Qimai Li

Personal Info

Position:	Ph.D. Student	Home Page:	https://liqimai.github.io
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Education

2017/09 - Present	**The Hong Kong Polytechnic University** Ph.D. student in the Department of Computing
2013/09 - 2017/06	**Zhejiang University** B.E. in Computer Science GPA 3.81/4.0

Selected Publications

Published 7 papers in top AI conferences, 3 as first author, 2 as co-first author, 800+ citations.

[1] **Qimai Li**, Xiaotong Zhang, Han Liu, Quanyu Dai, and Xiao-Ming Wu. "Dimensionwise Separable 2-D Graph Convolution for Unsupervised and Semi-Supervised Learning on Graphs." In *Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery and Data Mining* **(KDD)**, 2021.

[2] Jiaxin Chen, Xiao-Ming Wu, Yanke Li, **Qimai Li**, Li-Ming Zhan, Fu-lai Chung. "A Closer Look at the Training Strategy for Modern Meta-Learning." In *Proceedings of the Thirty-fourth Conference on Neural Information Processing Systems* **(NeurIPS)**, 2020.

[3] Guangfeng Yan, Lu Fan, **Qimai Li (co-first author)**, Han Liu, Xiaotong Zhang, Xiao-Ming Wu, and Albert Y.S. Lam. "Unknown Intent Detection Using Gaussian Mixture Model with an Application to Zero-shot Intent Classification." In *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics (Long Paper)* **(ACL)**, 2020.

[4] Han Liu, Xiaotong Zhang, Lu Fan, Xuandi Fu, **Qimai Li**, Xiao-Ming Wu, and Albert Y.S. Lam. "Reconstructing Capsule Networks for Zero-shot Intent Classification." In *Proceedings of 2019 Conference on Empirical Methods in Natural Language Processing (Long Paper)* **(EMNLP)**, 2019.

[5] **Qimai Li**, Xiao-Ming Wu, Han Liu, Xiaotong Zhang, and Zhichao Guan. "Label efficient semi-supervised learning via graph filtering." In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition* **(CVPR)**, pp. 9582-9591, 2019.

[6] Xiaotong Zhang, Han Liu, **Qimai Li (co-first author)** and Xiao-Ming Wu. "Attributed Graph Clustering via Adaptive Graph Convolution." In *Proceedings of the 28th International Joint Conference on Artificial Intelligence* **(IJCAI)**, 2019.

[7] **Qimai Li**, Zhichao Han, and Xiao-Ming Wu. "Deeper insights into graph convolutional networks for semi-supervised learning." In *Thirty-Second AAAI Conference on Artificial Intelligence* **(AAAI)**, 2018. **Oral Presentation**. Selected as one of the **Most Influential AAAI Papers** by Paper Digest (**673 Citations** as of June 29, 2021).

[8] Yong Wang, Xiao-Ming Wu, **Qimai Li**, Jiatao Gu, Wangmeng Xiang, Lei Zhang, and Victor OK Li. "Large Margin Meta-Learning for Few-Shot Classification." In *Workshop on Meta-Learning at Thirty-second Annual Conference on Neural Information Processing System* **(MetaLearn @NuerlPS)**, 2018.

Work under Review

[1] Lu Fan, **Qimai Li**, Bo Liu, Xiaotong Zhang, Fuyu Lv, Guli Lin, Sen Li, Taiwei Jin, Keping Yang, and Xiao-Ming Wu. "Enriching Product Representations with Graph Convolution for Personalized Product Search." In submission to **ICDM** 2021.

[2] Cong Wang, **Qimai Li**, Xiao-Ming Wu, Jinshan Pan. "Single Image Deraining Using Multi-Scale Graph Neural Networks with Exemplars." In submission to **ICCV** 2021.

Awards

2021	One of the Most Influential AAAI Papers selected by Paper Digest, 10 out of 933 accepted papers in 2018, top 1.1%.
2019	Hong Kong Ph.D. Fellowship (250 out of 14,000+, 1.7% acceptance rate).
2019 - 2021	COMP Scholarship for HK PhD Fellowship Students.
2017 - 2019	Postgraduate Scholarship in the Hong Kong Polytechnic University.
2016	Second-Class Prize in HUAWEI Code Craft, 256 out of 11409, Top 2.3%.
2016	Honorable Mention in the Mathematical Contest in Modeling, USA.
2016	Excellent Group in Student Research Training Program, Zhejiang University.
2015 & 2016	Scholarship for Outstanding Merits, Zhejiang University.
2015 & 2016	Scholarship for Outstanding Students, Zhejiang University.

Experiences

2020 - 2021 | Alibaba DAMO Academy
Worked on Taobao product search system. Designed personalized product search algorithm with graph convolution.

2019 - 2020 | Fano Labs
Developped zero/few-shot learning algorithm for (new) intent detection to boost chat robots and customer service system.

Summer 2016 | Huawei Technologies Co., Ltd.
Worked on smart transportation system. Implemented, tested and compared different algorithms for car detection and recognition.

Skills

Advanced:	Python, C/C++, Tensorflow, PyTorch, LaTeX, Git.
Intermediate:	Matlab, Java, OpenCV, CUDA Programming, Verilog.
Basic:	HTML, CSS, JavaScript, Golang, SQL, Rust, MongoDB, MySQL.

Projects

2017/09 - Present

Machine learning via graph convolutional network

We revisited graph convolutional network (GCN) from the perspective of graph signal processing. In spatial domain, we showed that the graph convolution of GCN is actually a special form of Laplacian smoothing and pointed out its fundamental limits. In spectral domain, we showed that the key to GCN's success is the low-pass filters and unified GCN with the classic label propagation method. Revisiting them led to new insights that improve their modeling capabilities and reduce model complexity. Along with the insight, we extended current 1D graph-convolution-based methods to 2D graph-convolution-based ones, and analyzed intra-class variance and inter-class variance of both our mthods and existing methods to demonstrate the effectiveness of 2D graph convolution. Results were published in AAAI-18, CVPR-19 and KDD-21.

2016/04 - 2016/06

GrabCut: Interactive Image Segmentation Software

An desktop application that implements GrabCut, which is an algorithm for segmenting images into foreground and background. The main advantage of GrabCut is that users only need to roughly indicate foreground and background by several clicks, and then the program can automatically generate a relatively good segmentation.

2015/09- 2016/01

Serenity: Toy Computer System

Serenity is a tiny but complete computer system. All software and most hardware were designed by our own team. It consists of 5 parts – a single-core, 5-stage-pipelined CPU with MIPS ISA, 64KB memory, I/O system, a single-job operating system, several user applications. We also developed a virtual machine of our computer system running on Windows.

2015/06 - 2015/07

Whatever: Search Engine

Whatever is a general web search engine, which supports wildcards, spell check, synonym search and phrase search. It implements various information retrieval algorithms, including bool model, vector space model, tf-idf features, PageRank.

2015/04 - 2016/04

Heart: Android Heart Rate Monitor

Heart is an android application for heart-rate measurement. With our application, you can measure heart rate anywhere and anytime without extra devices other than your smart phone. This project was entitled as excellent SRTP project by College of Biomedical Engineering & Instrument Science, Zhejiang University.