TAO JIANG

136 Hoy Rd, Ithaca, NY 14850
tj293@cornell.edu

EDUCATION

Cornell University, United States *September 2020 - present*
- Ph.D. in Operaitons Research, School of Operations Research and Information Engineering *CGPA: 4.115/4.0*
- Thesis advisor: Prof. Damek Davis
- Committee members: Prof. James Renegar, Prof. Adrian Lewis, Prof. Anil Damle, Prof. Katya Scheinberg

University of Waterloo (UW), Canada *September 2018 - August 2020*
- Master of Mathematics (Thesis), Department of Combinatorics and Optimization *CGPA: 95/100*
- Thesis advisor: Prof. Stephen Vavasis
- Committee members: Prof. Levent Tunçel, Prof. Henry Wolkowicz
- Thesis: Sum-of-norms clustering: theoretical guarantee and algorithms

Singapore University of Technology and Design (SUTD), Singapore *May 2015 - August 2018*
- Bachelor of Engineering, Summa Cum Laude, Engineering Systems and Design *CGPA: 4.79/5.00*
- Majors: Operations Research, Business Analytics

University of California, Berkeley, United States *June - August 2016*
- Summer exchange program, Department of Applied Mathematics *CGPA: 3.85/4.00*

INDUSTRY EXPERIENCES

Data Science Analyst, GIC Private Limited, Singapore *July - September 2017*
- Forecast NAREIT Index price value performance using Regression and Tree Ensemble on a monthly basis with 50,000 public data points, producing prediction results with a 2% MAPE

Client Services Analyst, Goldman Sachs, Singapore *May - July 2017*
- Enhanced client onboarding process and web application with 3 hours reduced per request
- Assisted client services for the trading of listed derivatives and advisory of trades discrepancies

RESEARCH INTEREST

Continuous optimization and its applications in data science.

PUBLICATIONS AND WORKING PAPERS

Jiang, T., Wang, S., Zhang, R., Qin, L., Wu, J., Wang, D., & Ahipasaoglu, S. D. (2019). An inexact l2-norm penalty method for cardinality constrained portfolio optimization. *The Engineering Economist*, 64(3), 289297. doi: 10.1080/0013791x.2019.1636169

Jiang, T., Vavasis, S., Zhai, C. W. (2020). Recovery of a Mixture of Gaussians by Sum-of-norms Clustering. Journal of Machine Learning Research, 21(225), 1-16.

Jiang, T., Vavasis, S. (2020). Certifying clusters from sum-of-norms clustering. arXiv preprint arXiv:2006.11355.

Davis, D., Jiang, T. (2022). A fast and condition-free Gauss-Newton-Polyak subgradient method for nonsmooth nonconvex optimization. (Working paper.)

Jiang, T., Tan, S., Vavasis, S. (2022). A New Family of Features That Strengthens Recovery Guarantees of Sum-of-Norms Clustering. (Working paper.)

TALKS

Recovery of a mixture of Gaussians by sum-of-norms clustering *August 2019*
ICCOPT 2019, Berlin, Germany
Certifying clusters from sum-of-norms clustering *July 2022*
ICCOPT 2022, Bethlehem, PA, USA
A new family of features that strengthens recovery guarantees of sum-of-norms clustering (Upcoming)
SIAM MDS22, San Diego, CA, USA
Informs Annual Meeting 2022, Indianapolis, IN, USA

RESEARCH EXPERIENCES

Graduate research assistant, Cornell University, USA *January 2021 - Present*
- Working with Prof. Davis on designing and analyzing a fast and scalable algorithm that is condition number independent for nonsmooth and nonconvex problems

- Working with Prof. Anil Damle on designing a variant of spectral clustering algorithm to solve the stereotyping problem

Graduate research assistant, UW, Canada *September 2018 - Present*
- Worked with Prof. Vavasis and Chen Wen Zhai on recovering a mixture of Gaussians by sum-of-norms clustering
- Worked with Prof. Vavasis on recovering optimal solution from inexact outputs of primal-dual algorithms for sum-of-norms clustering
- Working with Prof. Vavasis and Samuel Tan on strengthening the recovery guarantee of sum-of-norms clustering by proposing a new family of features

Undergraduate research assistant, SUTD, Singapore *January 2016 - August 2018*
- Worked with Prof. Peter Jackson on modeling catastrophic patient allocation in response to bioterrorism with graphic network modeling and CapFlow
- Worked with Prof. Selin D. Ahipasaoglu on cardinality constrained portfolio optimization for INFORMS O.R. & Analytics Student Team Competition
- Worked with Prof. James Wan on implementing generalizations of Celines Method in Mathematica
- Worked with Dr. Sergey Kushnarev on designing a diagnosis algorithm for Alzheimers Disease using MRI images which achieved a 75% success rate

HONORS AND AWARDS

Ministry of Education, Singapore: SM2 Undergraduate Scholarship
SUTD: SRX Operations Research Award, top student in Operations Research, SUTD Honors List for all academic terms
UW: William Tutte Postgraduate Scholarship, Sinclair Graduate Scholarship, MATH Senate Graduate Scholarship, UW Graduate Scholarship, TA, RA fellowship, Travelling Research Assistantship for *ICCOPT*
Cornell: Eleanor and Howard Morgan PhD 68 Graduate Fellowship
SIAM: SIAM Student Travel Awards

TEACHING EXPERIENCES

Graduate Teaching Assistant, Cornell University, USA
ORIE 5380 Optimization Methods *2022 Fall*
ORIE 4740 Statistical Data Mining *2022 Spring*
ORIE 4741 Big Messy Data *2021 Fall*
ORIE 3310 Optimization II *2021 Spring*

Graduate Teaching Assistant, UW, Canada
CO 671 Semidefinite Programming *2020 Spring*

CO 663 Convex Optimization and Analysis *2020 Winter*
CO 250 Introduction to Optimization, teaching assistant and coordinator *2019 Fall*
- Coordinated a group of eight TAs with assignment marking, exam proctoring and office hours
- Wrote and revised solutions for two midterms and one final exam
CO 250 Introduction to Optimization *2019 Winter, Spring*
Math 114 Linear Algebra for Science *2018 Fall*

Undergraduate Teaching Assistant, SUTD, Singapore
10.007 Modelling the Systems World *2017 Winter, 2018 Spring*
40.002 Optimization *2017 Fall*
10.004 Advanced Mathematics II (Linear Algebra) *2016 Fall*

SKILLS AND SELECTED PROJECTS

- Proficient in Matlab, Python, R, Julia, AMPL, SQL, Hadoop, Microsoft VBA, LaTex
- Bilingual and biliterate in English, native in Chinese
- Built an interactive web application for a financial institution which takes satellite images and other auxiliary data sources, to perform automated retail catchment analysis by machine learning
- Performed revenue maximization for Wind Flower Florist, with tools of statistics, Newsvendor model, dynamic pricing and data of sales and supply in the past 24 months
- Developed an algorithm for a car-sharing company, Car Club, which dynamically recommends the best plan to allocate vehicles across 78 stations weekly, boosting usage rate by 12%

PERSONAL INTEREST

- 1-year rock climber
- 4.5-year ballroom dancer in standard ballroom dance and Latin, champion in the beginner category of multiple international dance competitions
- 8-year flutist with grade nine in Arts Grade Examination of China
- 1-year fencer with a specialty in foil
- Owner of 3 patents; Slippers with an embedded massaging function, kitchen knives that provide a cleaner cut on vegetables and foldable toothbrush incorporating four useful tools