Yunxiang Yan

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EDUCATION

University of Notre Dame Notre Dame, IN

Undergraduate Exchange Student | GPA: 3.94 / 4.00 Aug. 2021 - May 2022

Southern University of Science and Technology - College of Finance Shenzhen, China

Bachelor of Economics, Financial Engineering | GPA: 3.67 / 4.00 Sept. 2019 - Jun. 2023

Related Coursework: *Data Science, *Machine Learning, *Neural Networks, Big Data Science, Computer System Design & Application, Data Structures, Algorithms, C/C++ Programming, Probabilities and Statistics, Mathematical Statistics, Advanced Linear Algebra, Mathematical Analysis, ^Computer Architecture, ^Computer Networks, ^Database Systems

**Crosslisted Graduate Course ^Spring 2023*

PUBLICATION

Constructing and Sampling Directed Graphs with Linearly Rescaled Degree Matrices Aug. 2022

First Author, Accepted and Presented at SIGKDD 2022 UC Co-author: Dr. Meng Jiang

- Proposed a novel sampling framework for large, directed graphs that can preserve several important graph properties
- Proposed a sampling algorithm based on the framework and provided the mathematical proof for its accuracy as well as the error upper bound
- Investigate the relationship between the sparsity of the degree matrices and the theoretical deviation
- Link to paper: *https://kdd.org/kdd2022/papers/24_Yunxiang%20Yan.pdf*

ACADEMIC PROJECT

Efficient Methods to Sample from Large Graphs May 2022 - Present

Undergraduate Researcher, Supervised by Dr. Meng Jiang University of Notre Dame

- Designed a new framework to sample from large graphs while preserving several graph properties including degree distributions. Theoretical portion constitutes the paper submitted to SIGKDD 2022 UC
- Designed and implemented a computationally efficient ($O(n^2)$) algorithm to sample from large graphs using approximation methods. Code publicly available on GitHub: *https://github.com/RaccoonOnion/sample.git*
- Conducting experiments to compare the performance of the proposed algorithm with SOTA algorithms on the ability to preserve degree distributions. Evaluation methods include comparing the parameters and standard deviation of the power-law regression on the degree sequence and calculating three statistics: Kolmogorov–Smirnov Test Statistic, Kullback–Leibler divergence and Jensen–Shannon divergence

Graph Anomaly Detection on Large Social Networks Oct. 2021 - May 2022

Undergraduate Researcher, Supervised by Dr. Meng Jiang University of Notre Dame

- Analyzed the degree distribution anomalies in Twitter and Tencent Weibo datasets
- Proposed hypotheses and conducted experiments to justify the origins of the anomalies

Efficient Matrix Solver for Sudoku and Magic Square problems Mar. 2021 - June 2021

Team Lead, Supervised by Dr. Adam Ghandar Southern University of Science and Technology

- Designed an efficient algorithm which is sectionally greedy, sectionally similar to simulated annealing algorithm
- Completed a Java/CSS project with a user-friendly GUI that can solve magic square and sudoku of size 200 * 200 within 1s
- In charge of algorithm design, testing and the full stack integration process

EXPERIENCE

Southern University of Science and Technology - Teaching Assistant Spring 2023

- In-coming. Course: CS209 Computer System Design and Applications
- In charge of building JUnit test for coding assignments and providing tutorship for students

Little Ball of Fur – Open Source Project Developer Oct. 2022 - Present

- GitHub Link: *https://github.com/benedekrozemberczki/littleballoffur.git*
- Working with the founder of the project, Dr. Benedek Rozembercki to develop functionalities for sampling directed graphs
- Fixing dependency issues with NetworKit

American Statistics Association DataFest Competition 2022 at Notre Dame - Awardee Mar. 2022

- Performed Analysis on data from Play2Prevent lab, Yale School of Medicine with Python visualization and data analysis tools
- Best Visualization Award, presentation video can be accessed at *https://datafestnd.weebly.com/datafest-2022.html*

National University of Singapore School of Computing (SOC) - Summer Workshop May 2021 - July 2021

- Took lectures on IT security and conducted experiments on DNS Poisoning, XSS and CSRF attack
- Developed a tool for PHP code vulnerability detection with a technical report

HONORS & AWARDS

Award for Best Visualization, ASA DataFest 2022 Competition, University of Notre Dame	Mar. 2022
Best Project Award, Computer System Design and Application, Southern University of Science and Technology	June 2021
Best Project Award, Student Union of Volunteer Activities, Southern University of Science and Technology	June 2021
Award for Outstanding Volunteers (Free online tutoring service for children of doctors and nurses during COVID-19)	Feb. 2021

SERVICES

Student Volunteer at SIGKDD 2022	Aug. 2022
Founding Member of the Data Science Club *DataHub*	Aug. 2021 - Present
Team Leader for Project *Green Chamber,* currently under long-term maintenance by school library	Apr. 2021 - Present

SKILLS

Programming: Python (Scipy, Networkx, Numpy, Pandas, Scikit-learn, Pytorch), Java, C/C++ (GNU MP, GNU MFPR, OpenMP, NEON), CMake, Make, Verilog, SQL, Git, bash, Linux, Stata, Android Studio

Language: English (Fluent, TOEFL 112, GRE 329); Chinese (Native)