Ashaduzzaman Sarker

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CAREER OBJECTIVE

Seeking a challenging position in a progressive and innovative environment where I can leverage my expertise in Artificial Intelligence, Data Science, and Machine Learning to contribute to organizational growth and technological excellence.

ACADEMIC BACKGROUND

Bachelor of Science (BSc) in Electrical and Electronic Engineering
BRAC University, Dhaka, Bangladesh **| CGPA:** 3.21/4.00 **| Graduated:** 2021

Higher Secondary Certificate (HSC)
Cantonment Public School and College, Rangpur **| GPA:** 5.00 (Golden A+) **| Year:** 2015

Secondary School Certificate (SSC)
Sathibari ML High School, Rangpur. **| GPA**-5.00 (Golden A+) **| Year:** 2013

EXPERIENCE

Research Assistant (Data Management)
***Centre for Entrepreneurship Development (CED), BRAC University* | (*June 2022 – Present*)**

- Conducted extensive research and collected, curated, verified, analyzed and presented up-to-date data on Bangladesh's RMG industry, focusing on supply chain visibility, ESG indices, sustainability practices, and renewable energy adoption.
- Key projects include:
  - ***Mapping export-oriented factories Mapped in Bangladesh (MiB)*** - [*Link*] [*Map*]
  - ***Exploring Adoption of Renewable Energy Technology (RET) among Apparel Exporters*** - [*Link*]
  - ***Addressing Climate Change and Plastic Waste in Bangladesh's Garment Industry*** - [*Link*]

CERTIFICATIONS

- **IBM AI Engineering Specialization |** *Certified by **IBM*** – [*Link*]
- **Deep Learning Specialization |** *Certified by **DeepLearning.AI*** - [*Link*]
- **Machine Learning Specialization |** *Certified by **Stanford Online & DeepLearning.AI*** - [*Link*]
- **IBM Data Science Specialization |** *Certified by **IBM*** - [*Link*]
- **TensorFlow Developer Specialization |** *Certified by **DeepLearning.AI*** - [*Link*]

TECHNICAL SKILLS

Python Programming: Advanced Python programming skills for AI, ML, and deep learning applications.

Machine Learning: Machine learning algorithms, applied ML, regression techniques, and mathematical analysis.

Deep Learning: Deep learning models, CNN, RNN, artificial neural networks, and network architecture.

Natural Language Processing (NLP): Text classification, sentiment analysis, named entity recognition (NER), machine translation, sequence-to-sequence modeling, Hugging Face Transformers.

Computer Vision: CNNs, Vision Transformers, image classification, object detection, segmentation, ResNet, EfficientNet, SAM, U-Net, model fine-tuning.

Multimodal Vision-Language Models: CLIP, ViLT, Visual Transformers, image captioning, visual question answering, cross-modal retrieval.

Large Language Models (LLMs): GPT-3, T5, BERT, text generation, question answering, summarization, causal and masked language modeling, transformer architectures, domain-specific fine-tuning.

Data Science: Python (Pandas, NumPy, Matplotlib), data cleaning, transformation, exploration, statistical analysis, logistic regression, decision trees, time series forecasting (ARIMA, LSTM, Transformer models).

Generative AI: Generative models and their applications in AI development.

SQL & Database Management: SQL database administration, dataset handling, and data-driven applications.

Software Tools: Skilled in using RStudio, Jupyter Notebooks, Hugging Face, Weights & Biases and GitHub for AI/ML development and version control.

Analytical & Problem Solving: Strong analytical and critical thinking skills, with a solution-oriented mindset.

Communication & Collaboration: Effective communicator, capable of working in team-oriented environments.

Frameworks: TensorFlow, PyTorch, Keras.

PROJECTS

Natural Language Processing (NLP) & Large Language Models (LLMs): [*GitHub*]

- ***Text Sentiment Classification on IMDb & MRPC Datasets (PyTorch & TensorFlow):*** Designed sentiment analysis models to classify text sentiment and detect paraphrases. Utilized Bidirectional LSTM and Transformer architectures to achieve high performance.
- ***Text Summarization with T5 & mT5 (PyTorch):*** Developed models to generate concise summaries from legal and consumer review texts, demonstrating advanced sequence-to-sequence modeling.
- ***Named Entity Recognition (NER) with Transformers (PyTorch & TensorFlow):*** Created and optimized token classification models for named entity recognition, achieving high precision on datasets like CoNLL-2003.
- ***Sequence-to-Sequence Transformers (PyTorch & TensorFlow):*** Engineered translation models to convert text between English and Spanish with high accuracy, using Marian and T5 models.
- ***Masked Language Modeling with DistilBERT & DistilRoBERTa (PyTorch):*** Enhanced language models' contextual understanding through masked language modeling, improving language comprehension on datasets like IMDb.
- ***Causal Language Modeling with GPT-2 & DistilGPT2 (PyTorch):*** Implemented causal language models, generating coherent and contextually appropriate text on datasets like ELI5 and CodeParrot.
- ***Question Answering with BERT & DistilBERT (PyTorch):*** Engineered advanced question-answering models using BERT and DistilBERT, achieving high accuracy on SQuAD and SWAG datasets.

Computer Vision: [*GitHub*]

- ***Image Classification with Vision Transformers & CNNs (Keras & PyTorch):*** Implemented state-of-the-art image classification models on diverse datasets like CIFAR-100 and MNIST.
- ***Object Detection with RetinaNet & Vision Transformers (PyTorch):*** Engineered object detection models, achieving high precision in localization and classification tasks.
- ***Image Segmentation with SAM & U-Net (Keras & PyTorch):*** Developed high-precision models for image segmentation, fine-tuning models like Segment Anything Model (SAM) and U-Net for exceptional accuracy.

Multimodal Vision-Language Models: [*GitHub*]

- ***Image Captioning:*** Fine-tuned a GIT image captioning model on the Pokémon BLIP dataset using PyTorch and Visual Transformers to generate descriptive captions for images.
- ***Document Question Answering (DocVQA):*** Fine-tuned LayoutLMv2 for document question answering on the DocVQA dataset, utilizing PyTorch for model optimization.
- ***Visual Question Answering (VQA):*** Fine-tuned a Visual Question Answering (VQA) model (ViLT) on the Graphcore VQA dataset, employing PyTorch for enhanced performance in answering questions about images.
- ***Text-to-Speech (TTS):*** Fine-tuned SpeechT5 for the text-to-speech task on the VoxPopuli dataset, using PyTorch to improve speech synthesis quality.
- ***Image-Text-to-Text:*** Developed models for tasks involving image-text relationships, integrating various architectures.

RESEARCH INTEREST

Computer Vision, Natural Language Processing (NLP), Large Language Models (LLMs), Vision Language Models (VLMs)

ACADEMIC ACHIEVEMENTS

Talent Pool Scholarship in Primary School Scholarship Examination (PSC) [2007]
Talent Pool Scholarship in Junior School Scholarship Examination (JSC) [2010]
BRAC University Merit Based Scholarship [2017]

LANGUAGES

BANGLA: Native speaker | **ENGLISH:** Proficient

PROFESSIONAL AFFILIATION

- **R&D Laboratory, Department of EEE, BRAC University |** *Research Intern (July 2019- Feb 2020)*
- **TEN'S 360-A Digital Marketing Agency |** *Digital Marketing Intern (Apr 2017- Dec 2017)*
- **IEEE BRAC University Student Branch |** *General Member (February 2018-Jan 2021)*
- **Robotics Club of BRAC University |** *General Member (Jan 2017- Dec 2020)*
- **International Conference on Energy and Power Engineering (BRACU) |** *Volunteer (March 2019)*

REFERENCES

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