Afrida Rahman

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Personal Website **Linkedin** **Google Scholar** **ResearchGate**

EDUCATION

2016-2021 — **Bachelor of Science (B.Sc.) in Computer Science and Engineering**
Rajshahi University of Engineering and Technology, Rajshahi, Bangladesh
- Earned 160 credits
- Undergraduate Thesis: iML-ysPTM: Identification of Multi-abel Lysine PTM Sites with Feature Optimization and Data Imbalance Minimization.

WORK EXPERIENCE

February 2021-Present (2 years) — **AI Engineer ,** MyMedicalHUB International Ltd. (Link)
Headquarter: 13220 McCormick Drive, Tampa, FL 33626, USA
- Working on an AI Coach project where virtual measurements and movements capturing of human musculoskeletal assessment have been delivered through telemedicine interface. It will be the first innovative app for patients who have musculoskeletal health issues and will be assessed by 1 million users.
- Implementing Machine Learning, Computer Vision techniques like pose detection, gesture detection, body masking , person identification, speech recognition and so on.

Award: Achieved "Best Team Award" for the outstanding performance of the year.

August 2019 - Present (3 years 6 months) — **Researcher** (h-index: 3, **Citation: 23**), Machine Learning Research Lab (Link)
- Analyzing and exploring the relevant fields of Machine Learning, Computer Vision and Bioinformatics (Computational Biology), Natural Language Processing and Data Mining.

April 2023 - Present (6 months) — **Reviewer**
IEEE Transactions on Neural Networks and Learning Systems (**Impact factor: 14.255**)
- Review state-of-art of studies on Neural Networks

PUBLICATIONS

Journal Articles Total **5 publications (4 Q1 Journal Articles (Impact Factor: 3.7-5.0)** and 1 Conference Paper as first author) on Bioinformatics and Machine Learning research. (**See Publications**)

2022

1. **Rahman, Afrida,** Sabit Ahmed, Md. Al Mehedi Hasan, Shamim Ahmad, and Abdollah Dehzangi. "Accurately Predicting Nitrosylated Tyrosine Sites Using probabilistic sequence information." DOI **(Gene) (Impact Factor 3.688)**

2021

2. Ahmed, Sabit, **Afrida Rahman**, Md. Al Mehedi Hasan, Shamim Ahmad, and Shovan, S. M. (2021). "Computational identification of multiple lysine PTM sites by analyzing the instance hardness and feature importance." **Scientific reports**, 11(1), 18882. DOI **(Impact Factor 5.133)** (Source Code)

2021

3. Ahmed, Sabit, **Afrida Rahman*,** Md. Al Mehedi Hasan, Md Khaled Ben Islam, Julia Rahman, and Shamim Ahmad. **"**predPhogly-Site: Predicting Phosphoglycerylation Sites by Incorporating Probabilistic Sequence-Coupling Information into PseAAC and Addressing Data Imbalance." Edited by Ozlem Keskin. **PLOS ONE** 16, no. 4 (April 1, 2021): e0249396. DOI **(Impact Factor 3.24)**(Source Code)(***Contributed equally as first author**)

2021

4. Ahmed, Sabit, **Afrida Rahman**, Md. Al Mehedi Hasan, Md Khaled Ben Islam, Julia Rahman, and Shamim Ahmad, "predML-Site: Predicting Multiple Lysine PTM Sites with Optimal Feature Representation and Data Imbalance Minimization," in **IEEE/ACM Transactions on Computational Biology and Bioinformatics**, DOI (**ImpactFactor-3.015)**

Conference Paper, 2020

1. **Rahman, Afrida,** Sabit Ahmed, Julia Rahman, and Md Al Mehedi Hasan. "Prediction of Formylation Sites by Incorporating Sequence Coupling into General PseAAC." In 2020 Region 10 Symposium (TENSYMP), pp. 921-924. IEEE, 2020. DOI

PROJECTS

August 2021 - present

1. EMMA - AI Coach - (Android version) (Demo)

- Developed AI driven musculoskeletal solutions with computer vision, natural language processing techniques which can provide virtual therapy to the patients.
- Deployed pose detection, gesture detection and body-part segmentation models in mobile devices.

August 2019 - Present

2. Protein Post-Translational Modifications (Research Project) (ResearchGate**)**

- Currently, utilizing the language models (i.e. Bert, Word2Vec, FastText, Glove) to identify the protein modifications and trying to find out the context of protein sequences for accurate prediction.
- Constructed 2 multi-label predictors predML-Site, and iMul-kSite for predicting 5 types of important protein modifications (i.e acetylation, crotonylation, methylation, succinylation, and glutarylation sites) simultaneously.
- Developed 3 single label predictors, such as Formyl_Pred, predPhogly-Site, and PredNitro which correspond to 3 types of crucial protein modifications (i.e. formylation, phosphoglycerylation, and nitrotyrosine sites) prediction individually (one at a time).

3. Cancer Detection (Code available upon request**)**

- Pursuing research on cancer lesions cells for deeper analysis on larger dataset and accurate prediction utilizing transfer learning, deep learning and computer vision.

4. Identifying RNA Modifications (Research Project) (ResearchGate**)**

- Pursuing research on RNA modifications and developed DeepR5hmc which can identify RNA 5-hydroxymethylcytosine sites with the help of Deep Learning techniques.

5. Gesture Detection - (Code available upon request)

- Developing efficient model for detecting different gestures from a distant place. For that, the largest dataset will be taken for training.

6. Hand Detection - (Github**)**

- Developing efficient model for detecting Hand from a distant place using computer vision.
- **Language and Tools:** Python, Transfer learning, deep learning, computer vision, Matlab, Scikit-learn, Pandas, Numpy, Django.

April 2021

7. Speech Recognition Model (GitHub**)**

- Speech recognition & prediction system which can take commands from the user and predict that speech or words and execute instructions according to it.

September 2020

8. Web Scraping API (GitHub**)**

- Review Scrapper and Image Scrapper: An application where customer reviews and images of a website (i.e. Flipkart) are scrapped .

October 2020 **9. Dockerized Crud API: (**Github**)**

- simple Flask crud api by which data can be inserted, deleted, updated based on sending json response and stored data in MongoDB and then containerized the whole application for deployment procedure.

Language and Tools: Docker, Flask, MongoDB, Postman, PostgreSQL.

PERSONAL SKILLS

Language	• Bangla, English, Hindi
Data science & machine learning	• Data analysis, Protein sequence analysis, Feature analysis, Basic statistics,Classification techniques, Linear regression, Deep learning, Hyper parameter tuning, Transfer learning, Model development, Computer Vision, Natural Language Processing.
Libraries & Frameworks	• Tensorflow, Scikit-Learn, OpenCV, Numpy, Pandas, Scipy, Dataframe, Matplotlib, Seaborn, Plotly.
Programming tools	• Python, C++, Matlab, Kotlin, Django, Flask, Android Studio. • SQLite, NoSQL(MongoDB), PostgreSQL, MySQL.
Deployment	• Docker, Docker-compose, Kubernetes.
Others	• Microsoft Word, Excel, PowerPoint, Git, Windows, Linux, Mac.

MEMBERSHIPS

December 2019 - Present **Student Member (**IEEE)
Communicating with the professional world and building networks.

CERTIFICATIONS

June 2020 **IEEE Region 10 Symposium 2020**
Certificate of appreciation for a successful presentation on "Prediction of Formylation Sites by Incorporating Sequence Coupling into General PseAAC

May 2019 - August 2019 **Issued by University of Michigan (Coursera Platform)**

- Programming for Everybody
- Python Data Structures
- Using Databases with Python
- Using Python to Access Web Data

REFERENCES

4th Year Thesis Supervisor	**Dr. Md Al Mehedi Hasan** Postdoctoral Researcher, University of Aizu, Japan Professor, Department of Computer Science and Engineering, Rajshahi University of Engineering and Technology, Rajshahi-6204, Bangladesh. Phone: +8801712205360 Email: mehedi_ru@yahoo.com	**Julia Rahman** Institute for Integrated and Intelligent Systems, Griffith University, Brisbane, Australia Assistant Professor, Department of Computer Science and Engineering,Rajshahi University of Engineering and Technology, Rajshahi-6204, Bangladesh. Phone: +61480278930 Email: julia.rahman@griffithuni.edu.au
Collaborator	**Dr. Abdollah Dehzangi** Assistant Professor, Department of Computer Science, Center for Computational and Integrative Biology (CCIB), Rutgers University, Camden, NJ 08102, USA Email: i.dehzangi@rutgers.edu Phone: +1 443 558 8006	**Shamim Ahmad** Professor, Department of Computer Science and Engineering,University of Rajshahi, Rajshahi-6205, Bangladesh. Phone: +8801713140107 Email: shamim_cst@ru.ac.bd, shamim_cst@yahoo.com