

YUHAN YAO

Carnegie Mellon University, Pittsburgh, PA, 15213

(+1) 412-209-5691 • yuhangya@andrew.cmu.edu • LinkedIn: Yuhang Yao • Homepage

EDUCATION

Carnegie Mellon University • Pitts • Pittsburgh, PA Aug 2019 – May 2024 (Expected)
Doctor of Philosophy • Electrical and Computer Engineering • GPA: 3.89/4.0

Shanghai Jiao Tong University • Shanghai, China Sept 2015 – July 2019
Bachelor of Science • Computer Science • GPA: 3.78/4.0

Research Focuses: Federated Learning; Graph Neural Network; Explainability;

Main Courses: Deep Learning; Machine Learning System; Advanced Cloud Computing; Convex Optimization;

TECHNICAL SKILLS

- Primary Programming Languages: Python
- Deep Learning Framework: Pytorch, Tensorflow, Keras
- Machine Learning & Data Analytics: Apache Spark, Pandas, Scipy, Sklearn

WORK EXPERIENCE

Research Scientist Intern – Part-time, Wyze, Smart Home Startup, Remote-Seattle Sep 2021 – Present

- Developing a general federated graph neural network representation learning system for graph classification, link prediction and node classification.
- Designing federated training methods for providing personalized models to users with different habits.
- Deploying a rule recommendation system on Wyze App for A/B testing with users.

Research Scientist Intern – Internship, Wyze, Smart Home Startup, Remote-Seattle May 2021 – Aug 2021

- Interned in Wyze AI research team with a project focus on recommending smart home rules to users.
- Developed a federated rule recommendation system with graph neural networks.
- Enabled cross-device federated learning by using the graph-based model for privacy preservation of users.
- Improved the accuracy 6% (84% → 90%) compared with original user-item based model.

PREPRINTS & WORKING PAPERS

- **Yuhang, Yao**, Mohammad Mahdi Kamani, Zhongwei Cheng, Chen Lin, Carlee Joe-Wong, and Tianqiang Liu. Fedrule: Federated rule recommendation system with graph neural networks. *Submitted to Conference on Machine and Learning Systems (MLSys)*, 2021
- **Yuhang, Yao** and Carlee Joe-Wong. Federated graph convolutional network. *To be submitted to International Conference on Machine Learning (ICML)*, 2022

CONFERENCE & JOURNAL PAPERS

- **Yuhang, Yao** and Carlee Joe-Wong. Interpretable clustering on dynamic graphs with recurrent graph neural networks. In *AAAI Conference on Artificial Intelligence (AAAI)*, 2021
- Yucai Fan, **Yuhang, Yao**, and Carlee Joe-Wong. Gcn-se: Attention as explainability for node classification in dynamic graphs. In *IEEE International Conference on Data Mining (ICDM)*, 2021
- Xudong Wu, Luoyi Fu, **Yuhang, Yao**, Xinzhe Fu, Xinbing Wang, and Guihai Chen. Glp: A novel framework for group-level location promotion in geo-social networks. *IEEE/ACM Transactions on Networking (ToN)*, 2018
- Jiaqi Liu, Luoyi Fu, **Yuhang, Yao**, Xinzhe Fu, Xinbing Wang, and Guihai Chen. Modeling, analysis and validation of evolving networks with hybrid interactions. *IEEE/ACM Transactions on Networking (ToN)*, 2018
- Jiapeng Zhang, Luoyi Fu, Shuhao Li, **Yuhang, Yao**, and Xinbing Wang. Core percolation in interdependent networks. *IEEE Transactions on Network Science and Engineering (TNSE)*, 2018

WORKSHOP PAPERS & POSTERS

- **Yuhang, Yao**, Jinhang Zuo, Haeyoung Noh, Zhang Pei, and Carlee Joe-Wong. Optimizing outdoor data collection over dynamic heterogeneous sensors. In *Mechanistic Machine Learning and Digital Twins for Computational Science, Engineering & Technology (MMLDT-CSET)*, 2021
- **Yuhang, Yao**, Xiao Zeng, Tianyue Cao, Luoyi Fu, and Xinbing Wang. Aprp: An anonymous propagation method in bitcoin network. In *AAAI Conference on Artificial Intelligence (AAAI)*, 2019
- Jiaqi Liu, **Yuhang, Yao**, Xinzhe Fu, Luoyi Fu, Xiao-Yang Liu, and Xinbing Wang. Evolving k-graph: Modeling hybrid interactions in networks. In *ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, 2017
- Jiayu Pan, **Yuhang, Yao**, Luoyi Fu, and Xinbing Wang. Core percolation in coupled networks. In *ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, 2017

OPEN-SOURCE CONTRIBUTION

- FedGraphNN, A Federated Learning System and Benchmark for Graph Neural Networks.
- OpenScout, Distributed Edge-Native Automated Situational Awareness.