

**Name:** Zhengxin Zhang

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## Education

Aug, 2019 - Cornell University, US  
Ph.D, Applied Mathematics

Sep, 2015 - Jun,2019 Shanghai Jiao Tong University, China  
B.S., Mathematics and Applied Mathematics  
GPA: 89.6/100(Overall) 91.9/100(Mathematics)

## Research Interests

I have a broad interest in statistical learning theory, with a particular focus on the theory of optimal transport (OT). My exploration spans across various facets of OT, encompassing variational analysis/duality, statistics, computations, gradient flow, among others.

Recently, my work has been dedicated to exploring the novel paradigm of OT known as the Gromov-Wasserstein distance, which consists a fascinating interplay of classical OT and metric geometry. This pursuit aims to uncover inherent structural similarities within heterogeneous data, presenting a compelling avenue for my research.

My curiosity extends further into generative modeling, encompassing both adversarial and flow-based setups, where my focus centers on geometric cycle consistency. Alongside this, I'm engrossed in understanding the foundational theories underpinning neural networks and deep learning, particularly the essential tradeoff between approximation and estimation.

Through these diverse interests, I aim to contribute to the deeper understanding of OT, explore innovative applications in heterogeneous data analysis and generative modeling, and advance the fundamental principles shaping neural network theory.

**Key words:** **Optimal transport, Gromov-Wasserstein distance, Statistical learning theory, High dimensional statistics, PDE in machine learning**

## Research Projects and Publications

- Sreekumar, Sreejith, **Zhengxin Zhang**, and Ziv Goldfeld. "Non-asymptotic performance guarantees for neural estimation of f-divergences." International Conference on Artificial Intelligence and Statistics. PMLR, 2021.

- **Zhang, Zhengxin**, et al. "Cycle Consistent Probability Divergences Across Different Spaces." International Conference on Artificial Intelligence and Statistics. PMLR, 2022.
- **Zhang, Zhengxin**, et al. "Gromov-Wasserstein Distances: Entropic Regularization, Duality, and Sample Complexity." arXiv preprint arXiv:2212.12848 (2022). Submitted.
- Gradient Flow of Gromov-Wasserstein Distance. In preparation.

## Professional Experiences

- Research intern, MIT-IBM Watson AI Lab, May 2023 - Aug 2023. Mentor: Kristjan Greenewald.
- Reviewer for AISTATS 2022 2024, ICLR 2024, NeurIPS 2023

## Awards and Honors

Cornell Graduate School Fellowship, 2019

National Scholarship (PRC), 2016

Zhiyuan Honor Scholarship, SJTU , 2016,2017

Hanyingjuhua Scholarship, SJTU, 2017

Kaiyuan Encouragement Scholarship, SJTU, 2017

Winner Prize, S.T. Yau College Student Mathematics Contests, Computational and Applied Mathematics, 2018

Winner Prize, S.T. Yau College Student Mathematics Contests, Geometry and Topology, 2018

Team Winner Prize, S.T. Yau College Student Mathematics Contests, 2018

Honorable Mention, The Mathematical Contest in Modeling, 2016

## Programming Skills

**Python, Julia, Matlab, C++, Fortran**