Rafat Ashraf Joy

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EDUCATION

University of Illinois Chicago — Chicago, IL, USA
PhD in Computer Science(Ongoing) — *August 2023 - Present*

EXPERIENCE

University of Illinois Chicago — Chicago, IL, USA
Graduate Research Assistant — *August 2023 - Present*
- Conducting research on solving Partial Differential Equations(PDEs) by Physics Informed Neural Networks(PINNs) assisted with Graph Neural Networks(GNNs) under the supervision of professor Pedram Rooshenas.

Dynamic Solution Innovators Ltd. — Dhaka, Bangladesh
Junior Software Engineer — *April 2023 - July 2023*
- Got hands on experience with Ruby on Rails.

PROJECTS

- **keshik**: A pip package which lets data scientists/developers oversample class imbalanced tabular data by Denoising Diffusion Probabilistic Model(DDPM), a novel deep generative model. The APIs were built using PyTorch deep learning framework

- **Super Resolution GAN for precipitation downscaling**: A super resolution Generative Adversarial Network(GAN) based approach for converting low res precipitation data(for south asia region) to its high res equivalent. The low res data is 16*16 and the high res data is 64*64. For evaluating the performance of the SRGAN model, PSNR and SSIM were used.

- **Snap the Leaf**: This web-app lets the users diagnose the disease of plants just by uploading the image of an infected leaf. Four deep learning model runs in the backend of this web app, which will perform the prediction task. One model is Baseline CNN and other 3 models are Transfer learning based (DenseNet, ResNet, ImageNet). The deep learaning models were trained using Keras API on Tensorflow Backend.

- **Carted**: An E-commerce website implemented by micro-services architecture. It has two different interfaces - for clients and suppliers. The transactions are settled by a separate banking API. React and Express were used in frontend and backend respectively.

PUBLICATIONS

1. **Fine Tuning the Prediction of the Compressive Strength of Concrete : A Bayesian Optimization Based Approach**, in IEEE Xplore. doi:10.1109/INISTA52262.2021.9548593

2. **An Interpretable Catboost Model to Predict the Power of Combined Cycle Power Plants**, in IEEE Xplore. doi:10.1109/ICIT52682.2021.9491700

PROGRAMMING SKILLS

Programming Languages: Python, Java, Ruby

Web Frameworks: Rails, Flask, React JS, Express JS

Libraries: PyTorch, Tensorflow

Others: Git, Linux, Latex, SQL, Tableau