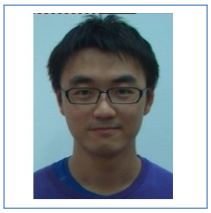

Zebang Shen

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Short Biography

Zebang Shen is a post-doctoral researcher at ETH Zürich, where he is supervised by Prof. Niao He. Prior to this role, he was a post-doctoral researcher at the University of Pennsylvania from 2019 to 2022, working under the guidance of Professors Alejandro Ribeiro and Hamed Hassani. He earned his Bachelor's degree and Ph.D. in 2014 and 2019, respectively, from Zhejiang University in China. Shen's recent research has focused on developing neural network-based methods for solving partial differential equations using entropy dissipation principles. He is also actively involved in optimization in the probability space and stochastic optimization techniques for addressing machine learning problems. His research has resulted in several publications in leading journals and conferences in his field. He has been invited to serve as a PC member or reviewer for several international conferences and journals.

Research Interests

Optimal Transport, Generative Models, Wasserstein Gradient Flow, Stochastic Optimization, Federated Learning

Education

2022.11 – now **Post-doctoral researcher at ETH Zürich**, *Research Focus: Entropy-informed neural network for PDE solving*.

2019.09 – 2022.08 **Post-doctoral researcher at University of Pennsylvania**, *Research Focus: Wasserstein gradient flow and its application in Machine Learning*.

2014.09 – 2019.06 **Ph.D of Computer Science and Technology at Zhejiang University**, *Research Focus: Stochastic optimization for large scale machine learning models*.

2010.09 – 2014.06 **Bachelor of Computer Science and Technology at Zhejiang University**.

Professional Services

Journals Reviewer of JMLR, PAMI, TNNLS, TAC, SIOPT

Conferences Reviewer of AAAI, IJCAI, NIPS, ICLR

Publication

2023 **Entropy-dissipation Informed Neural Network for McKean-Vlasov Type PDEs**, ***Zebang Shen***, *Zhenfu Wang*, Accepted to the Thirty-seventh Conference on Neural Information Processing Systems (**NIPS**) 2023.

2023 **Straggler-Resilient Personalized Federated Learning**, *Isidoros Tziotis*, ***Zebang Shen***, *Ramtin Pedarsani, Hamed Hassani, Aryan Mokhtari*, Transactions on Machine Learning Research (**TMLR**).

2023 **Share your representation only: Guaranteed improvement of the privacy-utility tradeoff in federated learning**, ***Zebang Shen***, *Jiayuan Ye, Anmin Kang, Hamed Hassani, Reza Shokri*, Accepted to the Eleventh International Conference on Learning Representations (**ICLR**) 2023.

2023 **Differentially Private Federated Learning: Guaranteed Improvement of the Privacy-Utility Tradeoff by Only Sharing Representations**, ***Zebang Shen***, *Jiayuan Ye, Hamed Hassani, Reza Shokri*, Accepted to International Conference on Learning Representations (**ICLR**) 2023.

2022 **Self-Consistency of the Fokker-Planck Equation**, ***Zebang Shen***, *Zhenfu Wang, Satyen Kale, Alejandro Ribeiro, Aim Karbasi, Hamed Hassani*, Accepted to Conference on Learning Theory (**COLT**) 2022.

2022 **An Agnostic Approach to Federated Learning with Class Imbalance**, ***Zebang Shen***, *Juan Cervino, Hamed Hassani, Alejandro Ribeiro*, Accepted to International Conference on Learning Representations (**ICLR**) 2022.

2022 **Federated Functional Gradient Boosting**, ***Zebang Shen***, *Hamed Hassani, Satyen Kale, Amin Karbasi*, Accepted to International Conference on Artificial Intelligence and Statistics (**AISTATS**) 2022 .

2020 **Sinkhorn Natural Gradient for Generative Models**, ***Zebang Shen***, *Zhenfu Wang, Alejandro Ribeiro, Hamed Hassani*, Accepted to the Thirty-fourth Conference on Neural Information Processing Systems (**NIPS**) 2020, **spotlight paper**.

2020 **Sinkhorn Barycenter via Functional Gradient Descent**, ***Zebang Shen***, *Zhenfu Wang, Alejandro Ribeiro, Hamed Hassani*, Accepted to the Thirty-fourth Conference on Neural Information Processing Systems (**NIPS**) 2020.

2020 **Stochastic conditional gradient++**, *Hamed Hassani, Amin Karbasi, Aryan Mokhtari,* ***Zebang Shen***, To appear in the SIAM Journal on Optimization (**SIOPT**) (alphabetical order).

2020 **Aggregated Gradient Langevin Dynamics**, *Chao Zhang, Jiahao Xie,* ***Zebang Shen***, *Hui Qian, Peilin Zhao, Tengfei Zhou*, Thirty-Fourth AAAI Conference on Artificial Intelligence (**AAAI**) 2020.

2019 **Efficient Projection-Free Online Methods with Stochastic Recursive Gradient**, *Jiahao Xie, **Zebang Shen**, Chao Zhang, Boyu Wang, Hui Qian*, Thirty-Fourth AAAI Conference on Artificial Intelligence (**AAAI**) 2020.

2019 **Stochastic Continuous Greedy ++: When Upper and Lower Bounds Match**, *Hamed Hassani, Amin Karbasi, Aryan Mokhtari, **Zebang Shen***, Thirty-third Conference on Neural Information Processing Systems (**NIPS**) 2019 (alphabetical order).

2019 **Hessian Aided Policy Gradient** , ***Zebang Shen**, Hamed Hassani, Chao Mi, Hui Qian, Alejandro Ribeiro*, International Conference on Machine Learning (**ICML**) 2019.

2019 **Complexities in Projection-Free Stochastic Non-convex Minimization** , ***Zebang Shen**, Hui Qian, Cong Fang, Peilin Zhao, Junzhou Huang*, The 22nd International Conference on Artificial Intelligence and Statistics (**AISTATS**) 2019.

2019 **Decentralized Continuous Submodular Maximization**, *Jiahao Xie, Chao Zhang, **Zebang Shen**, Chao Mi, Hui Qian*, The 22nd International Conference on Artificial Intelligence and Statistics (**AISTATS**) 2019.

2019 **Multitask Metric Learning: Theory and Algorithm**, *Boyu Wang, Hejia Zhang, Peng Liu, **Zebang Shen**, Joelle Pineau*, The 22nd International Conference on Artificial Intelligence and Statistics (**AISTATS**) 2019.

2018 **Towards More Efficient Stochastic Decentralized Learning: Faster Convergence and Sparse Communication**, ***Zebang Shen**, Aryan Mokhtari, Tengfei Zhou, Peilin Zhao, Hui Qian*, International Conference on Machine Learning (**ICML**) 2018.

2018 **JUMP: a Jointly Predictor for User Click and Dwell Time**, *Tengfei Zhou, Hui Qian, **Zebang Shen**, Chao Zhang, Chengwei Wang, Shichen Liu, Wenwu Ou* , International Joint Conference on Artificial Intelligence (**IJCAI**) 2018.

2018 **Towards Memory-Friendly Deterministic Incremental Gradient Method**, *Jiahao Xie, Hui Qian, **Zebang Shen**, Chao Zhang*, International Conference on Artificial Intelligence and Statistics (**AISTATS**) 2018.

2017 **Accelerated Doubly Stochastic Gradient Algorithm for Large-scale Empirical Risk Minimization**, ***Zebang Shen**, Hui Qian, Chao Zhang, Tengfei Zhou*, International Joint Conference on Artificial Intelligence (**IJCAI**) 2017.

2017 **Tensor Completion with Side Information: A Riemannian Manifold Approach**, *Tengfei Zhou, Hui Qian, **Zebang Shen**, Congfu Xu*, International Joint Conference on Artificial Intelligence (**IJCAI**) 2017.

2016 **Adaptive Variance Reducing for Stochastic Gradient Descent**, ***Zebang Shen**, Hui Qian, Tengfei Zhou, Tongzhou Mu*, International Joint Conference on Artificial Intelligence (**IJCAI**) 2016.

2016 **Fast Hybrid Algorithm for Big Matrix Recovery**, *Tengfei Zhou, Hui Qian, **Zebang Shen**, Congfu Xu*, AAAI Conference on Artificial Intelligence (**AAAI**) 2016.

2015 **Simple Atom Selection Strategy for Greedy Matrix Completion**, ***Zebang Shen**, Hui Qian, Tengfei Zhou, Song Wang*, International Joint Conference on Artificial Intelligence (**IJCAI**) 2015.