Curriculum Vitae

PERSONAL INFORMATION

Name:	Afrida Rahman
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ResearchGate:	www.researchgate.net/profile/Afrida_Rahman2

EDUCATION

2016-2021

Bachelor of Science (B.Sc.) in Computer Science and Engineering

Rajshahi University of Engineering and Technology, Rajshahi, Bangladesh
CGPA: 3.51 (Last four semesters)

WORK EXPERIENCE

**February 2021 - Present
(1 year 6 months)**

AI Engineer
MyMedicalHUB (Link)
Headquarter: 13220 McCormick Drive, Tampa, FL 33626, US

- 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 heath issues and will be assessed by 1 million users.

- Worked on real time audio detection for better prediction for voice command sub-project in the AI Learned Therapy project. In this sub-project, audio data analysis with appropriate feature construction, deep learning model with deployment are the key elements.

**August 2019 - Present
(3 years)**

Researcher (Google Scholar , ORCID , h-index: 3)
Machine Learning Research Lab (Link)
Analyzing and exploring the relevant fields of Data Mining, Machine Learning, Bioinformatics, Computer Vision, Natural Language Processing etc.

PUBLICATIONS

Journal Articles

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)**

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)

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**)

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 (**Impact Factor 3.015**)

Conference Paper	**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 IEEE Region 10 Symposium (**TENSYMP**), pp. 921-924. IEEE, 2020. DOI

PROJECTS

(August 2019 – Present)

1. Identifying Protein Modifications with Machine Learning Models (ResearchGate) (**Github**)

• 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).

• 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.

2. Identifying RNA Modifications with Deep Learning Methods (Github)

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

Web-servers:
- predPhogly-Site: http://103.99.176.239/predPhogly-Site
- PredNitro: http://103.99.176.239/PredNitro
- predML-Site: http://103.99.176.239/predML-Site
- iMul-kSite: http://103.99.176.239/iMul-kSite

Language and Tools: Python, Matlab, Scikit-learn, Pandas, Numpy, Django, HTML, CSS.

3. Cancer Detection using Computer Vision Techniques (Github)

• Pursuing research on cancer lesions cells for deeper analysis on larger dataset and accurate prediction utilizing transfer learning and deep learning.

Language and Tools: Python, Transfer learning, deep learning, computer vision.

(August 2021 - present)

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

• Developing AI driven musculoskeletal solutions with computer vision, natural language processing.

• Developing software for providing virtual therapy to the patients by real-time movements tracking and voice commands recommended by renowned doctors and physicians.

• Deploying various pose detection and body-part segmentation models in android.

Language and Tools: Kotlin, Android Studio, Computer Vision, Machine Learning

(May 2022 - Present)

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

• Developing efficient model for detecting Hand from a distant place using computer vision.

6. 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.

Language and Tools: Computer vision, Machine Learning, python.

(September 2020)

7. Web Scraping API ([GitHub](#))

- **Review Scraper**: It is an application where customer reviews of a website (i.e. Flipkart) are scrapped using Flask and the gained customer reviews are stored automatically in MongoDB and lastly, the deployment has been completed using Heroku server.
- **Image Scraper**: It is another Flask application by which images can be scrapped from different websites based on user requirement.

Language and Tools: Flask, HTML, CSS, Python, MongoDB

(April 2021)

8. Speech Recognition Model ([GitHub](#))

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

Language and Tools: Python, Django, Javascript

(October 2020)

9. Dockerized Crud API: ([Github](#))

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

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

PERSONAL SKILLS

Language
- Native: Bangla
- Other: 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 language
- Python, C++, Matlab, Kotlin, Django, Flask, Android Studio.

Database
- SQLite, NoSQL(MongoDB), PostgreSQL, MySQL.

Deployment
- Docker, Docker-compose, Kubernetes.

Others
- Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Git, Windows, Linux, Mac.

CERTIFICATIONS

IEEE Region 10 Symposium 2020

Certificate of appreciation for a successful presentation on "Prediction of Formylation Sites by Incorporating Sequence Coupling into General PseAAC

Issued by University of Michigan (Coursera Platform)
- Programming for Everybody (Getting Started with Python)
- Python Data Structures
- Using Databases with Python
- Using Python to Access Web Data

Curriculum Vitae

REFERENCES

4th Year Thesis Supervisor

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