, Microcontrollers, Arduino, Raspberry Pi
Research Domains	Assistive Technology, Medical Imaging, Autonomous Systems, XAI

PUBLICATIONS

Journal

Optimizing Stroke Recognition with MediaPipe and Machine Learning: An Explainable AI Approach for Facial Landmark Analysis

Karim, R. U., Mahdi, S., Samin, A., Zereen, A. N., Abdullah-Al-Wadud, M. M., & Uddin, J.
IEEE Access, 12 March, 2025. DOI: [10.1109/ACCESS.2025.3550577](https://doi.org/10.1109/ACCESS.2025.3550577)

Conference Papers

Machine Learning Approaches in Photoplethysmography-Based Sleep Stage Classification

Ferdous, T., Karim, R. U., Samin, A., Mahdi, S., Tasnim, H., Zereen, A. N.
2024 IEEE 2nd International Conference on Electrical, Automation and Computer Engineering (ICEACE 2024), 3 March, 2025, Pages 117-122. DOI: [10.1109/ICEACE63551.2024.10898858](https://doi.org/10.1109/ICEACE63551.2024.10898858)

Improved Photoplethysmography-Based Four-Stage Sleep Classification with Explainable AI-Driven Machine Learning

Ferdous, T., Karim, R. U., Samin, A., Mahdi, S., & Zereen, A. N.
2024 IEEE 2nd International Conference on Electrical, Automation and Computer Engineering (ICEACE 2024), 3 March, 2025, Pages 117-122. DOI: [10.1109/ICEACE63551.2024.10898853](https://doi.org/10.1109/ICEACE63551.2024.10898853)

WORK EXPERIENCE

Core team member - AI and autonomous systems 01/2024 - 06/2025
BRAC University Mars Rover Team - MONGOL TORI Dhaka, Bangladesh

- Designed high-precision electronic circuits and PCBs for the BRACU Mongol-Tori Mars Rover arm control while optimizing AI-based object detection and autonomous vision-guided systems, improving efficiency, reliability, and inference performance by up to 30%.

Undergraduate Teaching Assistant
BRAC University

02/2025 - 06/2025
Dhaka, Bangladesh

- Supported the academic progress of 120+ students across three sections by delivering tutorials on numerical algorithms, providing one-on-one guidance, and assisting with grading and assessment in collaboration with faculty.

Contributor - Electronics and communications
BRAC University Rescue Rover - BRACU DICHARI

11/2022 - 12/2023
Dhaka, Bangladesh

- Integrated basic electronics for rescue rovers, including motors, drivers, microcontrollers, and entry-level rover-base station communication, while programming microcontrollers within a ROS-based framework to improve system integration, reliability, and testing efficiency.

PROJECTS

LUMENAA: A Language-Unified Multimodal Edge-Native Agent for Assistive Perception in Blindness and Low Vision

09/2024 - 06/2025

Built edge-first multimodal vision agent with persistent identities and calibrated spatial cues, achieving 95%+ reduction in cloud vision calls.

A Vision Transformer-Based Framework for Early Detection of Autism Spectrum Disorder in Toddlers via Facial and Behavioral Analysis

07/2025 - Present

Developed Vision Transformer-based multimodal fusion framework integrating facial and behavioral datasets for scalable early screening of ASD.

DRISTEE – Depth-aware Recognition and Intelligent Scene Translation for Enhanced Engagement

04/2025 - Present

Engineered real-time navigation assistant with depth mapping, object detection, facial recognition, and voice-command NLP for visually impaired users.

An Explainable Multi-Model Ensemble Framework for Conflict Risk Prediction in Bangladeshi Road Scenes

Designed multi-modal ensemble pipeline with SegFormer, YOLO12n, MediaPipe, and SHAP for explainable pedestrian conflict risk prediction.

Vision-based Hand Gesture Virtual Keyboard-Mouse framework with Bilingual Next-word prediction

03/2025 - Present

Implemented MediaPipe-based gesture recognition with bilingual LSTM next-word prediction (English/Bangla) for touchless text entry.

WeHeal - a MERN stack based all-in-one healthcare web application

01/2025 - Present

Developed full-stack telemedicine platform with role-based dashboards, video consultations, EMR/e-prescription, and payment integration. (weheal.live)

CERTIFICATIONS

AI Engineer for Data Scientists Associate, DataCamp
Credential ID: AEDS0010426564518

22/09/2025

HONOR AWARDS

Dean's List and Vice Chancellor's List, BRAC University

01/2023 - Present

First Runner Up, System Analysis and Design Project Summer 2025, School of Data and Sciences, BRAC University

Second Runner Up, Robosoccer competition TECHSPECTRA, Robotics Club of BRAC University

Third Runner Up and Grand Finalist, EXCELERATE 2025, Finance and Accounting Club of BRAC University

Semi Finalist, OnCampus Rounds, Hult Prize BRAC University 2023

Bronze level Award, The Duke of Edinburgh's International Awards

05/2023 - 03/2024