

Md. Shahad Mahmud Chowdhury

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WORK EXPERIENCE

Machine Learning Engineer, *Giga Tech Limited, Dhaka, Bangladesh* | October, 2022 – Present

- Developed data preparation, Language model pre-training, hyper-parameter optimization and fine-tuning evaluation pipelines for Bangla language, utilizing Word2Vec, BERT, ELECTRA, GPT-2, T5, and XLNet.
- Achieved SOTA 96.36% accuracy on internally built test dataset by researching and implementing a word formation dependent rule-based Lemmatizer for Bangla language.
- Developed a Bangla text processing toolkit in python that normalizes and cleans Bangla texts, reducing ambiguous data by 32%. It also includes NER, POS tagging and shallow parsing pipelines for faster experiments.

Software Engineer, *REVE Systems, Dhaka, Bangladesh* | April, 2021 – August, 2022

- Researched and developed non-streaming and streaming Speech Recognition (ASR) systems for Bangla language, achieving a Word Error Rate (WER) of approximately 16%.
- Implemented knowledge distillation-based incremental/continual learning mechanism for ASR using RBKD and EBKD losses, resulting in 73% coverage on previous test data.
- Developed a sentence embedding-based system to suggest semantically duplicate questions for a Question and Answer Management System.
- Optimized ML models for faster inference and exposed APIs for seamless integration with applications.

SKILLS

Technical skills: Deep Learning, Python, Data Analysis & Visualization, Algorithms, Data structures, OOP, Regular Expression, Git, Linux, Docker, Model serving (FastAPI, gRPC), SQL, Qdrant.

Machine learning skills: ANN, CNN, RNN, LSTM, RNN-T, CTC, Transformers, BERT, GPT-2, Sequence-to-sequence Modeling, generative models, question-answering, Incremental/continual learning, Prompt Engineering, PyTorch, Hugging Face, Numpy, Pandas, etc.

Soft skills: Communication, Teamwork, Adaptability, Time management.

EDUCATION

Bachelor of Science in Engineering | *February, 2021*

Department of Computer Science and Engineering (CSE), Rajshahi University of Engineering & Technology (RUET)
CGPA: 3.08 out of 4.00

RESEARCH AND PUBLICATION

BERT-Based Emotion Classification Approach with Analysis of COVID-19 Pandemic Tweets.

Md. Shahad Mahmud Chowdhury and Biprodip Pal

- Developed a deep learning model that outperformed state-of-the-art models with an F1 score of 0.72 to classify emotions in terms of the ISEAR data set.
- Analyzed emotion and identified n-gram based contributing factors with the model agnostic explanation of the deep learning models from COVID-19-related English tweets.

PERSONAL EXPERIENCE AND PROJECTS

Incremental Learning for ASR: ([GitHub](#)) Knowledge distillation-based incremental learning approach for ASR. Implemented RBKD and EBKD losses from scratch and used in a teacher-student framework.

Unicode converter: ([GitHub](#), [PyPi](#)) Developed easy-to-use and accurate python package to convert Bangla Bijoy text to Unicode text. This solves – 1) the broken text problem and 2) text containing both Unicode and Bijoy encoding.

Problem Solving: Solved 225+ algorithmic problems in [LeetCode](#) and 170+ in [Codeforces](#) and participated in contests with a maximum rating of 1374. Also solved about 150+ problems in other several Online Judges.