

# YIFAN HOU

Email: yifan.hou.z@gmail.com

Homepage: <https://yifan-h.github.io/>

Mail Address: RM 122(A), Ho Sin Hang Engineering Building, The Chinese University of Hong Kong

## EDUCATION

---

**The Chinese University of Hong Kong**

2018 - Present

Department of Computer Science and Engineering

GPA: 3.87/4.0

M.Phil. in Computer Science and Engineering

Advisor: Prof. James CHENG & Prof. Ming-Chang YANG

Anticipated Graduation: June, 2020

**Huazhong University of Science and Technology**

2014 - 2018

School of Electronic Information and Communications

GPA: 3.59/4.0

B.Eng. in Information Science for Advanced Class in Mathematics and Physics

## EXCHANGES

---

**National University of Singapore** (*Summer Intern*)

June 2019 - September 2019

Analyzing Graph Neural Networks based on Information Theory

Advisor: Prof. Richard T. B. Ma

**University of Illinois at Urbana-Champaign** (*Summer Exchange*)

July 2017 - August 2017

Information Science and Engineering Summer School Program (Network Analysis)

## CURRENT RESEARCH FOCUS

---

Graph neural networks; graph representation learning; graph embedding

## PUBLICATIONS

---

**Yifan Hou**, Hongzhi Chen, Changji Li, James Cheng, and Ming-Chang Yang. A representation learning framework for property graphs. In *Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining*, pages 65–73, 2019.

**Yifan Hou**, Pan Zhou, Jie Xu, and Dapeng Oliver Wu. Course recommendation of MOOC with big data support: A contextual online learning approach. In *IEEE Conference on Computer Communications Workshops, INFOCOM Workshops*, pages 106–111, 2018.

Hongzhi Chen, Xiaoxi Wang, Chenghuan Huang, Juncheng Fang, **Yifan Hou**, Changji Li, and James Cheng. Large scale graph mining with g-miner. In *Proceedings of the 2019 ACM SIGMOD International Conference on Management of Data*, pages 1881–1884, 2019.

Hongzhi Chen, Changji Li, Juncheng Fang, Chenghuan Huang, James Cheng, Jian Zhang, **Yifan Hou**, and Xiao Yan. Grasper: A high performance distributed system for OLAP on property graphs. In *Proceedings of the ACM Symposium on Cloud Computing (SoCC)*, pages 87–100, 2019.

## SUBMITTED PAPERS

---

**Yifan Hou**, Jian Zhang, James Cheng, Kaili Ma, Richard T. B. Ma, Hongzhi Chen, Ming-Chang Yang. A research paper about graph neural networks<sup>1</sup>. Submitted to *International Conference on Learning Representations, ICLR*, 2020. (review score ranks top 5.8% to 6.9%)

---

<sup>1</sup>Under double blind peer review

## SELECTED RESEARCH PROJECTS

---

### Graph Representation Learning for Property Graphs

Published in KDD 2019

*Department of Computer Science and Engineering (CUHK)*

- Proposed a three-step framework that is capable of capturing the differences among neighbors for better neighborhood aggregation.
- Extended the framework to support edge properties and edge direction by multiple channels in neighborhood aggregation.
- Evaluated existing graph representation learning algorithms/frameworks: DeepWalk, node2vec, GCN and GraphSAGE.

---

### Graph Neural Network Analysis

Submitted to ICLR 2020

*Department of Computer Science and Engineering (CUHK)*

- Proposed a general Graph Neural Network framework and defined the information gain from neighborhood in aggregation.
- Proposed two graph smoothness metrics to measure the quantity and quality of information gain from graph data.
- Proposed a new improved Graph Neural Network model that utilizes the two smoothness metrics to maximize information gain and reduce noises.
- Evaluated existing graph algorithms: struc2vec, GraphWave, Label Propagation, GCN, GraphSAGE and GAT.

---

### Multi-Armed Bandits of Reinforcement Learning

Published in INFOCOM 2018

*School of Electronic Information and Communications (HUST)*

- Proposed a contextual online learning algorithm for course recommendation, with preferences of users considered.
- Extended continuous multi-armed bandits algorithm ( $\mathcal{X}$ -armed bandits) to support discrete connected course data.
- Proved the upper bound of our model (continuous arm space and contextual support) is sublinearly related to time.

---

### Graph Query Processing Systems

Published in SIGMOD 2019 and SoCC 2019

*Department of Computer Science and Engineering (CUHK)*

- Cleaned large-scale connected datasets (up to 500GB) derived from wiki, twitter, amazon, etc., and converted them to property graph format.
- Evaluated graph databases (e.g., OrientDB) on query latency and throughput with distributed implementation.

## SELECTED AWARDS

---

The National Scholarship: The highest award for students in China	2016
Outstanding Graduates Awards (HUST): The highest student achievement at HUST	2018
Student Travel Award (KDD)	2019

## SKILLS

---

<b>Languages:</b>	Mandarin (native), English (Fluent)
<b>Programming Languages:</b>	Python (Expert), C++ (Proficient), C (Intermediate), MATLAB (Intermediate)
<b>Machine Learning Libraries:</b>	PyTorch (Expert), NumPy (Expert), scikit-learn (Expert), NetworkX (Expert), DGL (Expert), TensorFlow (Proficient), PyTorch Geometric (Proficient), PyGSP (Proficient)
<b>Operating Systems:</b>	Linux (Expert), Pregel+ (Intermediate), G-Miner (Intermediate)