

MUHAMMAD MAHBUBUR RAHMAN

4807 Westland Blvd., Apt. A, Halethorpe, MD 21227

443-847-4611* mahbubur84k@gmail.com

RESEARCH INTEREST

I am interested in real world problems in the fields of Artificial Intelligence, Machine Learning, Natural Language Processing and Data Science.

RELEVANT EXPERIENCE

Postdoctoral Researcher

Technology and Translational Research Unit
National Institute on Drug Abuse
National Institutes of Health

October 2019 to Current

Postdoctoral Researcher

CLSP Research Lab
Whiting School of Engineering
Johns Hopkins University (JHU)

Oct 2018 to Sep 2019

Research Assistant

eBiquity Research Lab
Department of Computer Science and Electrical Engineering
University of Maryland Baltimore County (UMBC)

June 2014 to August 2018

Summer Research Intern

eBay Inc.
San Jose, CA

June 2017 to August 2017

Research Associate

RedShred, LLC
BWTech @ UMBC Cyber Incubator

June 2014 to January 2017

Summer Research Intern

eBay Inc.
San Jose, CA

June 2016 to August 2016

Summer Research Intern

AT&T Labs- Research
Bedminster, NJ

June 2015 to August 2015

Graduate Assistant

Department of Computer Science and Electrical Engineering
University of Maryland Baltimore County (UMBC)

February 2014 to May 2014

Faculty Member

Department of Computer Science
American International University-Bangladesh (AIUB)
Dhaka, Bangladesh

January 2009 to August 2013

Data Analyst

Micro parts USA incorporation
Dhaka, Bangladesh

June 2008 to December 2008

EDUCATION

University of Maryland, Baltimore County (UMBC)

Ph.D. in Computer Science

Duration: August 2013 to August 2018

Advisor: Professor Tim Finin

Graduation Date: August 2018

University of Dhaka (DU)

Master in Information Technology

Duration: July 2007 to June 2008

American International University- Bangladesh (AIUB)

Bachelor of Science in Computer Science

Honors: Graduated with Summa Cum Laude

Duration: May 2002 to February 2006

CERTIFICATION OR PROFESSIONAL TRAINING

- Cisco Certified IT Essential Instructor
- Oracle Database Developer

May 2009

December 2008

CHALLENGE AWARD and Grants

- ISWC Travel grant 2018
- Dissertation Fellowship 2018
- NSF travel grant, December 2017
- UMBC GSA travel grant, November 2017
- NSF travel grant, April 2017
- UMBC GSA travel grant, March 2017
- Runner-up in eBay Hackathon 2016
- Schema-agnostic Queries Semantic Web Challenge award in 12th ESWC 2015

JOURNAL AND CONFERENCE PUBLICATIONS

1. Mahsa Yarmohammadi, Xutai Ma, Sorami Hisamoto, **Muhammad Mahbubur Rahman**, Yiming Wang, Hainan Xu, Daniel Povey, Philipp Koehn and Kevin Duh, “Robust Document Representations for Cross-Lingual Information Retrieval in Low-Resource Settings”, MT Summit, Dublin, Ireland, August 19-23, 2019
2. **Muhammad Mahbubur Rahman**, Sorami Hisamoto and Kevin Duh, “Query Expansion for Cross-Language Question Re-Ranking”, arXiv:1904.07982 [cs.IR] April 2019
3. **Muhammad Mahbubur Rahman**, Tim Finin, “Unfolding the Structure of a Document using Deep Learning”, IEEE Transactions on Knowledge and Data Engineering (TKDE) (Under review)
4. **Muhammad Mahbubur Rahman**, Tim Finin, “Understanding and representing the semantics of large structured documents”, SemDeep at 17th International Semantic Web Conference (ISWC), Monterey, CA, USA, October 8-12, 2018
5. **Muhammad Mahbubur Rahman**, Tim Finin, “Deep Understanding of a Document's Structure”,

- 4th IEEE/ACM International Conference on Big Data Computing, Applications and Technologies (BDCAT 2017), Austin, TX, USA, Dec 5-8, 2017
6. Zareen Syed, Lushan Han, **Muhammad Mahbubur Rahman**, Tim Finin, James Kukla and Jeehye Yun, “Querying Large Linked Data Resources”, 14th International Semantic Web Conference (ISWC) October 11-15, 2015
 7. Zareen Syed, Lushan Han, **Muhammad Mahbubur Rahman**, Tim Finin, James Kukla, Jeehye Yun, “UMBC Ebiqity-SFQ: Schema Free Querying System”, 12th Extended Semantic Web Conference (ESWC) June 1, 2015
 8. Zareen Syed, Tim Finin, **Muhammad Mahbubur Rahman**, James Kukla, Jeehye Yun, “Discovering and Querying Hybrid Linked Data”, 4th ESWC Workshop on Knowledge Discovery and Data Mining Meets Linked Open Data, May 31, 2015
 9. **Muhammad Mahbubur Rahman**, “Mining Social Data to Extract Intellectual Knowledge”, International Journal of Intelligent Systems and Applications (IJISA), Vol. 4, No. 10, PP.15-24, September 2012
 10. **Muhammad Mahbubur Rahman**, “Intellectual Knowledge Extraction from Online Social Data”, IEEE International Conference on Informatics, Electronics & Vision (ICIEV), May 18-19, 2012, Dhaka, Bangladesh
 11. Md. Saiful Islam, **Muhammad Mahbubur Rahman**, Zerina Begum and M. Z. Hafiz, “Fault Tolerant Variable Block Carry Skip Logic (VBCSL) using Parity Preserving Reversible Gates”, International Journal of Computer and Electrical Engineering, Vol.3, No.1, pp.1-7, February, 2011
 12. **Muhammad Mahbubur Rahman**, Arif Ul Alam, Abdullah-Al-Mamun and Tamnun E Mursalin, “A more appropriate protein classification using data mining”, Journal of Theoretical and Applied Information Technology (JATIT), Vol. 19, No. 1, pp. 33-43, September 2010
 13. Md. Saiful Islam, **Muhammad Mahbubur Rahman**, Zerina Begum and Mohd. Zulfiqar Hafiz, "Realization of a Novel Fault Tolerant Reversible Full Adder Circuit in Nanotechnology", International Arab Journal of Information Technology, Vol. 7, No. 3, pp.317-323, July 2010
 14. Md. Saiful Islam, **Muhammad Mahbubur Rahman**, Zerina Begum and Mohd. Zulfiqar Hafiz, "Low Cost Quantum Realization of Reversible Multiplier Circuit", Information Technology Journal, Vol. 8, No. 2, pp. 208-213, 2009
 15. Md. Saiful Islam, **Muhammad Mahbubur Rahman**, Zerina Begum, Mohd. Zulfiqar Hafiz and A. A. Mahmud, “Synthesis of Fault Tolerant Reversible Logic Circuits”, IEEE International Conference on Testing and Diagnosis, 28-29 April, 2009, Chengdu, China
 16. Md. Saiful Islam, **Muhammad Mahbubur Rahman**, Zerina Begum and M. Z. Hafiz, “Fault Tolerant Reversible Logic Synthesis: Carry Look-Ahead and Carry-Skip Adders”, IEEE International Conference on Advances in Computational Tools for Engineering Applications, pp. 396-401, 2009
 17. Md. Saiful Islam, **Muhammad Mahbubur Rahman**, Zerina Begum and M. Z. Hafiz, “Efficient Approaches for Designing Fault Tolerant Reversible Carry Look-Ahead and Carry-Skip Adders”, MASAUM Journal of Basic and Applied Sciences (MJBAS), 2009
 18. **Muhammad Mahbubur Rahman**, Afroza Nahar, “Modified Bully Algorithm using election commission”, MASAUM Journal of computing ISSN 2076-0833 (MJC), Vol. 1, No. 3, pp.439-446, October 2009

PEER REVIEWED RESEARCH POSTER PRESENTATIONS

1. Amy E. Kwarteng, **Muhammad M. Rahman**, Dylan G. Gee, M. Alejandra Infante, Susan F. Tapert, McKenzie L. Himelein-Wachowiak, Chase W. Smitterberg, Brenda L. Curtis “The Impact of Familial Substance Use History on Reward Processing in the Adolescent Brain”, APA annual meeting, Philadelphia, PA, USA, April 25-29, 2020
2. **Muhammad Mahbubur Rahman**, Tim Finin “Understanding the Logical and Semantic Structure of Large Documents”, Doctoral Forum, 2017 SIAM International Conference on Data Mining (SDM), Houston, TX, USA, April 27-29, 2017
3. **Muhammad Mahbubur Rahman**, Tim Finin, James Kukla and Jeehye Yun, “Semantic Section Identification from Vertical Domains”, 38th Annual Graduate Research Conference (GRC),

- UMBC, Baltimore, USA, March 23, 2016
4. **Muhammad Mahbubur Rahman**, Jim Rowland, “Contextual Unstructured Data Anonymization”, AT &T Labs- Research Summer Poster Session, June 2015
 5. **Muhammad Mahbubur Rahman**, Zareen Syed, Tim Finin, James Kukla and Jeehye Yun, “Semantic Information Extraction from RFP Documents”, 37th Annual Graduate Research Conference (GRC), UMBC, Baltimore, USA, March 25, 2015
 6. **Muhammad Mahbubur Rahman**, “Open Information Extraction and Topic Modeling on Academic Profiles”, 37th Annual Graduate Research Conference (GRC), UMBC, Baltimore, USA, March 25, 2015
 7. **Muhammad Mahbubur Rahman**, Zareen Syed, Tim Finin, James Kukla and Jeehye Yun, “Extracting Information from RFPs”, IBM Beyond Watson conference, UMBC, Feb 23-24, 2015
 8. **Muhammad Mahbubur Rahman**, Tim Finin, “A study on Facebook: spam apps and privacy”, 36th Annual Graduate Research Conference (GRC), UMBC, Baltimore, USA, March 26, 2014
 9. **Muhammad Mahbubur Rahman**, Tamnun E Mursalin, Anwarul Kabir, “Automation system of Protein Databank (PDB) with new classification using clustering”, Conference Poster on Systems Biology and Computational Proteomics, USA, Dec 2-3, 2006

BOOK PUBLICATIONS

Muhammad Mahbubur Rahman, “Protein Classification using Machine Learning Approaches”, ISBN-10: 3659108391, ISBN-13: 978-3659108396, Publisher: LAP LAMBERT Academic Publishing (April 27, 2012)

RECENT RESEARCH ACTIVITIES

- Cross-Lingual IR in Machine Translation for English Retrieval of Information in Any Language
- Deep Concept Learning from e-commerce items using bidirectional LSTM and CNN
- Named Entity Recognition from item specifications using LSTM-CRF
- Contextual Unstructured Data Anonymization using OpenFST and CRFSuite
- Developed KB using Open Information Extraction and Topic Modeling on Academic Profiles
- Developed Prototypes and Machine Learning algorithms for open Information Extraction using OpenIE and scikit-learn
- Defined NLP pipelines to successfully evaluate an RFP (Request for Proposal)
- Developed an application for Semantic Similarity measurement of natural language using Stanford Core NLP, REVERB, UMBC SemSim service, Apache Tika and Apache UIMA
- Developed a gesture-based application using smart phone to control home system
- Generation of Biologically Meaningful Non-Interacting Protein Pairs
- Statistical (using TF, TFIDF & Dynamic Programming) and Binary classifiers for gene sequences
- Stress and Non-stress Gene Sequence classification using SVM
- EEG signal classification using TF, TF-IDF, PCA, Neural Network and K-NN classifier

SELECTED PROJECTS

Slot Discovery And Linking

- Developed algorithm for discovering slot and fillers from RFP documents
- Used Microsoft Cognitive Services and Wikipedia Miner
- Used DBpedia Ontology

Open Information Extraction and Topic Modeling on Academic Profiles

- Developed JSON based KB on academic profiles
- Used OpenIE 4.0 for facts extraction
- Used Scikit-learn machine learning framework for implementing NMF based topic modeling and k-means clustering on facts and raw text data

Gesture Based Home controlling System

- Designed and developed an Android App to write in the Air
- Developed program to communicate with Microsoft HomeOS from Smart Phone
- Developed application to control Home devices using Lab of Things (LoT)

Price Comparison Web Portal (BDRATE)

- Designed and developed a price comparison web portal for consumer products
- Programmed an admin module to control all products' history, clients, marketplaces and items
- Programmed a client module to add products, add price, update price, add markets and upload category
- Programmed a budget module, item module and a search module

Topic Modeling

- Implemented a Non-negative Matrix Factorization (NMF) based topic modeling algorithm using Python code released by Arora
- Programmed to transform documents to sparse matrix format
- Coded modules for recovery matrix, anchor words and top words for each anchor word

SERVICES AND ACTIVITIES

- Senator at Graduate Student Association at University of Maryland Baltimore County
- Member of Session Planning and Management subcommittee of IEEE International Conference on Computer and Information Technology (ICCIT) 2011, Dhaka, Bangladesh
- Reviewer: Journal of Social Network Analysis and Mining (SNAM), Springer Publication, ACL, EMNLP, ACL-IJCNLP, RepL4NLP, ADMA and Advances in Science, Technology and Engineering Systems Journal (ASTESJ)

COMPUTER SKILLS

Programming: Python, Java, C/C++ and PHP

Software: Oracle, Mysql, Weka, MatLab, Scikit-learn, Tensorflow and R

Operating System: OS X, Windows and Linux

AWARDS OF EXCELLENCE

- **100% Merit** Scholarship in the university based on cgpa
- **Board** Scholarship Based on level 10th
- **Govt. Junior** Talent-pool Scholarship in eight standards
- **District Commissioner** Scholarships in six and seven standards
- **Municipality Education** Scholarship in seven standard

EXTRA-CURRICULAR AND SOCIAL ACTIVITIES

- **Scouting:** Attended in several national, regional and local conferences, hiking to long distances
- **Eye Camping:** Attended in several eye camping programs
- **Essay Competitions:** Participated in many essay competitions and received several prizes
- **Debating:** Participated in many debating contests and received several prizes.