Mobasshir Bhuiya Shagor

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Research Interests

I build instruments that test whether a learned system still deserves trust once it meets real people: longitudinal benchmarks, evaluation protocols that separate identity leakage from genuine distribution shift, and audits of whether a recommender's explanation matches what it actually did. The questions come from nearly eight years of shipping recommendation and vision systems, where the failures that mattered were the ones a clean test split could not see. Next, I want to carry the same measurement problem to agentic systems that act for a person rather than only advise them.

Education

American International University Bangladesh — Dhaka, Bangladesh
B.Sc. in Computer Science & Engineering *CGPA 3.49 / 4.00* — 2014 – 2018
Thesis: Categorized Affect Map, a crowdsourced GIS for classifying places by affective response (published, ICCA 2020).

National University of Singapore — Singapore
Specialist Training & Prototype Development Programme, Artificial Intelligence — Jun – Sep 2020

Publications

Peer-reviewed

1. **M. B. Shagor**, M. Z. H. Alvi, and K. T. Hasan. "CID: Cow Images Dataset for Regression and Classification." *ICCA '22: Proceedings of the 2nd International Conference on Computing Advancements*, March 2022. doi:10.1145/3542954.3543018

2. **M. B. Shagor**, M. Al Rayhan, K. I. Huq, I. Nahar, and K. T. Hasan. "CAM – Categorized Affect Map: Implementation of a Smart Geographic Information System for Categorizing Places Based on People's Affective Responses." *ICCA 2020: Proceedings of the International Conference on Computing Advancements*, January 2020. doi:10.1145/3377049.3377074

Manuscripts and work in preparation

3. **M. B. Shagor**, N. H. Tonmoy, and M. S. U. Miah. BoviShift benchmark paper. *Manuscript available on request*, 2026.

4. **M. B. Shagor**. "Explanation Faithfulness, Hallucination, and Fairness in LLM-Based Recommenders." *In preparation*, 2026.

Research Experience

BoviShift: a six-year longitudinal benchmark — Dhaka, Bangladesh
First author and project lead, with N. H. Tonmoy (Indiana University) and Dr. M. S. U. Miah (AIUB) — 2021 – present

- Collected and curated the dataset myself across six years of a single livestock marketplace: 2,657 unique bulls photographed from 2021 to 2026, with every image tied to the animal it shows. That identity link is what makes leakage measurable at all.
- Designed the evaluation around a three-way protocol decomposition. A random split rewards a model for recognising an animal it has already seen; identity-disjoint and temporally forward protocols separate that from generalising to new animals and to a population that has since changed, so an accuracy drop can be attributed rather than only reported.
- Held the 2024 cohort out of the primary temporal arm because its missingness is non-random, so a collection artifact cannot pass as distribution shift. An extension of the benchmark is planned with the same team.

Audit of LLM-based recommenders — Dhaka, Bangladesh
Sole author — In preparation

- Testing whether a recommender's stated explanation describes the actual basis of its ranking, whether it invents attributes of the items it recommends, and whether either failure falls unevenly across user groups. Built to run without GPU compute, so any team can repeat it on its own system.

National University of Singapore Singapore
Prototype Development Programme: KhaoDao Recommendation Engine Jun – Sep 2020

- Led the design of a context-aware food recommender that conditions on weather, day of week and time of day. Moved from classical collaborative filtering (Surprise, Implicit) to DLRM when cold start and sparsity became the binding problems, then optimised it for low-latency online inference.

AIUB Data Science Lab Dhaka, Bangladesh
Research Assistant, lab of Prof. Khandaker Tabin Hasan Sep 2017 – Dec 2018

- Built the Categorized Affect Map, which classifies places by problem category from crowdsourced affective responses using multi-label classification. Led the thesis group from a Top 10 finish at the SDG Hackathon 2018 to publication at ICCA 2020, and led experiments on the Bengali WordNet.

Datasets and Research Software

- **CID: Cow Images Dataset.** 513 cattle across 8 breeds, with 2,052 photographs and 15,812 video frames, each animal annotated for ten attributes including weight, height, age and breed. Released with regression and classification baselines. github.com/bhuiyanmobasshir94/CID
- **BoviShift.** 2,657 unique bulls, 2021–2026, with the three-protocol evaluation harness. To be released with the paper.
- **Margin.** An adaptive writing tutor that personalises lessons from a learner's own recent errors and spaces review on a 3, 7, 14, 30-day ladder. An LLM does the grading; deterministic code bounds every output, clamping scores to the legal scale and recomputing each aggregate from its parts.
  margin.mobasshirbhuiya.com Source (private): github.com/bhuiyanmobasshir94/margin

Professional Experience

Graaho Technologies Dhaka, Bangladesh
Staff Machine Learning Engineer Feb 2023 – present

- **AlgoRec:** multi-tenant recommendation platform on AWS Marketplace. No candidate model shipped without first being scored by AUC against a popularity baseline. Built two recommendation models with NVIDIA Merlin and an implicit-feedback ALS model with confidence weighting; served embeddings through a 64-dimensional approximate nearest-neighbour index, with every run versioned in MLflow.
- **Koronik:** agent platform for Islami Bank Bangladesh PLC across web, WhatsApp, Messenger and Facebook, serving 5,000+ daily users. Answers only from tenant-approved content; below a confidence threshold it refuses and hands the customer to a person. Tenant isolation lives at the database partition key, not in the prompt.
- **KhaoDao GPT:** conversational ordering agent for a food-delivery platform, pairing Llama models with Elasticsearch retrieval to take a customer from "something nearby" to a complete order.
- **Smart Guess (CowNet):** PyTorch multi-input-output network trained on 13,964 images, predicting age, height, length, weight and breed; used for initial procurement screening at Bengal Meat.
- **Easymator:** construction takeoff from architectural drawings, with scale calibration validated before any measurement. Automatic wall detection was left out on purpose, because its errors would be invisible to the contractor.

Senior Machine Learning Engineer, seconded to Renforce, Sydney Oct 2021 – Jan 2023

- Built the ML behind a regulatory-compliance product: a text-cluster classifier that turns regulatory PDFs into obligations verified against an ontology, a named-entity metadata extractor, and a rule recogniser (80% accuracy, 0.78 F1). Designed the ML lifecycle platform and a Kafka-driven workflow manager that generates Airflow DAGs from templates.

Machine Learning Engineer Mar 2020 – Sep 2021

- Took the DLRM-based KhaoDao recommender to production with low-latency online prediction; built Bengali and English OCR services for identity verification and menu digitisation; built computer vision for vehicle, number-plate and space detection in a smart-parking system; prototyped credit-risk models.

Data Scientist Mar 2019 – Feb 2020

- Built the original Smart Guess pipeline: Mask R-CNN instance segmentation to locate girth keypoints, and a Keras multi-input-output network predicting height, length, weight and breed. *BASIS National ICT Award 2019*.

Teaching, Mentoring and Community

- Translated Week 12 (deep learning for NLP) of the NYU Deep Learning course by Yann LeCun and Alfredo Canziani into Bengali; published on the course site.
- Mentor, Code to Communicate and Free The Mind: programming for under-served students. 2018 – 2020
- Study-group leader for the Udacity Bertelsmann and Intel Edge AI scholarship cohorts; voted "You Rock" awards by cohorts of about 5,000 and 13,000 students. 2019 – 2020

Honours and Awards

- **BASIS National ICT Award**, second runner-up, AI in Agriculture, for Smart Guess. 2019
- **Kaggle 3× Expert**, top 5% of data scientists across notebooks, datasets and discussion. 2021
- **Specialist Training in AI**, Singapore e-Government Leadership Centre and Bangladesh Ministry of ICT. 2020
- **Top 10**, Sustainable Development Goal Hackathon, Banglalink Digital and a2i. 2018

Technical Skills

Research: PyTorch, TensorFlow, scikit-learn, OpenCV, NVIDIA Merlin; instance segmentation, implicit-feedback recommendation, sequence labelling, multi-label classification, retrieval-augmented generation. **Systems:** Python, C++, Java, SQL; FastAPI, Django; MLflow, Airflow, Kafka, Spark; AWS (SageMaker, Bedrock), Docker. **Certifications:** AWS Certified Machine Learning, Specialty (2026); AWS Certified Solutions Architect, Associate (2024).

Selected Talks

- "CID: Cow Images Dataset for Regression and Classification." ICCA 2022. 2022
- "KhaoDao Recommendation Engine." Prototype presentation, National University of Singapore. 2020