

Amit Roy

Lafayette, Indiana, USA

✉ roy206@purdue.edu

in amitroy7781

🔍 google scholar

🌐 amitroy7781.github.io

Education

Purdue Univeristy

PhD Student in Computer Science

Current CGPA: 3.88/4.0

Research Focus: Deep Learning on Graphs

Advisor: Prof. Pan Li

West Lafayette, Indiana, USA

August 2022 - Present

Univeristy of Dhaka

B.Sc in Computer Science and Engineering

CGPA: 3.96 out of 4.00 (Class Rank: 1st out of 65 students)

Thesis Topic: Utility-based Graph Mining

Advisor: Dr. Chowdhury Farhan Ahmed

Dhaka, Bangladesh

January 2016 - January 2020

Professional Experience

Artificial Intelligence and Cybernetics Lab (AGenCy Lab)

Research Assistant - Machine Learning on Graphs

Developed GNN-based models for spatial-temporal traffic forecasting, node classification, and graph classification supported by ICT Division, Government of Bangladesh. Advisors: Dr. Amin Ahsan Ali and Dr. AKM Mahbubur Rahman

Dhaka, Bangladesh

February 2020 - June 2022

Tiger IT Bangladesh Ltd.

Software Engineer - Machine Learning

Worked as a backend developer on applied computer vision projects from real-time video data e.g. Automatic Number Plate Recognition and object detection and deep fake-based face animation generation using First-Order-Motion Model.

Dhaka, Bangladesh

December 2020 - August 2022

Publications

Unified Spatio-Temporal Modeling for Traffic Forecasting using GNN

April 2021

Amit Roy*, Kashob Kumar Roy*, Amin Ahsan Ali, M Ashraful Amin and A K M Mahbubur Rahman

The International Joint Conference on Neural Networks (IJCNN-2021) [[Paper](#)] [[Code](#)]

SST-GNN: Simplified Spatio-temporal Traffic forecasting model using Graph Neural Network

February 2021

Amit Roy*, Kashob Kumar Roy*, Amin Ahsan Ali, M Ashraful Amin and A K M Mahbubur Rahman

The 25th Pacific-Asia conference on Knowledge Discovery and Data Mining (PAKDD-2021) [[Paper](#)] [[Code](#)]

Node Embedding using Mutual Information and Self-Supervision based Bi-level Aggregation

April 2021

Kashob Kumar Roy*, **Amit Roy***, Amin Ahsan Ali, M Ashraful Amin and A K M Mahbubur Rahman

The International Joint Conference on Neural Networks (IJCNN-2021) [[Paper](#)] [[Code](#)]

Structure-Aware Hierarchical Graph Pooling using Information Bottleneck

April 2021

Kashob Kumar Roy*, **Amit Roy***, Amin Ahsan Ali, M Ashraful Amin, and A K M Mahbubur Rahman

The International Joint Conference on Neural Networks (IJCNN-2021) [[Paper](#)] [[Code](#)]

Mining High Utility Subgraphs

September 2021

Md. Tanvir Alam, **Amit Roy**, Chowdhury Farhan Ahmed, Md. Ashraful Islam, Carson K. Leung

UDML 2021: 4th Workshop on Utility Driven Mining and Learning @ ICDM 2021 [[Paper](#)]

UGMINE: Utility-based Graph Mining

February 2022

Md. Tanvir Alam, **Amit Roy**, Chowdhury Farhan Ahmed, Md. Ashraful Islam, Carson K. Leung

Applied Intelligence Journal, Impact Factor: 5.086 [[Paper](#)]

* indicates Equal Contribution

Academic Projects

Investigating Knowlege Graph Completion with Pre-trained Language model and GNN

January 2023 - April 2023

Developed architecture with pre-trained word embeddings from BERT and Relational Graph Convolutional Network (RGCN) for link prediction in knowledge graphs. [[Github](#)] [[Presentation](#)]

- Exploring the loss landscape of self-supervised learning with MCMC sampling** January 2023 - April 2023
 Employed Hamiltonian Monte Carlo MCMC sampling algorithm to find a potential fragility in the optimization of a state-of-the-art self-supervised learning method Simsim [Github] [Presentation]
- Reproducing "Taking a long look at QUIC"** August 2022 - December 2022
 Performed file download latency and fairness comparison between two transport layer protocols QUIC and TCP. [Github] [Demo Video]
- interviewGeek : An online interview platform** January 2019 - June 2019
 Developed a real-time mock interview platform with online IDE, user profiles, and personalized feeds. [Github]
- cricHUB : A website for cricket news updates** July 2018 - November 2018
 Developed cricket-based website with live scores, cricket news, match predictors, player and tournament statistics. [Github]
- uRECO: Web project for online gesture recognition** January 2018 - June 2018
 Developed web application for real-time image processing tasks: sentiment detection from facial expression, digit recognition from hand gestures of American Sign Language (ASL), and on-screen keyboard with fingertip usage. [Github] [Demo Video]
- iGest Recognito : Mobile App for sign language based communication** July 2017 - November 2017
 Developed an android application as a communication medium between regular text messaging and sign language, awarded as the Champion at **DUIITS-ROBI National IT Fest, 2018** (Results) and presented as a poster in **International conference on Emerging technologies in data Mining and Information Security(IEMIS)**, 2018 in Kolkata, India.
 [Github] [Demo Video] [Poster Link]

Technical Skills

Programming Languages:	Python, C++, C, Java
Data Science Tools:	PyTorch, NumPy, Scikit-Learn, Matplotlib, NetworkX, OpenCV
Web Development:	FrontEnd - HTML, JavaScript BackEnd - Flask, MySQL, MongoDB
Miscellaneous:	Git, L ^A T _E X

Problem Solving and Courseworks

- **Core Courses:**
 - **Undergrad Level:** Linear Algebra, Introduction to Probability and Statistics, Artificial Intelligence, Mathematical and Statistical Analysis for Engineers, Data Mining
 - **Grad Level:** Deep Learning, Machine Learning on Graphs, Statistical Machine Learning, Natural Language Processing
- **MOOC Courses:** Machine Learning, Coursera [Certificate], Neural Networks and Deep Learning, Coursera [Certificate], Structuring Machine Learning Projects, Coursera [Certificate] Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization, Coursera [Certificate] Build Basic Generative Adversarial Networks (GANs), Coursera [Certificate]
- Solved 1000+ problems in different Online Judges including Codeforces, Codechef, UVA.
- Reached Expert (Rating 1640) in Codeforces and 5* (Rating 2160) in Codechef, username: *amitroy7781*.

Awards and Achievements

- 2022: "**University Grants Commission of Bangladesh Scholarship**" for the first position in the Faculty of Engineering and Technology, University of Dhaka [Certificate]
- 2022: "**Professor Dr. M Lutfur Rahman Award**" for securing the highest CGPA in the Bachelor of Science Examination of 2019 in Computer Science and Engineering, University of Dhaka. [Certificate]

References

Dr. Pan Li Assistant Professor Computer Science, Purdue University, West Lafayette, Indiana, USA Email: panli@purdue.edu	Dr. Amin Ahsan Ali Associate Professor Department of Computer Science and Engineering Independent University, Bangladesh Email: aminali@iub.edu.bd
Dr. A K M Mahbubur Rahman Assistant Professor Department of Computer Science and Engineering Independent University, Bangladesh Email: akmmrahman@iub.edu.bd	Dr. Chowdhury Farhan Ahmed Professor Department of Computer Science and Engineering University of Dhaka, Bangladesh Email: farhan@du.ac.bd