Yeasir Rayhan

yeasirrayhan.prince@gmail.com
https://yeasirrayhanprince.github.io

Research Interests

Interpretable AI, Spatio-temporal Data Mining, Graph Representation Learning, AI for Healthcare & Social Good, Spatial Database

Education

Bangladesh University of Engineering and Technology Dhaka
Bachelor of Science in Computer Science and Engineering 2014 - 2018
CGPA: 3.81/4.00 (Ranked 21^{st} in a class of 126 students)
Thesis: Efficient Scheduling of Generalized Group Trips in Road Networks
Advisor: Dr. Tanzima Hashem

Publications

Efficient scheduling of generalized group trips in road networks
Yeasir Rayhan, Tanzima Hashem, Roksana Jahan, Muhammad Aamir Cheema
In *ACM Transactions on Spatial Algorithms and Systems (TSAS)*, 2019

Under Review

AIST: An Interpretable Attention-based Deep learning Model for Crime Prediction
Yeasir Rayhan, Tanzima Hashem
Under Review in *ACM Transactions on Intelligent Systems and Technology (TIST)*, 2020

Research Experience

Interpretable Spatio-temporal Model for Long-term Epidemic Prediction
Supervisor: Dr. Tanzima Hashem
We aim to forecast long-term infection rate of infectious diseases such as COVID-19 at county-level of USA based on different spatio-temporal aspects such as inter-county human mobility, intra-county human mobility, different POIs, connectivity of counties, demographics along with traditional historical COVID-19 cases and deaths in an interpretable manner.

AIST: An Interpretable Attention-based Deep learning Model for Crime Prediction
Supervisor: Dr. Tanzima Hashem
We developed AIST, a novel attention-based interpretable spatio-temporal deep learning architecture that combines spatial, temporal and semantic information to predict crimes of a particular region at future time steps. Extensive experiments show the superiority of our model in terms of both accuracy and interpretability using real datasets.

MinMax Location Selection and Facility Relocation Queries in Indoor Spaces
Collaborators: Dr. Tanzima Hashem, Muhammad Aamir Cheema
We designed two novel algorithms based on the nearest neighbor and shortest distance computation algorithms of VIP-tree for MinMax Location Selection and Facility Relocation queries, adapted the state-of-the-art solution in road networks to indoor spaces and ran extensive experiments on Melbourne Central and Chadstone Shopping Center dataset to prove the efficiency of the developed algorithms.

Efficient Scheduling of Generalized Group Trips in Road Networks
Supervisor: Dr. Tanzima Hashem
Awards: Regional Winner (Asia), The Global Undergraduate Awards, 2019

We introduced generalized group trip scheduling (GGTS) queries that enable friends and families to perform activities at different points of interest (POIs). We proposed an optimal, two heuristic solutions and ran experiments on California road dataset to show that optimal algorithm is preferable for small parameter settings, and heuristic solutions are preferable for large parameter settings.

Poster Presentation

Efficient scheduling of generalized group trips in road networks
Yeasir Rayhan, Tanzima Hashem, Roksana Jahan, Muhammad Aamir Cheema
International Conference on Networking, Systems and Security (NSysS), 2019

Employment History

East West University, Dhaka 2019 - Present
Lecturer, Department of Computer Science and Engineering

Eastern University, Dhaka 2018
Lecturer, Department of Computer Science and Engineering

Courses Instructed

Structured Programming Language, Object-Oriented Programming Language, Discrete Mathematics, Numerical Methods, Structured Programming Language Sessional, Object-Oriented Programming Language Sessional, Numerical Methods Sessional

Scholarships, Awards, and Grants

Regional Winner (Asia) in Computer Science, The Global Undergraduate Awards, 2019
Dean's Honor List, BUET
University Merit Scholarship, BUET

Community Services

Reviewer: NSysS (2020), APWEB-WAIM (2019, 2020), ICASERT (2019)
Organizing Committee Member: ICASERT (2019)

Technical Skills

Programming Languages: Python (PyTorch, Scikit-learn, NumPy, SciPy), Java, C/C++
Tools/OS: Android Studio, MySQL, Oracle, Firebase, LaTeX, Git; Windows, Linux
Languages: Bengali (proficient), English (proficient)