YUXIN YANG

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Department of Computer Science
University of Southern California

EDUCATION

Ph.D. in Computer Science, University of Southern California Sep 2023 –

- **GPA**: 3.9/4.00
- **Courses**: Parallel and Distributed Computation (4.0), Advanced Analysis of Algorithms (4.0)

B.Eng. in Automation, Tsinghua University Sep 2019 – Jun 2023

- **GPA**: 3.84/4.00
- **Courses**: Foundation of Artificial Intelligence (4.0), Pattern Recognition and Machine Learning (4.0)

SELECTED AWARDS AND HONORS

- Changtong Scholarship (the Highest honor in Department of Automation, 1%) 2022
- Comprehensive Scholarship of University (top 5% in University) 2021
- Comprehensive Scholarship of University (top 5% in University) 2020

PUBLICATIONS AND MANUSCRIPTS

Yuxin Yang, Hongkuan Zhou, Rajgopal Kannan, Viktor Prasanna. "Towards Ideal Temporal Graph Neural Networks: Evaluations and Conclusions after 10,000 GPU Hours" 51st International Conference on Very Large Data Bases, under review.

Yuxin Yang, Yitao Liang, and Muhan Zhang. "PA-GNN: Parameter-Adaptive Graph Neural Networks." Workshop on Dynamic Neural Networks in *the 39th International Conference on Machine Learning* (ICML-22-DyNN-Workshop), oral presentation.

Zhi Lu, Yeyi Cai, Yixin Nie, **Yuxin Yang**, Jiamin Wu, and Qionghai Dai. "A practical guide to scanning light-field microscopy with digital adaptive optics." *Nature Protocols (2022)*.

RESEARCH EXPERIENCE

Towards Ideal Temporal Graph Neural Networks: Evaluations and Conclusions Oct 2023 – May 2024
Research Assistant, advisor: Prof. Viktor Prasanna University of Southern California

- Proposed a practical approach to TGNN model comparison that compares models at the modular level with a standardized and optimized implementation framework.
- Addressed research questions about the cost, effectiveness, and universality of the modules.
- Explored interplay between modules and datasets, starting new research directions.

Structural Learning with Line-graph Based Propagation Jun 2022 – Oct 2022
Research Assistant, advisor: Prof. Hanghang Tong University of Illinois Urbana-Champaign

- Proposed a line-graph based graph structure learning pipeline to learn a better graph for downstream tasks.
- Implemented a graph neural network that predict links from presentations of node pairs. The network is developed from 2-FWL test that propagates on line-graphs and captures common neighbor information.
- Modeled some graph properties with probabilistic models; proved that common neighbor information helps our model predict links more accurately on graphs.
- Devised a sampling strategy based on the observation of local connection. The strategy constrains the space and time complexity of the learning process.

- Improved ~2% in accuracy in node classification tasks by applying graph neural networks (GNNs) on the learned graph structure.

PA-GNN: Parameter-adaptive Graph Neural Networks Nov 2021 – Jun 2022
Research Assistant, advisor: Prof. Muhan Zhang Beijing Institute for General Artificial Intelligence

- Showed that capturing local patterns of graph datasets improves performance of learning tasks on graphs.
- Designed a trainable node-specific aggregator that learns from node position and features to capture local patterns; Utilized DeepWalk to encode node position.
- Experimentally showed that graph neural networks with an adaptive aggregator can exploit local patterns and improve node classification accuracy by up to 5%.
- Introduced a new dataset which displays strong regional difference; Analyzed the dataset to show that our results are in accordance with the assumption.

COMPUTER AND LANGUAGE SKILLS

- **Programming**: Python, C/C++, Javascript
- **Tools**: PyTorch, MATLAB, CMake, LabVIEW, Linux, Git, LaTeX
- **Language**: TOEFL 114/120 (Reading 30, Listening 29, Speaking 25, Writing 30); GRE 327/340+3.5/6.0 (Verbal 157, Quantitative 170, Analytical Writing 3.5)