Monirul Islam Mahmud

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PERSONAL PROFILE

Passionate and driven Computer Science enthusiast with a diverse educational background, ranging from a Bachelor's degree in Computer Science & Engineering to ongoing studies for a Master's degree at Fordham University, New York. My experiences as a Research Assistant at the Design Inclusion and Access Lab (DIAL) and Trainee Engineer at Systech Datasoft have honed my skills in conducting experiments with analyzing data with Machine Learning. With a keen interest in cutting-edge techniques such as Explainable AI, Federated Learning, and NLP, I am excited to apply my expertise to contribute meaningfully to projects pushing AI innovation's boundaries.

PROFESSIONAL EXPERIENCE

Research Assistant (RA) / Design Inclusion & Access Lab (DIAL), Dhaka **December 2023 — Present**

- 1 years of successful team lead experience. demonstrating exceptional leadership, influencing, and relationship-building skills, fostering cohesive collaboration within diverse research teams.
- Working on 'DeepFake Detection System' and 'Diabetic Foot Ulcer Detection' project.

Student Researcher / Design Inclusion & Access Lab (DIAL), Dhaka **July 2023 — December 2023**

- Working under the guidance and supervision of Professor Nova Ahmed.
- Completed 'Alternative Credit Scoring' funded by NSU-CTRG (CTRG-23-SEPS-02)
- Efficiently managed stakeholders and Banking Sector in Bangladesh, fostering positive relationships.

Trainee Engineer (Data Science) / Systech Datasoft, Dhaka **August 2023 — December 2023**

- Worked on 'Resume Screening' project for the Systech Company.
- Implemented a PDF parser to enhance the efficiency of Resume Screening from PDF.
- Collaborated with suppliers and vendors to ensure quality control of the project.

EDUCATION

Degree	Institution	Major	Duration
M.S.	Fordham University, New York	Computer & Information Science	2024 - Ongoing
B.Sc.	North South University, Dhaka	Computer Science & Engineering	2020 - 2024

SKILLS

Programming Languages: C, PHP, Python
Database Systems: MySQL, MongoDB
ML Tools & Frameworks: Tensorflow, Numpy, Pandas, Scikit-learn, Flask, Django
Data Visualization: Matplotlib, Seaborn, Tableau
Software: MS Excel, MS Power Point, MS Word, Visual Basic, Latex

ONLINE COURSES

- Google Data Analytics Professional Certificate – Coursera Link
- Natural Language Processing Specialization – Coursera Link

WORK INTEREST AREA

Machine Learning and Predictive Analytics, Data Visualization, NLP, Explainable AI, Federated Learning.

PERSONAL PROJECTS

- **Human Activity Recognition using Sensor Data: A Federated Learning Approach.**

  Activity Recognition for Elderly people with Accelerometer and Gyroscope data. Federated Learning Technique with 3 local models is implemented here for user data privacy. Also, Explainable AI (XAI) techniques - SHAP and LIME are used in this project.

- **Hybrid approach for Diabetic Foot Ulcer using Explainable AI: A Webapp based Solution.**

  "Diabetic Foot Ulcer Detection using Deep Learning" embarks on a journey to leverage the prowess of state-of-the-art technologies to revolutionize the diagnostic landscape. Applied New Novel Approach - DFU_DIALNet outperformed other models with 99.33% Accuracy. LIME and Gradcam were Implemented to interpret model decision. A complete Web app is developed using Streamlit to predict Foot Ulcers.

- **Explainable Approach to Stroke Prediction with different Feature Selections & WebApp.**

  Merged dataset of public and 733 collected healthcare data is used in this project where different feature selections – Fisher Score, Information Gain, Lasso L1 and Kendall's Tau were applied. Additionally, XAI techniques LIME (Local) and Morris Sensitivity Analysis (Global) are implemented for transparent result. Information Gain with our novel approach "XGTree" comes up with highest accuracy of 95.78% and 92% MCC. Lastly, a Web App is developed using Flask for this predictive analysis project.

- **Alternative Credit Scoring using different Machine Learning, Deep Learning techniques and XAI.**

  Merged dataset of public and collected Bank data (both Quantitative and Qualitative data) is used here. Also, Permutation Feature Importance, Morris Sensitivity Analysis and SHAP are implemented to explain the Blackbox machine learning models.

- **Resume Screening using NLP and Resume Parser.**

  Merged dataset of public and collected candidate data is used for this project to shortlist the candidate for the Systech Datasoft company, Dhaka. Moreover, this automated system will retrieve candidate's email, name and qualification from their CV to 97.92% accurately predict whether the person is suitable for the position or not.

RESEARCH PAPER

Monirul Islam Mahmud, Md Shihab Reza and Intisar Tahmid Naheen. 2024. Optimizing Stroke Detection: An Analysis of Different Feature Selection Approaches. In Companion of the 2024 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp Companion '24), October 5–9, 2024, Melbourne, VIC, Australia. ACM, New York, NY, USA, 4 pages. https://doi.org/10.1145/ 3675094.3677602

EXTRA-CURRICULAR ACTIVITIES

- Former Volunteer of Content Writing Team at IEEE NSU Student Branch.
- Former General Member of Team Provision at NSU ACM Student Branch.

REFERENCES

Dr. Nova Ahmed

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