

Ibna Kowsar

✉ kawser.ibn.93@gmail.com |  ikowsar |  kawseribn
 kawseribn.github.io | Davis, California

Education

University of California, Davis

Ph.D. in Computer Science

California, USA

Fall 2025 – Present

Tennessee State University

M.Sc. in Computer Science (Data Science Specialization) (GPA: 4.0/4.0)

Tennessee, USA

Fall 2023 – Spring 2025

- **Thesis:** Improving Structured Data Imputation Using Attention Mechanisms
- **Project 01:** Developed an SQL database architecture inspired by the *All of Us Workbench*.
github.com/kawseribn/COMP5400_Project
- **Project 02:** Developed SmartMedScan, a medical document scanner using OCR and a Unified Text-to-Text Transformer (T5) to summarize medical documents. Implemented secure OCR pipelines for sensitive medical document processing and integration into medical workflows.
github.com/kawseribn/SmartMedScan

Brac University

B.Sc. in Computer Science and Engineering (CGPA: 3.87/4.0)

Dhaka, Bangladesh

2017 – 2021

- **Thesis:** Facial Expression Recognition: Convolutional Attentional Masking Network and Ensemble Approach
- **Project:** Developed a system for real-time driver drowsiness detection.
github.com/kawseribn/Driver-Drowsiness-Detection

Professional Experience

Research Associate

CIDA Lab, Tennessee State University

May'2025 – Present

- Conducting research on Large Language Models (LLMs) for cross-domain transfer learning with structured tabular data.
- Exploring domain generalization techniques and transformer-based architectures for robust representation learning.

Graduate Research Assistant

CIDA Lab, Tennessee State University

Aug'2023 – May'2025

- Utilized lightweight LLMs for transferring knowledge to EHR and structured tabular data.
- Proposed a novel imputation method using sample and feature attention.
- Developed an unsupervised probabilistic model for inter- and intra-class domain adaptation.
- Currently investigating feature importance in EHR data through causal inference methods.

Machine Learning Engineer

Apurba Technologies Inc.

Jul'2021 – Jan'2023

Sunnyvale, CA

Optimized Bengali OCR systems: Enhanced detection and segmentation in character recognition models, improving text analysis accuracy and efficiency.

Developed scalable ML architectures: Implemented systems using Docker, optimized data pipelines, and deployed APIs (Flask, FastAPI), reducing inference times by 30%.

Lecturer

BRAC University

Oct'2021 – Aug'2023

- **Teaching:** Taught courses including Introduction to Robotics (CSE461), System Analysis and Design (CSE471), Digital Logic Design (CSE260), Database Systems (CSE370), and Programming Language I and II.
- **Advising:** Provided hands-on mentorship, fostering innovative thinking and guiding students through the full software development lifecycle, from conceptualization to implementation.

Undergraduate Teaching Assistant

Programming Language I (Structured Programming) & II (OOP)

Jan'2020 – May'2021

- Created video tutorials on Object-Oriented Programming in Java & Python.
- Provided consultation hours for problem-solving and exam preparation.

Technical Skills

Languages & Frameworks: Python, Java, PyTorch, TensorFlow, SQL

APIs: FastAPI, Flask, Postman

Development Tools: Jupyter, Docker, Git, AWS (EC2, S3), Google Cloud Platform (GCP)

ML Libraries: Scikit-learn, Keras, OpenCV, SciPy, Pandas, NumPy, Seaborn, Matplotlib

Databases: MySQL, MongoDB, NoSQL

Software & Design Environments: MATLAB, Simulink, LabVIEW, LATEX, Verilog, VHDL

Peer Reviewed Publications and Projects

I have 11 peer-reviewed publications; the full list is on my **Google Scholar** page.

- [5] **Kowsar, I.**, & Samad, M. D. (2025).. *DeepIFSA: Deep Imputation of Missing Values Using Feature and Sample Attention. (Under review in IEEE TNNLS).*
- [4] Rabbani, S. B., **Kowsar, I.**, & Samad, M. D. (2024). *Transfer Learning of Tabular Data by Finetuning Large Language Models. 13th International Conference On Electrical and Computer Engineering (ICECE).*
- [3] **Kowsar, I.**, Rabbani, S. B., & Samad, M. D. (2024). *Attention-based Imputation of Missing Values in Electronic Health Records Tabular Data. In The 12th IEEE International Conference on Healthcare Informatics (ICHI).* DOI: 10.1109/ICHI61247.2024.00030.
- [2] **Kowsar, I.**, Rabbani, S. B., Akhter, K. F. B., & Samad, M. D. (2024). *Contrastive Domain Adaptation by Minimizing Divergence in Source-Target Image Distributions. International Conference on Imaging, Signal Processing and Communications (ICISPC).* DOI: 10.1109/ICISPC63824.2024.00018.
- [1] Islam, M. M., Das, A., **Kowsar, I.**, Azad Rabby, A. K. M. S., Hasan, N., & Rahman, F. (2021). *Towards Building a Bangla Text Recognition Solution with a Multi-Headed CNN Architecture. In 2021 IEEE International Conference on Big Data (Big Data), Orlando, FL, USA, pp. 1061-1067. <https://doi.org/10.1109/BigData52589.2021.9671653>.*

Certificates & Awards

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| • Highest Distinction, Brac University | 2021 |
| • Merit Scholarship Award, Brac University | 2019–2021 |
| • VC's List and Dean's List Award, Brac University | 2019–2021 |
| • Presentation Skill Award, Brac University | 2017 |