Zheyuan Liu

Personal Information

Zheyuan Liu
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Website: https://zheyuanliu.netlify.app/
TOEFL: 110/120 (R: 27, L: 30, S: 25, W: 28)
GRE: 324/340 (V: 154, Q:170, W:4.0)

Education

09/2019–05/2023 **B.S Computer Science**, **Applied Mathematics** (double-major)
Brandeis University, Waltham, MA, USA
Cumulative GPA: 3.88
Advisor: Prof. Chuxu Zhang

Relevant Courses:

Deep Learning (A), Principles of Mathematical Modeling (A), Fundamentals of Software Engineering (A+), Statistical Machine Learning (A), Operating System (A-), Linear Algebra (A), Multi-variable Calculus (B+), Differential Equations (A), Probability (A), Fundamentals of Natural Language Processing I (In-process)

Research Interest

Efficient Machine Learning, Deep Learning

Graph Mining/Data Mining, Data-efficient AI, Trustworthy AI

Cybersecurity, HCI, software systems

Publications

1. Wang, Y., Peng, H. M., Sha, L., **Liu, Zheyuan**, and Hong, P. State-level covid-19 trend forecasting using mobility and policy data. *medRxiv* (2021)
2. Wu, J., Zhang, C., **Liu, Zheyuan**, Zhang, E., Wilson, S., and Zhang, C. Graph-BERT: Bridging graph and text for malicious behavior detection on social media. In *ICDM* (2022)

3. Zhang, C., Tian, Y., Ju, M., **Liu, Zheyuan**, Ye, Y., Chawla, N., and Zhang, C. Chasing all-round graph representation robustness: Model, training, and optimization. In *ICLR* (2023)
4. **Liu, Zheyuan**, Zhang, C., Tian, Y., Zhang, E., Huang, C., Ye, Y., and Zhang, C. G-FAME: Fair graph representation learning via diverse mixture of experts. In *WWW* (2023)

Research Experience

06/2022–11/2022 **G-Fame: Fair Graph Representation Learning via Diverse Mixture of Experts**
Research Assistant Advised by Prof. Chuxu Zhang

- Analyzed the unique property of graph fairness data.
- Aimed to boost the performance of GNN model on fairness graph data while alleviating the oversmoothing problem.
- Enriched the representation diversity of model from three perspectives: the node embedding of fairness graph data, learned representation across different experts in *Mixed of Expert* (MOE), and learned representation across different-depth layers.
- Analyzed loss landscape of the model to empirically and theoretically explain the effectiveness of diversity learning.
- Successfully improved the accuracy of a newly designed GNN based model under fairness setting while restraining the oversmooth problem from happening.

12/2021–05/2022 **GraphBERT: Bridging Graph and Text for Malicious Behavior Detection on Social Media**
Research Assistant Advised by Prof. Chuxu Zhang

- Signified harmful posts/comments manually from more than 60k tweets to serve as positive/negative samples during the training process.
- Collected project related information (e.g. BERT, GNN and contrasive learning), and helped run experiments on baseline models.
- Helped run the experiments on new designed model over two tasks: malicious user detection and malicious tweet detection.
- Assisted the first author to draft a manuscript of the work and submitted to ICDM conference.

05/2021–08/2021 **Network-based virus-host interaction prediction with application to SARS-CoV-2**
Research Assistant Advised by Prof. Pengyu Hong

- Designed the website through front end languages (HTML, CSS, Javascript, AJAX, etc.) to display the relationship between the protein groups of different types of coronavirus with different hosts.
- Imported the previous work data of the paper from github to construct website, which can be used to identify potential infected host groups based on similar structure of the protein groups. (Simple version of the website)
- Updated website based on the most recent result given by the algorithm.

08/2020–12/2020 **Visualizing the COVID-19 Trend Prediction**
Research Assitant Advised by Prof. Pengyu Hong

- Designed a website to hold data of a machine learning algorithm that predicted the COVID-19 trend based on the ground truth using front end languages (Javascript, HTML, CSS, etc.) and python.
- Pulled data from Airtable and transferred it using Python to make it compatible with the website.
- Modified the website to be user-friendly, which also serves as a platform to compare the groundtruth/predicted cases of each state.
- Co-published the work to medRxiv.

Work Experience

09/2021–Current **Brandeis University**, Waltham, MA
Teaching Assistant

- Acted as teaching assistant for Python, JAVA and Operating System class, held office hours each week helping students with programming assignments and questions about the content from the lecture.
- Assisted Professor grade assignments, exams and gave feedback to students.

06/2020–08/2020 **VeryEngine**, Hangzhou, China
Software development intern

- Utilized TypeScript and JavaScript to develop online VR showroom for different companies.
- Tested compatibility of VR Device (HTC Vive) with computers with different CPU and GPU and gave feedback on device configuration and setup.

Honors, Awards & Scholarships

06/2022– 08/2022 Provost's Research Fellowship (5000 dollars)

12/2019– 05/2022 Dean's List

09/2017– Current Patent of a new type of packing tool

Skills:

Python, Pytorch, Deep Learning, Java, JavaScript, HTML, CSS, SQL, Linux command, Typescript

Service

IEEE Transactions on Big Data Reviewer
IEEE Transactions on Neural Networks and Learning Systems (TNNLS) Reviewer