

# YIFAN HOU

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## EDUCATION

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<b>The Chinese University of Hong Kong</b>	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
<b>Huazhong University of Science and Technology</b>	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

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<b>National University of Singapore</b> ( <i>Summer Intern</i> )	June 2019 - September 2019
Analyzing Graph Neural Networks based on Information Theory	
Advisor: Prof. Richard T. B. Ma	
<b>University of Illinois at Urbana-Champaign</b> ( <i>Summer Exchange</i> )	July 2017 - August 2017
Information Science and Engineering Summer School Program (Network Analysis)	

## CURRENT RESEARCH FOCUS

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Graph neural networks; graph representation learning; graph embedding; graph theory

## PUBLICATIONS

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**Yifan Hou**, Jian Zhang, James Cheng, Kaili Ma, Richard T. B. Ma, Hongzhi Chen, Ming-Chang Yang. Measuring and improving the use of graph information in graph neural networks. In *International Conference on Learning Representations*, 2020.

**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. (**Research Track, acceptance rates = 15%**)

**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.

## SELECTED RESEARCH PROJECTS

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### Graph Neural Network Analysis

Published in 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.

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### 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.

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### 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.

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### 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

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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

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<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)