Qing Ling

Contact Information

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Research Interests

Decentralized Optimization and Learning
Decentralized Signal Processing

Employment History

Professor 2017.12–Present
School of Computer Science and Engineering, Sun Yat-Sen University

Associate Professor 2009.09–2017.11
Department of Automation, University of Science and Technology of China

Postdoctoral Research Fellow 2006.09–2009.08
Department of Electrical and Computer Engineering, Michigan Technological University

Education Background

Ph.D. in Control Theory and Control Engineering 2001.09–2006.07
Department of Automation, University of Science and Technology of China

B.E. in Automatic Control 1997.09–2001.07
Department of Automation, University of Science and Technology of China

Visiting Experience

Visiting Scholar 2016.07–2016.08
Department of Electrical and Computer Engineering, University of Minnesota

StarTrack Visiting Scholar 2014.09–2015.02
Visual Computing Group, Microsoft Research Asia

Visiting Scholar 2012.08–2014.02
Department of Electrical and Systems Engineering, University of Pennsylvania

Awards

Young Author Best Paper Award (As Coauthor) 2024.12
IEEE Signal Processing Society

Young Author Best Paper Award (As Coauthor) 2017.12
IEEE Signal Processing Society

Best Student Paper Finalist (As Coauthor) 2017.10
Asilomar Conference on Signals, Systems, and Computers

Services

Associate Editor 2023.10–Present
IEEE Transactions on Signal Processing

Senior Area Editor 2020.10–2022.09
IEEE Signal Processing Letters

Associate Editor 2017.12–2020.11
IEEE Transactions on Network and Service Management

Associate Editor 2016.10–2020.09
IEEE Signal Processing Letters

Technical Program Committee Chair 2023.09
IEEE SPAWC

Teaching

Operations Research and Optimization — 2018–2025
Undergraduate Course

Convex Optimization — 2010–2025
Undergraduate/Graduate Course

System Identification — 2009–2017
Undergraduate/Graduate Course

Selected Publications

[J54] Yue Huang, Zhaoxian Wu, Shiqian Ma, Qing Ling: Single-timescale multi-sequence stochastic approximation without fixed point smoothness: Theories and applications. IEEE Transactions on Signal Processing, 73: 1939–1953, 2025

[J53] Jie Peng, Weiyu Li, Stefan Vlaski, Qing Ling: Mean aggregator is more robust than robust aggregators under label poisoning attacks on distributed heterogeneous data. Journal of Machine Learning Research, 27: 1–51, 2025

[J52] Haoxiang Ye, Qing Ling: Generalization error matters in decentralized learning under Byzantine attacks. IEEE Transactions on Signal Processing, 73: 843–857, 2025

[J51] Jiaojiao Zhang, Xuechao He, Yue Huang, Qing Ling: Byzantine-robust and communication-efficient personalized federated learning. IEEE Transactions on Signal Processing, 73: 26–39, 2025

[J50] Qifeng Lin, Qing Ling: Robust reward-free actor-critic for cooperative multi-agent reinforcement learning. IEEE Transactions on Neural Networks and Learning Systems, 35(12): 17318–17329, 2024

[J49] Runhua Wang, Qing Ling, Zhi Tian: Dual-domain defenses for Byzantine-resilient decentralized resource allocation. IEEE Transactions on Signal and Information Processing over Networks, 10: 804–819, 2024

[J48] Xingrong Dong, Zhaoxian Wu, Qing Ling, Zhi Tian: Byzantine-robust distributed online learning: Taming adversarial participants in an adversarial environment. IEEE Transactions on Signal Processing, 72: 235-248, 2024

[J47] Quan Xiao, Qing Ling, Tianyi Chen: Lazy queries can reduce variance in zeroth-order optimization. IEEE Transactions on Signal Processing, 71: 3695–3709, 2023

[J46] Zhaoxian Wu, Tianyi Chen, Qing Ling: Byzantine-resilient decentralized stochastic optimization with robust aggregation rules. IEEE Transactions on Signal Processing, 71: 3179–3195, 2023

[J45] Jintang Li, Jiaying Peng, Liang Chen, Zibin Zheng, Tingting Liang, Qing Ling: Spectral adversarial training for robust graph neural network. IEEE Transactions on Knowledge and Data Engineering, 35(9): 9240–9253, 2023

[J44] Huikang Liu, Jiaojiao Zhang, Anthony Man-Cho So, Qing Ling: A communication-efficient decentralized Newton's method with provably faster convergence. IEEE Transactions on Signal and Information Processing over Networks, 9: 427–441, 2023

[J43] Heng Zhu, Qing Ling: Byzantine-robust distributed learning with compression. IEEE Transactions on Signal and Information Processing over Networks, 9: 280–294, 2023

[J42] Jiaojiao Zhang, Huikang Liu, Anthony Man-Cho So, Qing Ling: Variance-reduced stochastic quasi-Newton methods for decentralized learning. IEEE Transactions on Signal Processing, 71: 311–326, 2023

[J41] Bin Wang, Jun Fang, Hongbin Li, Xiaojun Yuan, Qing Ling: Confederated learning: Federated learning with decentralized edge servers. IEEE Transactions on Signal Processing, 71: 248–263, 2023

[J40] Weiyu Li, Tianyi Chen, Liping Li, Zhaoxian Wu, Qing Ling: Communication-censored distributed stochastic gradient descent. IEEE Transactions on Neural Networks and Learning Systems, 33(11): 6831–6843, 2022

[J39] Runhua Wang, Yaohua Liu, Qing Ling: Byzantine-resilient resource allocation over decentralized networks. IEEE Transactions on Signal Processing, 70: 4711–4726, 2022

[J38] Yaohua Liu, Gang Wu, Zhi Tian, Qing Ling: DQC-ADMM: Decentralized dynamic ADMM with quantized and censored communications. IEEE Transactions on Neural Networks and Learning Systems, 33(8): 3290–3304, 2022

[J37] Rui Li, Zhi Zhou, Xu Chen, Qing Ling: Resource price-aware offloading for edge-cloud collaboration: A two-timescale online control approach. IEEE Transactions on Cloud Computing, 10(1): 648–661, 2022

[J36] Jiaojiao Zhang, Huikang Liu, Anthony Man-Cho So, Qing Ling: A penalty alternating direction method of multipliers for convex composite optimization over decentralized networks. IEEE Transactions on Signal Processing, 69: 4282–4295, 2021

[J35] Zhaoxian Wu, Han Shen, Tianyi Chen, Qing Ling: Byzantine-resilient decentralized policy evaluation with linear function approximation. IEEE Transactions on Signal Processing, 69: 3839–3853, 2021

[J34] Jiaojiao Zhang, Qing Ling, Anthony Man-Cho So: A Newton tracking algorithm with exact linear convergence rate for decentralized consensus optimization. IEEE Transactions on Signal and Information Processing over Networks, 7: 346–358, 2021

[J33] Qifeng Lin, Qing Ling: Decentralized TD(0) with gradient tracking. IEEE Signal Processing Letters, 28: 723–727, 2021

[J32] Xiaofeng Zhang, Zhangyang Wang, Dong Liu, Qifeng Lin, Qing Ling: Deep adversarial data augmentation for extremely low data regimes. IEEE Transactions on Circuits and Systems for Video Technology, 32(1): 15–28, 2021

[J31] Zhaoxian Wu, Qing Ling, Tianyi Chen, Georgios Giannakis: Federated variance-reduced stochastic gradient descent with robustness to Byzantine attacks. IEEE Transactions on Signal Processing, 68: 4583–4596, 2020

[J30] Kun Yuan, Wei Xu, Qing Ling: Can primal methods outperform primal-dual methods in decentralized dynamic optimization? IEEE Transactions on Signal Processing, 68: 4466–4480, 2020

[J29] Jiaojiao Zhang, Shuang Cong, Qing Ling, Kezhi Li, Herschel Rabitz: Quantum state filter with disturbance and noise. IEEE Transactions on Automatic Control, 65(7): 2856–2866, 2020

[J28] Weiyu Li, Yaohua Liu, Zhi Tian, Qing Ling: Communication-censored linearized ADMM for decentralized consensus optimization. IEEE Transactions on Signal and Information Processing over Networks, 6(1): 18–34, 2020

[J27] Jiaojiao Zhang, Shuang Cong, Qing Ling, Kezhi Li: An efficient and fast quantum state estimator with sparse disturbance. IEEE Transactions on Cybernetics, 49(7): 2546–2555, 2019

[J26] Yaohua Liu, Wei Xu, Gang Wu, Zhi Tian, Qing Ling: Communication-censored ADMM for decentralized consensus optimization. IEEE Transactions on Signal Processing, 67(10): 2565–2579, 2019

[J25] Tianyi Chen, Qing Ling, Yanning Shen, Georgios Giannakis: Heterogeneous online learning for thing-adaptive fog computing in IoT. IEEE Internet of Things Journal, 5(6): 4328–4341, 2018

[J24] Tianyi Chen, Qing Ling, Georgios Giannakis: Learn-and-adapt stochastic dual gradients for network resource allocation. IEEE Transactions on Control of Network Systems, 5(4): 1941–1951, 2018

[J23] Tianyu Wu, Kun Yuan, Qing Ling, Wotao Yin, Ali Sayed: Decentralized consensus optimization with asynchrony and delays. IEEE Transactions on Signal and Information Processing over Networks, 4(2): 293–307, 2018

[J22] Xiaokang Xie, Qing Ling, Ping Lu, Wei Xu, Zuqing Zhu: Evacuate before too late: Distributed backup in inter-DC networks with progressive disasters. IEEE Transactions on Parallel and Distributed Systems, 29(5): 1058–1074, 2018

[J21] Zifeng Wang, Zheng Yu, Qing Ling, Dimitris Berberidis, Georgios Giannakis: Decentralized RLS with data-adaptive censoring for regressions over large-scale networks. IEEE Transactions on Signal Processing, 66(6): 1634–1648, 2018

[J20] Tianyi Chen, Qing Ling, Georgios Giannakis: An online convex optimization approach to proactive network resource allocation. IEEE Transactions on Signal Processing, 65(24): 6350–6364, 2017

[J19] Xiaoyun Yuan, Difei Tang, Yebin Liu, Qing Ling, Lu Fang: Magic glasses: From 2D to 3D. IEEE Transactions on Circuits and Systems for Video Technology, 27(4): 843–854, 2017

[J18] Aryan Mokhtari, Qing Ling, Alejandro Ribeiro: Network Newton distributed optimization methods. IEEE Transactions on Signal Processing, 65(1): 146–161, 2017

[J17] Aryan Mokhtari, Wei Shi, Qing Ling, Alejandro Ribeiro: A decentralized second-order method with exact linear convergence rate for consensus optimization. IEEE Transactions on Signal and Information Processing over Networks, 2(4): 507–522, 2016

[J16] Kun Yuan, Qing Ling, Wotao Yin: On the convergence of decentralized gradient descent. SIAM Journal on Optimization, 26(3): 1835–1854, 2016

[J15] Qing Ling, Yaohua Liu, Wei Shi, Zhi Tian: Weighted ADMM for fast decentralized network optimization. IEEE Transactions on Signal Processing, 64(22): 5930–5942, 2016

[J14] Aryan Mokhtari, Wei Shi, Qing Ling, Alejandro Ribeiro: DQM: Decentralized quadratically approximated alternating direction method of multipliers. IEEE Transactions on Signal Processing, 64(19): 5158–5173, 2016

[J13] Ping Lu, Qing Ling, Zuqing Zhu: Maximizing utility of time-constrained emergency backup in inter-datacenter networks. IEEE Communications Letters, 20(5): 890–893, 2016

[J12] Wei Shi, Qing Ling, Gang Wu, Wotao Yin: A proximal gradient algorithm for decentralized composite optimization. IEEE Transactions on Signal Processing, 63(22): 6013–6023, 2015

[J11] Qing Ling, Wei Shi, Gang Wu, Alejandro Ribeiro: DLM: Decentralized linearized alternating direction method of multipliers. IEEE Transactions on Signal Processing, 63(15): 4051–4064, 2015

[J10] Kun Yuan, Qing Ling, Zhi Tian: Communication-efficient decentralized event monitoring in wireless sensor networks. IEEE Transactions on Parallel and Distributed Systems, 26(8): 2198–2207, 2015

[J09] Wei Shi, Qing Ling, Gang Wu, Wotao Yin: EXTRA: An exact first-order algorithm for decentralized consensus optimization. SIAM Journal on Optimization, 25(2): 944–966, 2015

[J08] Wei Shi, Qing Ling, Kun Yuan, Gang Wu, Wotao Yin: On the linear convergence of the ADMM in decentralized consensus optimization. IEEE Transactions on Signal Processing, 62(7): 1750–1761, 2014

[J07] Qing Ling, Alejandro Ribeiro: Decentralized dynamic optimization through the alternating direction method of multipliers. IEEE Transactions on Signal Processing, 62(5): 1185–1197, 2014

[J06] Houqiang Li, Zhenbo Lu, Zhangyang Wang, Qing Ling, Weiping Li: Detection of blotch and scratch in video based on video decomposition. IEEE Transactions on Circuits and Systems for Video Technology, 23(11): 1887–1900, 2013

[J05] Zhangyang Wang, Houqiang Li, Qing Ling, Weiping Li: Robust temporal-spatial decomposition and its applications in video processing. IEEE Transactions on Circuits and Systems for Video Technology, 23(3): 387–400, 2013

[J04] Qing Ling, Zaiwen Wen, Wotao Yin: Decentralized jointly sparse optimization by reweighted lq minimization. IEEE Transactions on Signal Processing, 61(5): 1165–1170, 2013

[J03] Xiaohan Wei, Yabo Yuan, Qing Ling: DOA estimation using a greedy block coordinate descent algorithm. IEEE Transactions on Signal Processing, 60(12): 6382–6394, 2012

[J02] Yinfei Fu, Qing Ling, Zhi Tian: Distributed sensor allocation for multi-target tracking in sensor networks. IEEE Transactions on Aerospace and Electronic Systems, 48(4): 3538–3553, 2012

[J01] Qing Ling, Zhi Tian: Decentralized sparse signal recovery for compressive sleeping wireless sensor networks. IEEE Transactions on Signal Processing, 58(7): 3816–3827, 2010