

YUXIN YANG

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Department of Automation
Tsinghua University, P.R. China

EDUCATION

B.Eng. in Automation, Tsinghua University

Sep 2019 – Jun 2023

- **GPA:** 3.84/4.00 (top 20%)

Core courses

- **Computer Science:** Computer Languages and Programming (4.0), C++ Programme Design and Training (4.0), Data Structure and Algorithms (4.0), Computer Network and Applications (4.0), Foundation of Artificial Intelligence (4.0), Pattern Recognition and Machine Learning (4.0)
- **Mathematics:** Linear Algebra (4.0), Introduction to Complex Analysis (4.0), Numerical Analysis and Algorithms (4.0), Operations Research (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
- Selected to ATOM Program (a department scientific research support program, 7 undergraduates in total) 2021

PUBLICATIONS AND MANUSCRIPTS

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).

Shuai Chen, Zhi Lu, Haoyu Jia, Bo Yang, Chun Liu, **Yuxin Yang**, Shuo Zhang et al. “Hepatocyte-specific Mas activation enhances lipophagy and fatty acid oxidation to protect against acetaminophen-induced hepatotoxicity in mice.” *Journal of Hepatology* (2022).

RESEARCH EXPERIENCE

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.

Real-time 3D Feedback Acquisition Software for Scanning Light-field Microscopy Mar 2021 – Mar 2022

Research Assistant, advisor: Prof. Jingtao Fan

Tsinghua University

- Used CMake, LabVIEW and C++ programming to integrate and improve existing algorithms in a cross-platform scanning light-field microscope controlling software.
- Implemented buffered image saving, high-speed camera control (~500hz) and drop-frame handling.
- Integrated 3D reconstruction algorithms in the software.
- Accelerated image rendering (~60% time less) by implementing parallel computing.

INTERNSHIP EXPERIENCE

Object Detection with Transfer Learning in Logistics Management

Jul 2021 – Sep 2021

Research Intern, Technology Center

ANJI Technology Co., Ltd

- Upgraded transfer learning pipeline for object detection on new class and new instances.
- Integrated multiple algorithms into the knowledge distillation framework, including elastic weight consolidation and feature fusion.
- Alleviated forgetting of old tasks to within 5% in mAP.

COMPUTER AND LANGUAGE SKILLS

- **Programming:** Python, C/C++
- **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)