Zabir Mohammad

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📇 Portfolio | in Linkdin | ○ GitHub | G Google Scholar |

Dhaka - 1215, Bangladesh.

RESEARCH INTERESTS

- Computer Vision and Representation Learning
- Deep Learning for Image and Video Understanding.
- Gait analysis, Biometrics, and Human-Centric AI.
- Self-Supervised Learning for clustering and retrieval tasks.
- Generative AI, Explainable AI, and HCI.

EDUCATION

• **Bangladesh University of Business and Technology** — *Feb 2017 - Jan 2021*
B.Sc in Computer Science and Engineering — Dhaka, Bangladesh
∘ GPA: 3.80/4.00
∘ **Thesis:** An Offline Writer-independent Signature Verification System using AutoEmbedder

• **Tejgoan College** — *2016*
Higher Secondary School Certificate — Dhaka, Bangladesh
∘ Grade: 4.75/5.00

• **Government Science School** — *2014*
Secondary School Certificate — Dhaka, Bangladesh
∘ GPA: 5.00/5.00

EXPERIENCE

• **Advanced Machine Intelligence Research Lab [🌐]** — *Jan 2023 - Present*
Researcher — Dhaka, Bangladesh
∘ Conducted research in Gait analysis using multimodal sensor data, focusing on pre-fall detection.
∘ Introduced an ensemble CNN-RNN model for fall detection in imbalanced datasets.
∘ Proposed a fall prevention mechanism for elderly care, enhancing safety measures.
∘ Prepared manuscripts and mentored undergraduate students, improving lab productivity.
∘ Developing a self-supervised image retrieval system with Vision Transformers (ViTs) to enhance retrieval accuracy.

• **King Abdul Aziz University [🌐]** — *Sept 2022 - Jan 2023*
Adjunct Co-Investigator — Jeddah, Saudi Arabia.(Remote)
∘ Developed a self-supervised writer identification model from unlabeled data.
∘ Designed a pairwise training pipeline for clustering handwriting embeddings.
∘ Conducted extensive experiments on unlabeled handwriting datasets.
∘ Prepared the manuscript and published research in Mathematics.

• **Bangladesh University of Business and Technology [🌐]** — *Jun 2021 - Dec 2022*
Research Assistant — Dhaka, Bangladesh
∘ Developed deep learning models for Signature verification and writer identification.
∘ Improved handwriting accuracy with robust feature extraction.
∘ Assisted in manuscript preparation and research collaboration.
∘ Presented findings at 24th International Conference on Computer and Information Technology (ICCIT).

PUBLICATIONS C=CONFERENCE, J=JOURNAL, S=IN SUBMISSION, P=IN PROGRESS

[J.1] Zabir Mohammad, Arif Reza Anwary, Muhammad Firoz Mridha et al. (2023). **An Enhanced Ensemble Deep Neural Network Approach for Elderly Fall Detection System Based on Wearable Sensors**. *Sensors*, Vol. 23, Issue 10, pp. 4774. DOI: 10.3390/s23104774

[J.2] Zabir Mohammad, Muhammad Mohsin Kabir, Muhammad Mostafa Monowa, et al. (2022). **Self-Writer: Clusterable Embedding Based Self-Supervised Writer Recognition from Unlabeled Data**. *Mathematics*, Vol. 10, Issue 24, pp. 4796. DOI: 10.3390/math10244796

[J.3] MF Mridha, Zabir Mohammad, Muhammad Mohsin Kabir, et al. (2023). **An Unsupervised Writer Identification Based on Generating Clusterable Embeddings**. *Computer Systems Science & Engineering*, Vol. 46, Issue 2, DOI: 10.32604/csse.2023.032977

[C.1] Zabir Mohammad, et al. (2021). **An Offline Writer-independent Signature Verification System using AutoEmbedder**. In *24th International Conference on Computer and Information Technology (ICCIT)*, pp. 1-6. Publisher: IEEE. Date: 2021/12/18, Location. DOI: 10.1109/ICCIT54785.2021.9689780

[S.1] Zabir Mohammad et al. (2025). **DeepAct-Net: A hybrid CNN-BiLSTM framework with self-attention for sensor-based human activity recognition**. Manuscript submitted for publication in *Scientific Reports*.

[P.1] Zabir Mohammad and M.F Mridha. **Self-Retrive: A self-supervision-based image retrieval system**. The work is currently in implementation process.

SKILLS

- **Programming Languages:** Python(advanced), C, C++, MATLAB(basic)
- **Machine Learning & Deep Learning:** TensorFlow, Keras, PyTorch, Scikit-learn
- **Computer Vision:** OpenCV, Object Detection, Semantic Segmentation, Image Classification
- **Data Science & Analytics:** Pandas, NumPy, Matplotlib, Seaborn
- **Algorithms & Frameworks:** CNNs, RNNs, LSTMs, GANs, ViTs, Hyperparameter Tuning
- **Web Technologies:** HTML, CSS, JavaScript, Node.js
- **Databases & Data Handling:** MySQL, SQLite, Oracle, TensorFlow Datasets
- **Version Control & Collaboration:** Git, GitHub, GitLab, Jupyter Notebooks
- **Interpersonal & Soft Skills** Critical thinking, Data analysis, Problem Solving, Research design, Technical Writing, Literature review, Communication skills, Time management

HONORS AND AWARDS

- **Annual Research Publication Award 2021** *2021*
  Advanced Machine Learning Lab
  ◦ Awarded for significant research contributions in machine learning.
  ◦ Honored for publishing high-quality research articles in top-tier journals.

- **Research Publication Award 2022** *2022*
  King Abdul Aziz University
  ◦ Recognized for outstanding research contributions in the field of Deep learning.
  ◦ Acknowledged for the impact of published work in academic circles.

- **Competition Achievement** *2017-2020*
  Intra-University Programming Contest, BUBT
  ◦ One-time Champion and 3-time Runner-up
  ◦ Demonstrated strong problem-solving skills by winning the contest and securing runner-up positions.
  ◦ Showcased proficiency in algorithmic thinking and coding challenges.

- **Merit-Based Academic Scholarship** *2017-2021*
  Bangladesh University of Business & Technology
  ◦ Awarded for maintaining a high CGPA throughout the undergraduate program.
  ◦ Recognized for academic excellence and commitment to studies.

VOLUNTEER EXPERIENCE

- **Research Mentorship** *2023 - Present*
  Advanced Machine Intelligence Research(AMIR) Lab
  ◦ Guided undergraduate students in deep learning, self-supervised learning, and human activity recognition research. Provided support in experiment design, model evaluation, and academic writing.

- **Peer Reviewer** *2025 - Present*
  The Journal of Supercomputing, Springer Nature
  ◦ Volunteered as a peer reviewer for MDPI journals, evaluating research manuscripts in computer vision and machine learning. Provided constructive feedback to improve the quality and impact of submitted papers.

ADDITIONAL INFORMATION

Languages: English (Fluent), Bangla (Native), Hindi & Urdu (Conversational).
Interests: Reading Books, Playing Soccer and Cricket, Traveling and Hiking, Competitive Programming.

REFERENCES

1. **Dr. Muhammad Firoz Mridha.**
   Professor, Department of Computer Science.
   American International University.
   Email: firoz.mridha@aiub.edu
   Phone: +880 16 74791594.
   Relationship: Thesis Advisor, Director of AMIR lab.

2. **Dr. Muhammad Mostafa Monowar.**
   Professor, Department of Computing and Information Technology.
   King AbdulAziz University.
   Jeddah, Saudi Arabia
   Email: mmonowar@kau.edu.sa
   Phone: +966 56 773 4785.
   Relationship: Project Supervisor.

3. **Sadah Anjum Shanto.**
   Assistant Professor, Department Computer Science.
   Bangladesh University of Business and Technology.
   Email: sshanto@bubt.edu.bd
   Phone: +880 16 74533198.
   Relationship: Direct faculty, Academic mentor.