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
- Rising Star for EECS UIUC, 2019
- Rising Star for Computational and Data Science UT Austin, 2020
- Gold medal (5^{th} place) in China Girls Math Olympiad (CGMO, an international competition with a proof-based format similar to the International Math Olympiad) China, 2009
- Meritorious Winner (First Prize) for The Mathematical Contest in Modeling (MCM) COMAP, 2014
- The Excellence Scholarship(top honor) Zhejing Univ, 2014
- First Prize for CMC (the Mathematics competition of Chinese College Student) China, 2012
- First Prize for National Olympiad in Informatics in Provinces (NOIP) China, 2007(perfect score), 2008

PUBLICATIONS

1. Xiao Wang, **Qi Lei**, Ioannis Panageas. "Fast Convergence of Langevin Dynamics on Manifold: Geodesics meet Log-Sobolev", *To appear at NeurIPS 2020*
2. Jason Lee, Qi Lei, Nikunj Saunshi, Jiacheng Zhuo. "Predicting What You Already Know Helps: Provable Self-Supervised Learning", *To appear at NeurIPS 2020 Workshop: Self-Supervised Learning - Theory and Practice*
3. Jay Whang, Qi Lei, Alexandros G. Dimakis. "Compressed Sensing with Invertible Generative Models and Dependent Noise", *To appear at NeurIPS 2020 Workshop on Deep Learning and Inverse Problems*
4. 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*

5. **Qi Lei**, Jason Lee, Alexandros G. Dimakis, Contantinos Daskalakis. "SGD Learns One-Layer Networks in WGANs", *International Conference of Machine Learning (ICML) 2020*
6. **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*
7. **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*
8. **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*
9. **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 (sysML), 2019* (covered by Nature Story)
10. 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*
11. 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*
12. 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*
13. 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*
14. **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*
15. 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*
16. **Qi Lei**, Kai Zhong, Inderjit S. Dhillon. "Coordinate-wise Power Method", *Neural Information Processing System(NIPS), 2016: 2056-2064*
17. 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
18. Jiazhou Chen, **Qi Lei**, Yongwei Miao, Qunsheng Peng, "Vectorization of Line Drawing Image based on Junction Analysis", *Science China Information Sciences*, 2014:1-14
19. 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 (PC'21, 20), STOC (20), NeurIPS (16,17,18,19,20), ICML (18,19,20), ICLR (18,19,20,21), AISTATS (18,19,20,21), AAAI (20,21), ACML (19), and more

Journal Reviewer: MOR (19), TNNLS (19), 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

- " Few-Shot Learning via Learning the Representation, Provably."
  IAS, Princeton, NJ & Simons Institute Reunion & UC Berkeley, 2020
- "Predicting What You Already Know Helps: Provable Self-Supervised Learning."
  One-World ML seminar & UW-Madison, 2020

- "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
- "Discrete Adversarial Attacks and Submodular Optimization with Applications to Text Classification."
  Simons-Berkeley Fellows Talk, Berkeley, CA, USA & SysML19, Stanford, CA, USA, 2019
- "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
- "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)