

# MD. ABER ISLAM

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## EDUCATION

### BRAC University

*Bachelor of Science in Computer Science and Engineering*

Dhaka, Bangladesh

*Jul 2020 – Jan 2025*

## SKILLS

**Languages:** Python, SQL, Ruby, JavaScript, HTML, CSS

**Technologies:** PyTorch, Numpy, Pandas, Sklearn, PyCaret (AutoML), HuggingFace Transformers, FAISS, FastAPI, Streamlit, Gradio, LangChain, Git/GitHub, Docker

**Methodologies:** Machine Learning, NLP, AutoML, Web Scraping, Fine-tuning, Vector Database, RAG

## EXPERIENCE

### Aspire to Innovate (a2i) Program

*Machine Learning Intern*

Dhaka, Bangladesh

*Jun 2024 – Dec 2024, Internship*

- Worked at a government initiative aimed at innovative technology solutions for public services, processing and analyzing datasets while implementing quality assurance protocols for government systems.
- Developed NLP pipelines for Bangla text classification, achieving high accuracy in sentiment analysis and designed web scraping solutions for Bangladesh's largest open-source Bangla NLP corpus.
- Engineered automated workflows reducing data preprocessing time and implemented machine learning models for public service optimization analytics.
- Contributed to building scalable ML infrastructure for government data processing, enabling efficient analysis of large-scale public service datasets for policy decision-making.

## PROJECTS

### Medical Guideline RAG System | [GitHub](#) | [Live Demo](#)

- An AI-powered medical consultation system providing evidence-based medication guidance using RAG architecture with comprehensive drug interaction analysis across 33 medical domains.
- Built with FastAPI backend, FAISS vector search, Gemini AI integration, NetworkX knowledge graphs for drug interactions, and Streamlit interface.
- Addresses critical healthcare challenges by enabling rapid access to evidence-based medical literature, drug safety analysis, and contraindication checking for clinical decision support.
- Processed 50,000+ medical articles with <200ms search latency, supporting 100+ concurrent consultations and achieving comprehensive drug interaction coverage with safety-first design principles.

### Real-time Face Mask Detection | [GitHub](#) | [Live Demo](#)

- A computer vision system that detects whether people are wearing face masks in real-time video streams, webcam feeds, and uploaded images with high efficiency.
- Implemented using PyTorch with MobileNetV3 architecture and transfer learning from ImageNet weights, processing video frames directly for optimal performance.
- Trained on 12,000+ balanced images from Face Mask 12K dataset with comprehensive train/validation/test splits, supporting multiple input types including live camera feeds.

- Achieved 96% test accuracy with fast inference capability and deployed via Gradio web interface, enabling automated safety compliance monitoring across various devices and lighting conditions.

#### **Real-time News Sentiment Analysis Dashboard** | [GitHub](#) | [Live Demo](#)

- A real-time dashboard that continuously monitors news headlines and provides instant sentiment classification and visualization.
- Built using Hugging Face Transformers for sentiment analysis, FastAPI for asynchronous processing, and RSS feeds for live news ingestion with interactive visualizations.
- Provides automated sentiment monitoring of news streams for quick market sentiment analysis and media trend tracking.
- Processes 100+ headlines per minute with 96% accuracy, reducing manual monitoring by 80% and providing sub-second API response times.

#### **AutoML AI Assistant Usage Prediction System** | [GitHub](#) | [Live Demo](#)

- An automated machine learning system that predicts students' likelihood of reusing AI assistants based on interaction patterns and academic data.
- Built using PyCaret for automated model comparison, hyperparameter tuning, and deployment with comprehensive visual reporting and model explainability features.
- Helps educational institutions understand AI tool adoption patterns and optimize AI assistant implementations for better student engagement.
- Processed 10,000+ interaction records with 90% prediction accuracy, reducing ML workflow time and providing actionable insights for educational AI tool optimization.