

# IBNA KOWSAR

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🌐 website: [kawseribn.github.io](https://kawseribn.github.io) | Nashville, Tennessee

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## Education

### Tennessee State University [TSU]

Tennessee

*M.S. in Computer Science (Data Science Specialization)*

2023 – 2025 (expected)

- **Research Interests:** Machine Learning, Deep Learning, Self-supervised & Unsupervised Methods, Problem-solving for Tabular and Image Data

### Brac University [BRACU]

Bangladesh

*B.Sc in Computer Science and Engineering*

2017 – 2021

- CGPA: 3.87/4.0 (Highest Distinction)
  - Undergraduate Thesis : Facial Expression Recognition: Convolutional Attentional Masking Network and Ensemble Approach  
Supervisor: Md. Hasanul Kabir, PhD. Co-Supervisor: Rasif Ajwad
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## Professional Experience

### Graduate Research Assistant

Aug'2023 – Jun'2025

*CIDA Lab, Tennessee State University*

- Implementing and enhancing deep learning algorithms for tabular data
- Investigating Deep Learning-based strategies to enhance domain adaptation on image data

### Machine Learning Engineer

Jul'2021 – Jan'2023

*Apurba Technologies Ltd.*

- Enhanced and optimized existing Machine Learning systems to address challenges in Bengali OCR (Optical Character Recognition), Detection, and Layout Segmentation
- Engineered and deployed scalable ML systems, including data pipelines, APIs, and continuous deployment workflows, ensuring robust monitoring and optimal performance in production environments

### Lecturer

Oct'2021 – Aug'2023

*BRAC University*

- Managed and mentored a diverse student body of over 150 each term while collaborating closely with fellow faculty to coordinate coursework
- Taught a range of courses including Introduction to Robotics (CSE461), System Analysis and Design (CSE471), Digital Logic Design (CSE260), and Database Systems (CSE 370)

### Undergraduate Teaching Assistant

Jan'20 – May'21

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

*Java, Python*

- Created video tutorial on Object Oriented Programming in both Java Python
  - Provided Consultation Hours for Problem Solving and Exam Preparation
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## Technical Skills

**Languages and Frameworks:** Python, Java, PyTorch, Tensorflow MySQL, Assembly (x86, 8051), Flask, FastAPI

**Developer Tools and Libraries:** Git, Bash Scripting, Pandas, OpenCV, Scipy, Matplotlib, Seaborn, Docker, AWS, Jupyter, Asana

**Software and Design Environments:** MATLAB, Simulink, Proteus, LabVIEW, Webots.

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## Recent Publications

### **Attention-based Imputation of Missing Values in Electronic Health Records Tabular Data**

*The 12th IEEE International Conference on Healthcare Informatics (ICHI 2024)*

- A novel attention-based missing value imputation framework that learns to reconstruct data with missing values leveraging between-feature (self-attention) or between-sample attentions.

### **A Deep Learning Based Unified Solution for Character Recognition**

*International Conference on Pattern Recognition (ICPR 2022)*

- Segmentation & Recognition of Bangla, Assamese and English (Handwritten, Typewritten, Computer Composed & Printed) characters using multi-headed CNN

### **Towards Building a Bangla Text Recognition Solution with a Multi-Headed CNN**

*IEEE International Conference on Big Data (IEEE BigData 2021)*

- State-of-the-art Recognition of Bangla OCR (Handwritten, Typewritten, Computer Composed & Printed) characters
- Proposed a model that reduces the complexity of multi-class classification and classifies the characters using only a three-headed convolutional neural network.

### **A Novel Approach to Enhance Safety on Drowsy Driving in Self-Driving Car**

*Mobile Networks and Applications (Springer MONET 2022)*

- Collected synthetic drowsy driving data and developed an algorithm for safe autonomous parking when detecting driver fatigue

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## Projects

**Facial Expression Recognition** | *Deep Learning, Attention Model*

**Driver Drowsiness Detection and Alarming System** | *Opencv, Machine Learning*

**Simobot: Simulation for Evolutionary Robotics** | *AI, Robotics, Simulation*

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## 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 | 2019-2022 |
| • Presentation Skill Award, Brac University        | 2017      |

## Online Course Certificates

Neural Networks and Deep Learning: Issued Oct 2020

- Certification Authority: Coursera, License Number: NVYYFDCBVWDV

Sequence Models: Issued Jun 2020

- Certification Authority: Coursera, License Number: 3SMGJDBNBNDL

Convolutional Neural Networks: Issued Sep 2020

- Certification Authority: Coursera, License Number: PF9VWKNJ9RX5