Lei, Qi

Website: https://cecilialeiqi.github.io/
Google Scholar: https://scholar.google.com/citations?user=kGOgaowAAAAJ&hl=en
Email: qilei@princeton.edu

EMPLOYMENT

Princeton University, NJ, United States July 2020 - Present

- *Postdoc Research Associate (CIFellow), Electrical Engineering Department*
- Postdoc Mentor: Jason D. Lee

EDUCATION

University of Texas at Austin, TX, United States August 2014 - May 2020

- *Ph.D., Oden Institute for Computational Sciences and Engineering*
- Advisors: Inderjit S. Dhillon and Alexandros G. Dimakis

Zhejiang University, Zhejiang, China Sep 2010 - June 2014

- *B.S., School of Mathematics (with honors)*, Chu Kochen Honors (GPA 3.92/4.0, rank 1^{st})
- Advisor: Qunsheng Peng, State Key Lab of CAD&CG.

AWARDS and RECOGNITIONS

- Computing Innovation Fellowship Computing Research Assiciation, 2020-2022
- Simons-Berkeley Research Fellowship Simons Institute, 2019 summer
- The National Initiative for Modeling and Simulation Research Fellowship UT Austin, 2014-2018
- Young Investigators Lecturers in Engineering and Applied Science Caltech, 2021
- Outstanding Dissertation Award Oden Institute, 2020
- Rising Star for EECS UIUC, 2019
- Rising Star for Computational and Data Science UT Austin, 2020
- Meritorious Winner (First Prize) for The Mathematical Contest in Modeling (MCM) COMAP, 2014
- The Excellence Scholarship (top honor) Zhejing Univ, 2014

PUBLICATIONS

1. Simon S. Du*, Wei Hu*, Sham M. Kakade*, Jason D. Lee*, **Qi Lei***. "Few-Shot Learning via Learning the Representation, Provably", *To appear at ICLR 2021*
2. **Qi Lei***, Sai Ganesh Nagarajan*, Ioannis Panageas*, Xiao Wang*. "Last iterate convergence in no-regret learning: constrained min-max optimization for convex-concave landscapes",*To appear at AISTATS 2021*
3. Xiao Wang, **Qi Lei**, Ioannis Panageas. "Fast Convergence of Langevin Dynamics on Manifold: Geodesics meet Log-Sobolev",*Proc. of Neural Information Processing Systems (NeurIPS), 2020*
4. Jason D. Lee*, **Qi Lei***, Nikunj Saunshi*, Jiacheng Zhuo*. "Predicting What You Already Know Helps: Provable Self-Supervised Learning", *NeurIPS 2020 Workshop: Self-Supervised Learning - Theory and Practice*
5. Jay Whang, **Qi Lei**, Alexandros G. Dimakis. "Compressed Sensing with Invertible Generative Models and Dependent Noise", *NeurIPS 2020 Workshop on Deep Learning and Inverse Problems*

6. Jiacheng Zhuo, **Qi Lei**, Alexandros G. Dimakis, Constantine Caramanis. "Communication-Efficient Asynchronous Stochastic Frank-Wolfe over Nuclear-norm Ball", *The 23rd International Conference on Artificial Intelligence and Statistics, 2020: 1464-1474*
7. **Qi Lei**, Jason Lee, Alexandros G. Dimakis, Contantinos Daskalakis. "SGD Learns One-Layer Networks in WGANs", *International Conference of Machine Learning (ICML), 2020: 5799-5808*
8. **Qi Lei**, Jiacheng Zhuo, Constantine Caramanis, Inderjit S. Dhillon, Alexandros G. Dimakis. "Primal-Dual Block Frank-Wolfe", *Proc. of Neural Information Processing Systems (NeurIPS), 2019: 13866-13875*
9. **Qi Lei**, Ajil Jalal, Inderjit S. Dhillon, Alexandros G. Dimakis. "Inverting Deep Generative models, One layer at a time", *Proc. of Neural Information Processing Systems (NeurIPS), 2019: 13910-13919*
10. **Qi Lei**, Jinfeng Yi, Roman Vaculin, Lingfei Wu, Inderjit S. Dhillon. "Similarity Preserving Representation Learning for Time Series Analysis", *The 28th International Joint Conference on Artificial Intelligence (IJCAI), 2019: 2845-2851*
11. **Qi Lei**, Lingfei Wu, Pin-Yu Chen, Alexandros G. Dimakis, Inderjit S. Dhillon, Michael Witbrock. "Discrete Adversarial Attacks and Submodular Optimization with Applications to Text Classification", *Systems and Machine Learning (MLsys), 2019* (covered by Nature Story)
12. Jinfeng Yi, **Qi Lei**, Wesley M Gifford, Ji Liu, Junchi Yan, Bowen Zhou. "Fast Unsupervised Location Category Inference from Highly Inaccurate Mobility Data", *Proceedings of the 2019 SIAM International Conference on Data Mining 2019: 55-63*
13. Zhewei Yao, Amir Gholami, **Qi Lei**, Kurt Keutzer, Michael W. Mahoney. "Hessian-based Analysis of Large Batch Training and Robustness to Adversaries", *Neural Information Processing Systems (NIPS), 2018: 4954-4964*
14. Jiong Zhang, **Qi Lei**, Inderjit S. Dhillon. "Stabilizing Gradients for Deep Neural Networks via Efficient SVD Parameterization", *International Conference of Machine Learning (ICML), 2018: 5801-5809*
15. Jinfeng Yi, **Qi Lei**, Junchi Yan, Wei Sun. "Session expert: A lightweight conference session recommender system", *IEEE International Conference on Big Data (Big Data), 2018: 1677-1682*
16. Lingfei Wu, Ian En-Hsu Yen, Jinfeng Yi, Fangli Xu, **Qi Lei**, Michael Witbrock. "Random Warping Series: A Random Features Method for Time-Series Embedding", *AISTATS 2018: 793-802*
17. Hsiang-fu Yu, Cho-Jui Hsieh, **Qi Lei**, Inderjit S. Dhillon. "A Greedy Approach for Budgeted Maximum Inner Product Search", *Neural Information Processing Systems (NIPS), 2017: 5453-5462*
18. **Qi Lei**, Enxu Yen, Chao-yuan Wu, Inderjit S. Dhillon, Pradeep Ravikumar. "Doubly Greedy Primal-Dual Coordinate Methods on Sparse Empirical Risk Minimization", *International Conference of Machine Learning (ICML), 2017: 2034-2042*
19. Rashish Tandon, **Qi Lei**, Alexandros G. Dimakis, Nikos Karampatziakis, "Gradient Coding: Avoiding Stragglers in Distributed Learning", *International Conference of Machine Learning (ICML), 2017: 3368-3376*
20. **Qi Lei**, Kai Zhong, Inderjit S. Dhillon. "Coordinate-wise Power Method", *Neural Information Processing System(NIPS), 2016: 2056-2064*

21. Arnaud Vandaele, Nicolas Gillis, **Qi Lei**, Kai Zhong, Inderjit S. Dhillon. "Coordinate Descent Methods for Symmetric Nonnegative Matrix Factorization", *IEEE Transactions on Signal Processing*, 64.21 (2016): 5571-5584
22. Jiazhou Chen, **Qi Lei**, Yongwei Miao, Qunsheng Peng, "Vectorization of Line Drawing Image based on Junction Analysis", *Science China Information Sciences*, 2014:1-14
23. Maria R. D'Orsogna, **Qi Lei**, Tom Chou, "First assembly times and equilibration in stochastic coagulation-fragmentation", *The Journal of Chemical Physics*, 2015: 143.1, 014112
24. Jiazhou Chen, **Qi Lei**, Fan Zhong, Qunsheng Peng, "Interactive Tensor Field Design Based on Line Singularities", *Proceedings of the 13th International CAD /Graphics*, 2013

TEACHING

Department of Electrical and Computer Engineering, UT Austin Fall 2019
- Scalable Machine Learning: *Teaching Assistant*

Oden Institute for Computational Engineering and Sciences, UT Austin Fall 2015
- Mathematical Methods in Applied Engineering and Sciences: *Instructor Intern*

EXPERIENCE

Institute for Advanced Study, Princeton, NJ, United States
September 2019 - July 2020
- Visiting Graduate Student for the "Special Year on Optimization, Statistics, and Theoretical Machine Learning"

Simons Institute, Berkeley, CA, United States May 2019 - August 2019
- Research Fellow for the Foundations of Deep Learning Program

Facebook/Photo&Video Search June 2018 - September 2018
- Explored offline/online evaluation gaps by estimating expected number of clicks based on historical logging data.

Amazon/A9 Product Search May 2017 - August 2017
- Inline search suggestions: used deep learning methods for NLP user search tasks.

Amazon Web Services (AWS Deep Learning Team) January 2017 - April 2017
- Documentations for MXNet: a deep learning framework designed for both efficiency and flexibility.

IBM Thomas J. Watson Research Center May 2016 - October 2016
- Partnered with one of the largest American financial companies on a challenge problem of predicting its clients' propensity of trading options
- Create World of Watson Session recommendation system: `https://myibm.ibm.com/events/wow/watson/`

SERVICE

Conference Reviewer: MLSys (Meta-reviewer'21, 20), COLT (21), STOC (20), NeurIPS (16,17,18,19,20), ICML (18,19,20,21), ICLR (18,19,20,21), AISTATS (18,19,20,21), AAAI (20,21), ACML (19), and more

Journal Reviewer: JSAIT(20), MOR (18,19,20), TNNLS (19,20), TKDE (19), ISIT (17,18), TIIS (17), IT (16,17), and more

PATENTS

- "Method and System for General and Efficient Time Series Representation Learning via Dynamic Time Warping."
  Q. Lei, J. Yi, R. Vaculin, and W. Sun
- "Real-Time Cold Start Recommendation and Rationale within a Dialog System".
  Q. Lei, J. Yi, R. Vaculin, M. Pietro

INVITED TALKS & ORAL PRESENTATIONS

1. " Few-Shot Learning via Learning the Representation, Provably."
   - IAS, Princeton, NJ, 2020
   - Simons Institute Reunion, virtual, 2020
   - UC Berkeley, virtual, 2020
2. "Predicting What You Already Know Helps: Provable Self-Supervised Learning."
   - One-World ML seminar, virtual, 2020
   - UW-Madison, virtual, 2020
3. "Provable representation learning."
   - Young Researcher Spotlight Talk at "Seeking Low-dimensionality in Deep Learning" workshop, virtual, 2020
   - Microsoft Research, virtual, 2021
4. "SGD Learns One-Layer Networks in WGANs."
   - International Conference of Machine Learning (ICML), virtual, 2020
   - Workshop on Learning and Testing in High Dimensions, Simons Institute, 2020
5. "Deep Generative models and Inverse Problems."
   - Minisymposium on Machine Learning for Solving Partial Differential Equations and Inverse Problems, 2019 SIAM Texas-Louisiana Section, Dallas, TX, USA, 2019
   - Google Research, virtual, 2021
6. "Similarity Preserving Representation Learning for Time Series Analysis."
   - The 28th International Joint Conference on Artificial Intelligence (IJCAI), Macao, 2019
7. "Discrete Adversarial Attacks and Submodular Optimization with Applications to Text Classification."
   - Simons-Berkeley Fellows Talk, Berkeley, CA, USA & SysML19, Stanford, CA, USA, 2019
8. "Recent Advances in Primal-Dual Coordinate Methods for ERM."
   - Minisymposium on Recent Progress in Coordinate-wise Descent Methods, SIAM Conference on Computational Science and Engineering, Spokane, WA, USA, 2019
   - International Conference of Machine Learning (ICML), Sydney, 2017
9. "Coordinate Descent Methods for Matrix Factorization."
   - Minisymposium on Recent Advances in Nonnegative Matrix Factorization, SIAM Annual Meeting, Boston, USA, 2016

PROGRAMMING SKILLS

C/C++(proficient), Python(proficient), Matlab(proficient), C#(prior experience)

Familiar with Deep Learning packages(Pytorch, Tensorflow, Theano, MXNet)