

# Ji Yang (Carl)

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## ACADEMIC BACKGROUNDS

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**Department of Computer Science, Emory University** *Aug. 2020 - present*  
*Tenure-Track Assistant Professor* *Atlanta, GA, US*

- Research interests: graph data mining, applied machine learning, structured information systems; knowledge bases, recommender systems, healthcare networks, biomedical informatics.

**Intelligent Systems Lab, Oxford University** *Apr. 2020 - present*  
*(Remote) Postdoctoral Research Fellow, Supervisor: Thomas Lukasiewicz* *Oxford, UK*

- Research interests: structure learning, multi-modal question answering, commonsense reasoning.

**Data Mining Group, University of Illinois, Urbana Champaign** *Aug. 2014 - Dec. 2020*  
*Ph.D. in Computer Science, Research Assistant, Teaching Assistant*  
*Committee: Jiawei Han (chair), Jian Peng, Chengxiang Zhai, Jure Leskovec* *Urbana, IL, US*

- Thesis: Multi-Facet Graph Mining with Contextualized Projections.
- Received Yunni & Maxine Pao Memorial Fellowship for research accomplishments.
- Received the **Best Paper Award** of ICDM 2020 (1 from 930 submissions).
- Received the UIUC 2020 Doctoral Dissertation Completion Fellowship (awarded to 20 candidates from 20 departments out from 74 nominations from 48 departments across the whole university).

**Chu Kochen Honors College, Zhejiang University** *Sep. 2010 - Jun. 2014*  
*B.Eng. in Computer Science & Technology, Advisor: Xiaofei He* *Hangzhou, Zhejiang, China*

- GPA: Major: 3.97/4.0, Overall: 3.86/4.0; Ranking: Top 2% of 201 students
- Won Chinese National Scholarship for Outstanding Merits, Zhejiang University (Top 1%).
- Won Chinese National Fellowship for Excellent Intellectuals in Research, Zhejiang University (Top 1%).

## SELECTED PUBLICATIONS

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### Since 2021:

- **Carl Yang**, Haonan Wang, Ke Zhang, Lichao Sun, Liang Chen: *Secure Deep Graph Generation with Link Differential Privacy*, **IJCAI**, 2021.
- Gongxu Luo, Hao Peng, Jianxin Li, Lichao Sun, **Carl Yang**, Philip Yu, Lifang He: *Graph Entropy Guided Node Embedding Dimension Selection for Graph Neural Networks*, **IJCAI**, 2021.
- Liang Chen, Jintang Li, Qibiao Peng, Yang Liu, Zibin Zheng, **Carl Yang**: *Understanding Structural Vulnerability in Graph Convolutional Networks*, **IJCAI**, 2021.
- Haonan Wang, Chang Zhou, **Carl Yang**, Hongxia Yang, Jingrui He: *Controllable Gradient Item Retrieval*, **WWW**, 2021.
- **Carl Yang**, Yuxin Xiao, Yu Zhang, Yizhou Sun, Jiawei Han: *Heterogeneous Network Representation Learning: A Unified Framework with Survey and Benchmark*. **TKDE**, 2021.
- Wenjie Hu, Yang Yang, Ziqiang Cheng, **Carl Yang**, Xiang Ren: *Time-Series Event Prediction with Evolutionary State Graph*. **WSDM**, 2021.
- Yuanzhen Xie, Zijing Ou, Liang Chen, Yang Liu, Kun Xu, **Carl Yang**, Zibin Zheng: *Learning and Updating Node Embedding on Dynamic Heterogeneous Information Network*. **WSDM**, 2021.
- Yanchao Tan, **Carl Yang**, Xiangyu Wei, Yun Ma, Xiaolin Zheng: *Multi-Facet Recommender Networks with Spherical Optimization*. **ICDE**, 2021.

### Before 2021 (Ph.D. graduation):

- **Carl Yang**, Jieyu Zhang, Jiawei Han: *Co-Embedding Network Nodes and Hierarchical Labels with Taxonomy Based Generative Adversarial Nets*, **ICDM (Best Paper Award)**, 2020.
- **Carl Yang**, Aditya Pal, Andrew Zhai, Nickil Pancha, Jure Leskovec, Jiawei Han: *MultiSage: Empowering GCN with Contextualized Multi-Embeddings on Web-Scale Multipartite Networks*. **KDD**, 2020.
- **Carl Yang**, Jieyu Zhang, Haonan Wang, Bangzheng Li, Jiawei Han: *Neural Concept Map Generation for Effective Document Classification with Interpretable Structured Summarization*. **SIGIR**, 2020.
- **Carl Yang**, Jieyu Zhang, Haonan Wang, Sha Li, Myunghwan Kim, Matthew Walker, Yiyou Xiao, Jiawei Han: *Relation Learning on Social Networks with Multi-Modal Graph Edge Variational Autoencoders*. **WSDM**, 2020.
- **Carl Yang**, Peiye Zhuang, Wenhan Shi, Alan Luu, Pan Li: *Conditional Structure Generation through Graph Variational Generative Adversarial Nets*. **NeurIPS**, 2019.
- **Carl Yang**, Mengxiong Liu, Frank He, Jian Peng, Jiawei Han: *cube2net: Efficient Quality Network Construction with Data Cube Organization*. **ICDM (PhD forum)**, 2019.
- **Carl Yang**, Jieyu Zhang, Jiawei Han: *Neural Embedding Propagation on Heterogeneous Networks*. **ICDM**, 2019.
- **Carl Yang**, Lingrui Gan, Zongyi Wang, Jiaming Shen, Jinfeng Xiao, Jiawei Han: *Query-Specific Knowledge Summarization with Entity Evolutionary Networks*. **CIKM**, 2019.
- **Carl Yang**, Dai Teng, Siyang Liu, Sayantani Basu, Jieyu Zhang, Jiaming Shen, Chao Zhang, Jingbo Shang, Lance Kaplan, Timothy Harratty, Jiawei Han: *CubeNet: Multi-Facet Hierarchical Heterogeneous Network Construction, Analysis, and Mining*. **KDD (demo paper)**, 2019.
- **Carl Yang**, Do Huy Hoang, Tomas Mikolov, Jiawei Han: *Place Deduplication with Embeddings*. **WWW**, 2019.
- **Carl Yang**, Kevin Chang: *Relationship Profiling over Social Networks: Reverse Smoothness from Similarity to Closeness*. **SDM**, 2019.
- **Carl Yang**, Yichen Feng, Pan Li, Yu Shi, Jiawei Han: *Meta-Graph Based HIN Spectral Embedding: Methods, Analyses and Insights*. **ICDM**, 2018.
- **Carl Yang**, Mengxiong Liu, Frank He, Xikun Zhang, Jian Peng, Jiawei Han: *Similarity Modeling on Heterogeneous Networks via Automatic Path Discovery*. **ECML-PKDD**, 2018.
- **Carl Yang**, Mengxiong Liu, Vincent Zheng, Jiawei Han: *Node, Motif and Subgraph: Leveraging Network Functional Blocks Through Structural Convolution*. **ASONAM**, 2018.
- **Carl Yang**, Xiaolin Shi, Jie Luo, Jiawei Han: *I Know You'll Be Back: Interpretable New User Clustering and Churn Prediction on a Mobile Social Application*. **KDD**, 2018.
- **Carl Yang**, Chao Zhang, Xuwen Chen, Jieping Ye, Jiawei Han: *Did You Enjoy the Ride: Understanding Passenger Experience via Heterogeneous Network Embedding*. **ICDE**, 2018.
- **Carl Yang**, Liyuan Liu, Mengxiong Liu, Zongyi Wang, Chao Zhang, Jiawei Han: *Graph Clustering with Embedding Propagation*. **BigData**, 2020 (Arxiv, 2017).
- **Carl Yang**, Lanxiao Bai, Chao Zhang, Quan Yuan, Jiawei Han: *Bridging Collaborative Filtering and Semi-Supervised Learning: A Neural Approach for POI Recommendation*. **KDD**, 2017.
- **Carl Yang**, Zhong Lin, Li-Jia Li, Jie Luo: *Bi-directional Joint Inference for User Links and Attributes on Large Social Graphs*. **WWW**, 2017.
- **Ji Yang**, Bin Xu, Binbin Lin, Xiaofei He: *Multi-Query Parallel Field Ranking for Image Retrieval*. **Neurocomputing**, 2014.
- Yingkui Wang, Di Jin, **Carl Yang**, Jianwu Dang: *Integrating Group Homophily and Individual Personality of Topics Can Better Model Network Communities*. **ICDM**, 2020.
- Chanyoung Park, **Carl Yang**, Qi Zhu, Donghyun Kim, Hwanjo Yu, Jiawei Han: *Unsupervised Differentiable Multi-aspect Node Representation Learning*. **KDD**, 2020.
- Yang Liu, Xianzhuo Xia, Liang Chen, Xiangnan He, **Carl Yang**, Zibin Zheng: *Certifiable Robustness to Discrete Adversarial Perturbations for Factorization Machines*. **SIGIR**, 2020.
- Yiqing Xie, Sha Li, **Carl Yang**, Raymond Chi-Wing Wong, Jiawei Han: *When Do GNNs Work: Understanding and Improving Neighborhood Aggregation*. **IJCAI**, 2020.

- Jiayi Liu, Quan Yuan, **Carl Yang**, He Huang, Chao Zhang, Philip Yu: *DAPred: Dynamic Attention Location Prediction with Long-Short Term Movement Regularity*. **IAAI**, 2020.
- Yuxin Xiao, Zecheng Zhang, **Carl Yang**, ChengXiang Zhai: *Non-local Attention Learning on Large Heterogeneous Information Networks*. **BigData**, 2019.
- Aravind Sankar, Adit Krishnan, Zongjian He, **Carl Yang**: *RASE: Relationship Aware Social Embedding*. **IJCNN**, 2019.
- Yu Shi, Fangqiu Han, Xinwei He, Xinran He, **Carl Yang**, Jie Luo, Jiawei Han: *Preservation and Collaboration in Multi-View Network Embedding*. **TKDE**, 2019.
- Yu Shi, Xinwei He, Naijing Zhang, **Carl Yang**, Jiawei Han: *User-Guided Clustering in Heterogeneous Information Networks via Motif-Based Comprehensive Transcription*. **ECML-PKDD**, 2019.
- Jiaming Shen, Jinfeng Xiao, Yu Zhang, **Carl Yang**, Jingbo Shang, Jinda Han, Saurabh Sinha, Peipei Ping, Richard Weinshilboun, Zhiyong Lu, Jiawei Han: *SetSearch+: Entity-Set-Aware Search and Mining for Scientific Literature*. **KDD (demo paper)**, 2018.
- Chao Zhang, Mengxiong Liu, Zhengchao, Liu, **Carl Yang**, Luming Zhang, Jiawei Han: *Spatiotemporal Activity Modeling Under Data Scarcity: A Graph-Regularized Cross-Modal Embedding Approach*. **AAAI**, 2018.
- Hanqing Lu, **Carl Yang**, Kevin Chang: *CONE: Community Oriented Network Embedding*. **IJCNN**, 2018, accepted.
- Binbin Lin, **Ji Yang**, Xiaofei He, Jieping Ye: *Geodesic Distance Function Learning via Heat Flows on Vector Fields*. **ICML**, 2014.
- Haifeng Liu, Zheng Yang, **Ji Yang**, Zhaohui Wu, Xuelong Li: *Local Coordinate Concept Factorization for Image Representation*. **TNNLS**, 2014.

## TEACHING EXPERIENCES

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- **Instructor**, CS253 Data Structures and Algorithms, Emory University, 2021 Spring.
- **Instructor**, CS584 Topics: Graph Data Mining, Emory University, 2020 Fall.
- **Teaching Assistant**, CS412: Introduction to Data Mining (online), Coursera, 2020 Spring.
- **Lead Teaching Assistant**, CS512: Data Mining: Principles and Algorithms, UIUC, 2019 Spring.
- **Lead Teaching Assistant**, CS512: Data Mining: Principles and Algorithms, UIUC, 2018 Spring.
- **Lead Teaching Assistant**, CS412: Introduction to Data Mining, UIUC, 2017 Spring.
- **Teaching Assistant**, CS511: Advanced Data Management, UIUC, 2016 Spring.
- **Teaching Assistant**, CS412: Introduction to Data Mining, UIUC, 2015 Fall.

## INDUSTRY EXPERIENCES

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- Research Lab, Pinterest Inc** *May. 2019 - Aug. 2019*  
*Research Intern, Supervisors: Dr. Aditya Pal, Prof. Jure Leskovec* *San Francisco, CA, US*

- Empowered GraphSage for web-scale Pinterest graph embedding through efficient graph down-sampling and context-aware conditional aggregation on heterogeneous pin-board networks.
- Places Data & AI Research, Facebook Inc.** *May. 2018 - Aug. 2018*  
*Research Intern, Supervisors: Dr. Do Huy Hoang, Dr. Tomas Mikolov* *New York, NY, US*

- Developed a two-step data-driven pipeline of feature generation and metric learning for place embedding to leverage ad-hoc place attributes and noisy training data towards efficient place deduplication.
- Economic Graph Research, LinkedIn Co.** *Aug. 2018 - Jul. 2019*  
*Remote Research Contractor, Supervisors: Dr. Myungwan Kim, Dr. Shipeng Yu* *Sunnyvale, CA, US*

- Developed a relation profiling algorithm based on multiple signals including user attributes, link structures and diffusive messages in the social network with novel multi-modal graph autoencoders.

**Big Data Research, Didichuxing Inc.***Jun. 2017 - Aug. 2017**Research Intern, Supervisors: Prof. Xuewen Chen, Prof. Jieping Ye**Beijing, China*

- Constructed the transportation HIN (heterogeneous information network) based on DiDi's unique travel data and developed a pattern-aware HIN embedding algorithm for passenger experience prediction.

**Research Lab, Snap Inc.***May. 2016 - Aug. 2016**Research Intern, Supervisors: Dr. Jie Luo, Dr. Xiaolin Shi, Dr. Li-Jia Li* *Los Angeles, CA, US*

- Developed a joint learning framework of user links and attributes for friend recommendation and interest targeting. Implemented a Spark pipeline and scaled up to millions of nodes and billions of edges.

**Demographics ads serving, Google LLC***May. 2015 - Aug. 2015**Software Engineer Intern, Supervisor: Dr. Tianyi Wu**Seattle, WA, US*

- Implemented data extraction and inventory analysis pipeline using flume C++. Implemented an online simulation of ads serving and an offline optimal algorithm based on max flow to analyze the inventory.

**SERVICES AND ACTIVITIES**

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**Paper Reviews**

- The International Conference on Machine Learning (**ICML**), since 2019.
- The Conference on Neural Information Processing Systems (**NeurIPS**), since 2019.
- The AAAI Conference on Artificial Intelligence (**AAAI**), since 2019.
- The International Joint Conference on Artificial Intelligence (**IJCAI**), since 2019.
- The ACM Conference on Knowledge Discovery and Data Mining (**KDD**), since 2019.
- The IEEE International Conference on Data Mining (**ICDM**), since 2019.
- The ACM International Conference on Web Search and Data Mining (**WSDM**), since 2019.
- The International World Wide Web Conference (**WWW**), since 2018.
- The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (**ECML-PKDD**), since 2018.
- The ACM International Conference on Information and Knowledge Management (**CIKM**), since 2018.
- The International Conference on Web Information Systems Engineering (**WISE**), since 2018.
- The IEEE Transactions on Big Data (**TBD**), since 2019.
- The ACM Transactions on Information Systems (**TOIS**), since 2019.
- The ACM Transactions on Intelligent Systems and Technology (**TIST**), since 2019.
- The IEEE Multidisciplinary Open Access Journal (**Access**), since 2019.
- The IEEE Transactions on Knowledge and Data Engineering (**TKDE**), since 2018.
- The IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**), since 2018.

**Event Organization**

- Session Chair, The IEEE International Conference on Data Engineering (**ICDE**), 2021.
- Session Chair, The International World Wide Web Conference (**WWW**), 2021.
- Session Chair, The IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (**ASONAM**), 2018.

**Research Seminars**

- University of Sydney (virtual), Australia, Mar 2020.
- University of North Texas and University of Florida, US, Mar 2020.
- Emory University, US, Feb 2020.
- Zhejiang University, China, Jan 2020.
- University of British Columbia and Simon Fraser University, Canada, Dec 2019.

- Northwestern University, US, Nov 2019.
- Great Lakes Workshop on Data Science in the University of Notre Dame, US, Sep 2019.
- Fudan University and Shanghai Jiao Tong University, China, Nov 2018.
- Snap Inc., US, Mar 2018.
- Tsinghua University and University of Science and Technology, China, Aug 2017.