

# Ibna Kowsar

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 [kawseribn.github.io](https://kawseribn.github.io) | Davis, California

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## Education

<b>University of California, Davis</b> <i>Ph.D. in Computer Science</i>	California, USA Fall 2025 – Present
<b>Tennessee State University</b> <i>M.Sc. in Computer Science (Data Science Specialization) (GPA: 4.0/4.0)</i>	Tennessee, USA Fall 2023 – Spring 2025
<ul style="list-style-type: none"><li><b>Thesis:</b> Improving Structured Data Imputation Using Attention Mechanisms</li><li><b>Project 01:</b> Developed an SQL database architecture inspired by the <i>All of Us Workbench</i>. <a href="https://github.com/kawseribn/COMP5400_Project">github.com/kawseribn/COMP5400_Project</a></li><li><b>Project 02:</b> 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. <a href="https://github.com/kawseribn/SmartMedScan">github.com/kawseribn/SmartMedScan</a></li></ul>	
<b>Brac University</b> <i>B.Sc. in Computer Science and Engineering (CGPA: 3.87/4.0)</i>	Dhaka, Bangladesh 2017 – 2021
<ul style="list-style-type: none"><li><b>Thesis:</b> Facial Expression Recognition: Convolutional Attentional Masking Network and Ensemble Approach</li><li><b>Project:</b> Developed a system for real-time driver drowsiness detection. <a href="https://github.com/kawseribn/Driver-Drowsiness-Detection">github.com/kawseribn/Driver-Drowsiness-Detection</a></li></ul>	

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## Professional Experience

<b>Research Associate</b> <i>CIDA Lab, Tennessee State University</i>	May'2025 – Present
<ul style="list-style-type: none"><li>Conducting research on Large Language Models (LLMs) for cross-domain transfer learning with structured tabular data.</li><li>Exploring domain generalization techniques and transformer-based architectures for robust representation learning.</li></ul>	
<b>Graduate Research Assistant</b> <i>CIDA Lab, Tennessee State University</i>	Aug'2023 – May'2025
<ul style="list-style-type: none"><li>Utilized lightweight LLMs for transferring knowledge to EHR and structured tabular data.</li><li>Proposed a novel imputation method using sample and feature attention.</li><li>Developed an unsupervised probabilistic model for inter- and intra-class domain adaptation.</li><li>Currently investigating feature importance in EHR data through causal inference methods.</li></ul>	
<b>Machine Learning Engineer</b> <i>Apurba Technologies Inc.</i>	Jul'2021 – Jan'2023
<p><b>Optimized Bengali OCR systems:</b> Enhanced detection and segmentation in character recognition models, improving text analysis accuracy and efficiency.</p> <p><b>Developed scalable ML architectures:</b> Implemented systems using Docker, optimized data pipelines, and deployed APIs (Flask, FastAPI), reducing inference times by 30%.</p>	Sunnyvale, CA
<b>Lecturer</b> <i>BRAC University</i>	Oct'2021 – Aug'2023
<ul style="list-style-type: none"><li><b>Teaching:</b> 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.</li><li><b>Advising:</b> Provided hands-on mentorship, fostering innovative thinking and guiding students through the full software development lifecycle, from conceptualization to implementation.</li></ul>	
<b>Undergraduate Teaching Assistant</b> <i>Programming Language I (Structured Programming) &amp; II (OOP)</i>	Jan'2020 – May'2021
<ul style="list-style-type: none"><li>Created video tutorials on Object-Oriented Programming in Java &amp; Python.</li><li>Provided consultation hours for problem-solving and exam preparation.</li></ul>	

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## 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

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## 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>.
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## Certificates & Awards

- 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