Md Mosharaf Hossain

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Education

University of North Texas	*May 2019 - Dec 2022*
Ph.D., Computer Science and Engineering	GPA: 4.0/4.0

Tennessee Tech University	*Aug 2016 - Dec 2018*
M.Sc., Computer Science	GPA: 4.0/4.0

Bangladesh University of Engineering and Technology	*Dec 2004 - Oct 2009*
B.Sc., Computer Science and Engineering	

Coursera.org	*Aug 2017 - Apr 2018*
Deep Learning Specialization	

Research Interests

Natural language understanding, commonsense reasoning, information extraction, multilinguality, natural language generation, dialog systems, artificial intelligence, and machine/deep learning

Publications

1. Md Mosharaf Hossain, Dhivya Chinnappa, and Eduardo Blanco. *An Analysis of Negation in Natural Language Understanding Corpora.* Accepted in the main conference at **ACL 2022**.
2. Md Mosharaf Hossain, Venelin Kovatchev, Pranoy Dutta, Tiffany Kao, Elizabeth Wei and Eduardo Blanco. *An Analysis of Natural Language Inference Benchmarks through the Lens of Negation.* In the Proceedings of **EMNLP 2020**.
3. Md Mosharaf Hossain, Antonios Anastasopoulos, Eduardo Blanco and Alexis Palmer. *It's not a Non-Issue: Negation as a Source of Error in Machine Translation.* In the **Findings of EMNLP 2020**.
4. Md Mosharaf Hossain, Kathleen Hamilton, Alexis Palmer and Eduardo Blanco. *Predicting the Focus of Negation: Model and Error Analysis.* In the Proceedings of **ACL 2020**.
5. Md Mosharaf Hossain, Thomas M. Hines, Sheikh K. Ghafoor, Sheikh Rabiul Islam, Ramakrishnan Kannan, and Sreenivas R. Sukumar. *A flexible-blocking Based Approach for Performance Tuning of Matrix Multiplication Routines for Large Matrices with Edge Cases.* In BPOD workshop at **IEEE Big Data**.
6. A. H. M. Jakaria, Md Mosharaf Hossain, and Mohammad Ashiqur Rahman. *Smart Weather Forecasting Using Machine Learning: A Case Study in Tennessee.* arXiv preprint arXiv:2008.10789 (2020).

Employment History

Graduate Research Assistant, CSE, UNT	May 2019 - Current

· My research focuses on natural language understanding, multilinguality, factuality, and commonsense reasoning. In particular, I study how to comprehend and reason with negation in monolingual and multilingual contexts.

Research Intern, Analytics and Machine Intelligence, Raytheon BBN	May 2020 - Aug 2020

· Explored *joint neural models* and *global features* based ideas for Information Extraction (IE).
· Explored the impact of *context* and *active learning* techniques to solve downstream tasks of IE, including events, arguments, and relations extractions.

Machine Learning Research Intern, Oak Ridge National Lab   May 2017 - Aug 2017

· Analyzed the memory complexity, hyperparameter optimization, time complexity, and usability of the popular convolutional neural network architectures (e.g., GoogleNet and ResNet) on high-performance architectures.

Senior Data Engineer, GrameenPhone Ltd.   Mar 2012 - Dec 2015

· Developed analytics models, including churn prediction, cross sell and up sell, customer profiling and segmentation.

Technical Skills

Programming:	Python, C++, Java, R, Matlab, MPI, CUDA
Machine Learning	Neural Networks, SVM, PCA, BiLSTM, CNN, Transformers, etc.
Pre-trained models	ELMo, BERT, XLNet, RoBERTa, XLM-RoBERTa, mBERT, T5, etc.
ML Tools	PyTorch, Keras, TensorFlow

Open-Sourced Projects

1. **Focus of Negation Prediction**
   https://github.com/mosharafhossain/focus-of-negation
2. **Negation and Natural Language Inference**
   https://github.com/mosharafhossain/negation-and-nli
3. **Negation and Machine Translation**
   https://github.com/mosharafhossain/negation-mt
4. **Scope of Negation Prediction**
   https://github.com/mosharafhossain/scope-of-negation

Ongoing Research Projects

Negation and Affirmative Interpretation

· Every language contains negation, and the intelligent systems often have difficulty solving problems in instances containing negation. In this project, we explore how negation can be comprehended and propose a question-answer driven methodology to reveal the affirmative interpretations of negations.

Multilingual Negation

· We study the semantics and typological perspectives of negation in a wide range of languages. Our study further explores the possibilities of cross-lingual transfer of negation (e.g., zero-shot, few-shot, and projection) from one language to another.

Negation and Natural Language Understanding

· We explore the role of negation in eleven corpora covering six natural language understanding (NLU) tasks: question answering, similarity and paraphrasing, inference, word sense disambiguation, coreference resolution, and sentiment analysis.

Honors & Awards

1. Graduate Research Assistantship offer from UNT in 2019
2. Best Student Paper award from ACM Mid-Southeast Conference in 2018
3. Student Travel Grant from 2017 ACM/IEEE Supercomputing Conference
4. Top Talent (Exceed Expectation and High Potential) award from Business Intelligence Department at GrameenPhone Limited in 2014.