

# Qinbin Li

✉ liqinbin1998@gmail.com • 🌐 qinbinli.com

## EDUCATION

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### National University of Singapore

Ph.D. - Computer Science

Singapore

Aug, 2018 - Dec, 2022

- Advisor: Prof. [Bingsheng He](#)

### Huazhong University of Science and Technology

B.Eng. - ACM class, Computer Science

China

Sep, 2014 - Jun, 2018

- GPA: 3.93/4.0

## EMPLOYMENT

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### Postdoc - UC Berkeley

Feb, 2023 - Present

- Advisor: Prof. [Dawn Song](#)

## RESEARCH INTERESTS

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Machine Learning, Federated Learning, Privacy, High-performance computing, Systems

## PUBLICATIONS

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### 2023

#### SoK: Privacy-Preserving Data Synthesis

- Yuzheng Hu, Fan Wu, [Qinbin Li](#), Yunhui Long, Gonzalo Munilla Garrido, Chang Ge, Bolin Ding, David Forsyth, Bo Li, Dawn Song
- *45th IEEE Symposium on Security and Privacy*. **S&P 2024**.

#### Communication-Efficient Generalized Neuron Matching for Federated Learning

- Sixu Hu, [Qinbin Li](#), Bingsheng He
- *52nd International Conference on Parallel Processing*. **ICPP 2023**.

#### Adversarial Collaborative Learning on Non-IID Features

- [Qinbin Li](#), Bingsheng He, Dawn Song
- *Fortieth International Conference on Machine Learning*. **ICML 2023**.

#### DeltaBoost: Gradient Boosting Decision Trees with Efficient Machine Unlearning

- Zhaomin Wu, Junhui Zhu, [Qinbin Li](#), Bingsheng He
- *The 2023 International Conference on Management of Data*. **SIGMOD 2023**.

#### FedTree: A Federated Learning System For Trees

- [Qinbin Li](#), Zhaomin Wu, Yanzheng Cai, Yuxuan Han, Ching Man Yung, Tianyuan Fu, Bingsheng He
- *Sixth Conference on Machine Learning and Systems*. **MLSys 2023**.

#### Towards Addressing Label Skews in One-Shot Federated Learning

- Yiqun Diao, [Qinbin Li](#), Bingsheng He

- *The Eleventh International Conference on Learning Representations. ICLR 2023.*

## 2022

### **A Coupled Design of Exploiting Record Similarity for Practical Vertical Federated Learning**

- Zhaomin Wu, **Qinbin Li**, Bingsheng He
- *Thirty-sixth Conference on Neural Information Processing Systems. NeurIPS 2022.*

### **Federated Learning on Non-IID Data Silos: An Experimental Study**

- **Qinbin Li\***, Yiqun Diao\*, Quan Chen, Bingsheng He (\* denotes equal contributions)
- *IEEE International Conference on Data Engineering. ICDE 2022.*

### **Practical Vertical Federated Learning with Unsupervised Representation Learning**

- Zhaomin Wu, **Qinbin Li**, Bingsheng He
- *IEEE Transactions on Big Data TBD 2022.*

## 2021

### **A Survey on Federated Learning Systems: Vision, Hype and Reality for Data Privacy and Protection**

- **Qinbin Li**, Zeyi Wen, Zhaomin Wu, Sixu Hu, Naibo Wang, Yuan Li, Xu Liu, Bingsheng He
- *IEEE Transactions on Knowledge and Data Engineering. TKDE 2021.*

### **Practical One-Shot Federated Learning for Cross-Silo Setting**

- **Qinbin Li**, Bingsheng He, Dawn Song
- *International Joint Conference on Artificial Intelligence. IJCAI 2021.*

### **Challenges and Opportunities of Building Fast GBDT Systems**

- Zeyi Wen, **Qinbin Li**, Bingsheng He, Bin Cui
- *International Joint Conference on Artificial Intelligence. IJCAI 2021 Survey Track.*

### **Model-Contrastive Federated Learning**

- **Qinbin Li**, Bingsheng He, Dawn Song
- *The Conference on Computer Vision and Pattern Recognition. CVPR 2021.*

### **The OARF Benchmark Suite: Characterization and Implications for Federated Learning Systems**

- Sixu Hu, Yuan Li, Xu Liu, **Qinbin Li**, Zhaomin Wu, Bingsheng He
- *ACM Transactions on Intelligent Systems and Technology. TIST 2021.*

## 2020

### **Practical Federated Gradient Boosting Decision Trees**

- **Qinbin Li**, Zeyi Wen, Bingsheng He
- *Thirty-Fourth AAAI Conference on Artificial Intelligence. AAAI 2020. PREMIA Best Student Paper Gold Award.*

### **Privacy-Preserving Gradient Boosting Decision Trees**

- **Qinbin Li**, Zhaomin Wu, Zeyi Wen, Bingsheng He
- *Thirty-Fourth AAAI Conference on Artificial Intelligence. AAAI 2020.*

### **ThunderGBM: Fast GBDTs and Random Forests on GPUs**

- Zeyi Wen, Hanfeng Liu, Jiashuai Shi, **Qinbin Li**, Bingsheng He, Jian Chen
- *Journal of Machine Learning Research. JMLR 2020.*

## 2019

### Adaptive Kernel Value Caching for SVM Training

- **Qinbin Li**, Zeyi Wen, Bingsheng He
- *IEEE Transactions on Neural Networks and Learning Systems*. **TNNLS 2019**.

### Exploiting GPUs for Efficient Gradient Boosting Decision Tree Training

- Zeyi Wen, Jiashuai Shi, Bingsheng He, Jian Chen, Kotagiri Ramamohanarao, **Qinbin Li**
- *IEEE Transactions on Parallel and Distributed Systems*. **TPDS 2019 Best Paper Award**.

## 2018

### ThunderSVM: A Fast SVM Library on GPUs and CPUs

- Zeyi Wen, Jiashuai Shi, **Qinbin Li**, Bingsheng He, Jian Chen
- *Journal of Machine Learning Research*. **JMLR 2018**.

## SYSTEMS

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A leader of **FedTree**.

- An efficient, effective, and secure tree-based federated learning system.
- Version 0.1 is available on [GitHub](#).

A developer of **ThunderSVM**.

- A fast SVM library on GPUs and CPUs.
- Has attracted about 1.3k stars on [GitHub](#).

A developer of **ThunderGBM**.

- A fast GBDTs and random forests library on GPUs.
- Has attracted about 600 stars on [GitHub](#).

## HONORS and AWARDS

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- Dean's Graduate Research Excellence Award, 2022.
- Google PhD Fellowship, 2021.
- PREMIA Best Student Paper Gold Award, 2021.
- Research Achievement Award, School of Computing, National University of Singapore, 2020, 2021.
- TPDS Best Paper Award, 2019.
- Outstanding Graduates, Huazhong University of Science and Technology, 2018.
- Samsung Scholarship, 2016.
- Outstanding Undergraduates in Term of Academic Performance, Huazhong University of Science and Technology, 2016.
- Excellent Student, Huazhong University of Science and Technology, 2014, 2015.
- National Scholarship, Ministry of Education of P.R.China, 2014.

## INDUSTRY EXPERIENCE

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- Internship at Alibaba *Jul-Sep, 2021*

## TEACHING EXPERIENCE

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- CG2271 Real-Time Operating Systems, Teaching Assistant, 2018/2019 Semester 1

- CS4225/5425 Big Data Systems for Data Science, Teaching Assistant, 2018/2019 Semester 2
- CS1010 Programming Methodology, Teaching Assistant, 2019/2020 Semester 1
- CS4225/5425 Big Data Systems for Data Science, Teaching Assistant, 2019/2020 Semester 2

## SERVICES

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- Conference reviewer: AAAI 2021; ICLR 2021, 2022, 2023; ICML 2022, 2023; NeurIPS 2020, 2021, 2022.
- Journal reviewer: ACM Computing Surveys (CSUR), Journal of Machine Learning Research (JMLR), IEEE Transactions on Dependable and Secure Computing (TDSC), ACM Transactions on Intelligent Systems and Technology (TIST), IEEE Transactions on Neural Networks and Learning Systems (TNNLS), IEEE Transactions on Parallel and Distributed Systems (TPDS).
- Organizer of IJCAI 2020 tutorial “A Tutorial on Federated Learning Systems: Comparative Studies and Hand-on Demonstrations”.
- Program Chair of Computing Research Week 2020, National University of Singapore.
- Student helper of 13th ACM SIGOPS Asia-Pacific Workshop on Systems (APSys 2022).