EMRUL HASAN

(647)-857-2014 | emrul.phy@gmail.com | Toronto, ON
emrulphy | emrulhasan-nlp | emrulhasan-nlp.github.io

PROFILE

Machine Learning Engineer with 5 years of experience in **ML, DL, NLP, and Recommendation Systems**. Well-versed with a wide range of ML frameworks including **PyTorch, Scikit-learn, Pandas, NumPy**, etc. Proven track record of **research and publications** in top-tier journals and conferences. Enthusiastic about **problem-solving and Generative AI**.

EDUCATION

Ph.D. in Computer Science/AI, Toronto Metropolitan University, Toronto **(4.13/4.33)** Jan 2021 -May 2025 (Expected)
Graduate Courses: **Machine Learning, Deep Learning, Advanced Natural Language Processing**

RELEVANT SKILLS & KNOWLEDGE

Languages: Python, C, MATLAB, SQL
Models: LLMs, Multimodal Learning, Transformer Models, CNN, RNN, LSTM
Technologies/Frameworks: PyTorch, Scikit-Learn, LangChain, NLTK, SpaCy, Huggingface, Git, Linux, SLURM, CUDA

WORK HISTORY

Applied Machine Learning Intern | Vector Institute, Toronto May 2024- Present

- Investigated the recent development in Multimodal LLM and identified approaches to Fake News detection.
- Applied Multimodal LLM to annotate News articles, preparing a novel Multimodal dataset.
- Developed a fairness-aware advanced recommender system, enhancing accuracy and trustworthiness.

Research Assistant | Toronto Metropolitan University, Toronto Jan 2021- Present

- Conducted thorough research into the latest advancements in **deep learning based** RecSys, and state-of-the-art solutions, identified the challenges, and proposed potential solutions.
- Applied **Machine Learning and NLP** techniques to develop a recommendation system by leveraging review.
- **Designed, trained, and fine-tuned machine learning,** and developed a recommendation system, achieving 23% and 19% performance improvement in terms of MAE and MSE compared to the state-of-the-art models.
- Applied **LLMs (e.g. Llama)** to summarize the document to create user and item profiles, developing RecSYs.
- Wrote research papers for publication and effectively **communicated complex analytical** concepts and results to non-technical audiences through presentations at conferences and seminars.

Teaching Assistant, Toronto Metropolitan and Northeastern University, Toronto Jan 2021 - Present

- Facilitated tutorials on diverse topics including **database management, statistics, Python, ML, NLP, and SQL**.
- Assessed assignments and final projects for a class of 200 students, offering constructive feedback and support.

MACHINE LEARNING PROJECTS

Document Summarization Jan 2021-April 2021

- Developed document summarizer by using **transformer decoder** architecture e.g**. T5, BART, and Pegasus**.
- Conducted rigorous testing and evaluation of document **summarization models, fine-tuning parameters** to achieve optimal performance and accuracy in summarizing long text.

Fake News Classification Jan 2021-April 2021

- Cleaned and analyzed unstructured data such as text data, and extracted features for ML Modeling.
- Developed a Fake News classifier for early detection, leading to a decreased risk of rumor propagation.
- Experimented with various classification algorithms such as **Naïve Bayes, Logistic Regression, XGboost, SVM, LSTM, and BERT**, achieving 97% accuracy with transformer encoder (e.g. BERT).