

SAFAEID HOSSAIN ARIB

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EDUCATION

Bachelor of Science in Robotics and Mechatronics Engineering

Jan 2019 - Mar 2024

University of Dhaka

CGPA: 3.66/4.00 (Final Year: 3.77/4.00)

Relevant Coursework:

- Artificial Intelligence
- Digital Signal Processing
- Linear Algebra
- Introduction to Machine Learning
- Object Oriented Programming
- Multivariate and Vector Calculus
- Digital Image Processing and Robot Vision
- Fundamentals of Programming
- Statistics for Engineers

RESEARCH INTERESTS

Reinforcement Learning, Multimodal Learning, Vision-Language Models, Embodied AI, Language Model Post-Training, Computer Vision

PUBLICATIONS

PUBLISHED

- **LAGEA: Language Guided Embodied Agents for Robotic Manipulation** [\[Paper\]](#)
Authors: Abdul Monaf Chowdhury, Akm Moshir Rahman Mozumder, **Safaeid Hossain Arib**, Rabeya Akter
Conference: [ICML 2026](#)
- **T3Time: Tri-Modal Time Series Forecasting via Adaptive Multi-Head Alignment and Residual Fusion** [\[Paper\]](#)
Authors: Abdul Monaf Chowdhury, Rabeya Akter, **Safaeid Hossain Arib**
Conference: [AAAI 2026 Main Technical Track](#)
- **SignFormer-GCN : Continuous Sign Language Translation Using Spatio-Temporal Graph Convolutional Networks** [\[Paper\]](#) [\[Extended Abstract\]](#)
Authors: **Safaeid Hossain Arib**[✉], Rabeya Akter[✉], Sejuti Rahman, Shafin Rahman (✉Equal contribution)
Journal: [PLOS ONE](#)
Workshop: [Women in Machine Learning Workshop, NeurIPS 2025](#)
- **Classical machine learning approach for human activity recognition using location data** [\[Paper\]](#) [\[Poster\]](#)
Authors: **Safaeid Hossain Arib**, Rabeya Akter, Omar Shahid, and Md Atiqur Rahman Ahad.
Conference: *Adjunct Proceedings of the 2021 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2021 ACM International Symposium on Wearable Computers*

PREPRINT

- **Teaching Language Models Where to Look with Privileged-Query Attention Distillation**
Authors: **Safaeid Hossain Arib**, Rabeya Akter, Ishmam Nur Swapnil, Md Faiyaz Abdullah Sayeedi, Tasnim Mohiuddin, Md Mofijul Islam
Manuscript under preparation
- **Counting Through Occlusion: Framework for Open World Amodal Counting** [\[Paper\]](#)
Authors: **Safaeid Hossain Arib**, Rabeya Akter, Abdul Monaf Chowdhury, Md Jubair Ahmed Sourov, Md Mehedi Hasan
Under review: [WACV 2027](#)
- **Bornil : An open-source sign language data crowdsourcing platform for AI enabled dialect-agnostic communication** [\[Paper\]](#)
Authors: Shahriar Elahi Dhruvo, Mohammad Akhlaqur Rahman, Manash Kumar Mandal, Md Istiak Hossain Shihab, A. A. Ansary, Kaneez Fatema Shithi, Sanjida Khanom, Rabeya Akter, **Safaeid Hossain Arib**

RESEARCH EXPERIENCE

- **Research Assistant** Jun 2025 - Present
Department of Robotics and Mechatronics Engineering, University of Dhaka
Supervisor: [Dr. Md Mehedi Hasan](#) and [Md. Jubair Ahmed Sourov](#)
 - Designed and implemented the first open-world amodal counting framework and assembled datasets to rigorously evaluate its performance.
 - Authored a manuscript detailing the methodology and empirical results, submitted to WACV 2027 (currently under review).
- **Research Assistant** Jan 2023 - Dec 2023
Department of Robotics and Mechatronics Engineering, University of Dhaka
Supervisor: [Dr. Shafin Rahman](#) and [Dr. Sejuti Rahman](#)
 - Designed and implemented a novel architecture that achieved competitive performance across Bangla, American, and German sign language benchmarks.
 - Secured a competitive research grant from the Bangladesh Ministry of Science and Technology's Special Innovation Fund (Project ID: SRG-232431, Fiscal Year: 2023-2024).

INDUSTRY EXPERIENCE

■ Machine Learning Engineer

Sep 2025 - Present

ACI PLC, Dhaka, Bangladesh

- Developed a few-shot classification pipeline for fine-grained recognition of visually similar objects, such as near-identical products from different brands.
- Building a lightweight text-to-speech model with few-shot voice-cloning and low-resource language-adaptation capabilities.
- Improving a video-based truck identification pipeline by enhancing low-resolution license plate imagery for more reliable detection and OCR in resource-constrained settings.
- Developing an agentic AI personal assistant for ACI employees enabling meeting scheduling, document summarization, and conversational search across company files via Drive and Calendar integration.

■ AI Engineer

Feb 2024 - Aug 2025

Ontik Technology, Dhaka, Bangladesh

- Developed agentic B2B automation systems that generate social media insights and automate client-ready reporting, substantially reducing manual workflows.
- Built agentic ETL pipelines for COBOL copybook parsing and legacy modernization, enabling AI-driven analytics and demonstrating the system to major consulting firms such as [Oliver Wyman](#).
- Developed a patient-facing, OCR-based tool to scan prescriptions, schedule medication doses, and recommend suitable alternative medicines under [Dr. Javed Mostafa](#).

TEACHING EXPERIENCE

■ Instructor

Jun 2024 - Aug 2024

National Camp, Bangladesh Artificial Intelligence Olympiad

- Designed and delivered lessons on classification algorithms and evaluation metrics for a group of high school students and created quizzes to assess their understanding.

SELECTED RESEARCH PROJECTS

■ Open-world Amodal Counting [\[GitHub\]](#)

Jun 2025 - Nov 2025

Supervisor: [Dr. Md Mehedi Hasan](#) and [Md. Jubair Ahmed Surov](#)

Topic: Multimodal Learning, Representation Learning

- Addressed limitations in SOTA vision-language systems that fail to count objects under occlusion by developing CountOCC, the world's first open-world amodal counting framework.
- Developed a Feature Reconstruction Module (FRM) operating over a three-level feature pyramid that leverages spatial context and text-visual prompts to recover class-discriminative representations in occluded regions.
- Co-implemented a Visual Equivalence (VisEQ) objective within a teacher-student distillation framework, enforcing attention consistency by aligning gradient-based attention maps between occluded and unoccluded views.
- Established occlusion-augmented evaluation protocols and demonstrated state-of-the-art (SOTA) performance with strong generalization across both structured and unstructured occlusion scenarios.

■ Language Guided Embodied Agents [\[GitHub\]](#)

May 2025 - Sep 2025

Topic: Vision Language Model, Embodied AI

- Contributed to the development of the LaGEA framework, transforming schema-constrained VLM feedback (Qwen-2.5-VL-3B) into temporally grounded dense reward signals, enabling agents to diagnose what went wrong and when failures occurred through structured episodic reflections encoded via GPT-2.
- Designed a key-frame selection mechanism to identify causal moments, localizing credit assignment to decisive transitions and preventing policy corruption from irrelevant states.
- Co-developed feedback alignment module creating control-relevant shared embedding space weighted by key-frame saliency to concentrate updates on causal moments.
- Achieved higher task success rates and faster convergence on the Meta-World MT10 benchmark.

■ Multivariate Time Series Forecasting [\[GitHub\]](#)

May 2025 - Sep 2025

Topic: Time Series Forecasting

- Co-developed T3Time tri-modal framework for learning shared representation space across temporal, spectral, and semantic modalities, replacing static dual-modal fusion for multivariate time series forecasting.
- Designed a horizon-aware gating module computing dynamic fusion weights between temporal and spectral branches conditioned on forecast horizon.
- Led extensive experimental evaluation across 8 benchmark datasets and got SOTA performance with strong generalization.

■ Continuous Sign Language Translation [\[GitHub\]](#) [\[Demo\]](#) [\[Presentation\]](#)

Jan 2023 - Dec 2023

Topic: Computer Vision

- Identified the lack of sign-execution dynamics in video-only Transformer models as a key bottleneck for cross-dataset generalization in continuous sign language translation.
- Developed SignFormer-GCN by fusing a video-stream Transformer with a spatio-temporal GCN over skeletal keypoints, capturing complementary appearance and motion cues and achieving SOTA performance.

SELECTED ACADEMIC PROJECTS

- **Automated Stock Trading**[\[GitHub\]](#) Aug 2022 - Nov 2022
Supervisor: [Dr. Sejuti Rahman](#)
Topic: Reinforcement Learning
- **Human Activity Recognition Using Location Data** [\[GitHub\]](#) Apr 2021 - Jun 2021
Supervisor: [Dr. Md Atiqur Rahman Ahad](#)
Topic: Machine Learning
- **Comparative Analysis of Emotional Support Delivery by NAO Robot and Humans Across Varied Emotional States** [\[GitHub\]](#) [\[Demo\]](#) Aug 2023 - Nov 2023
Supervisor: [Dr. Lafifa Jamal](#)
Topic: Human-Robot Interaction

ACADEMIC SERVICE

- Reviewer at AAAI 2026

AWARDS

- Honourable Mention, NASA Earth Observatory (EO) Dashboard Hackathon [\[Link\]](#) 2021
- 11th, Sussex Huawei Locomotion Challenge 2021

LEADERSHIP/VOLUNTEER ACTIVITIES

- **Student Activity Secretary** Jan 2023 - Dec 2023
IEEE Robotics and Automation Society
University of Dhaka Student Branch
 - Organized several workshops, interactive sessions and industry expert experience sharing sessions.
- **Mentor** Jul 2019 - Dec 2020
Bangladesh Robot Olympiad (BdRO)
 - Conducted robotics workshops in multiple high schools and developed engaging quizzes for BdRO.