

Jiguang Li

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Education

- **Yale University** **New Haven, CT Aug 2019 - May 2020**
 - Master of Arts in Statistics
 - Courses: Linear Models (H), Optimization (H), Spectral Graph Theory (HP), Measure Theory (H), Data Analysis(H), Theory of Statistics (H), Advanced Probability(H), Predictive Modeling (H)
 - **Middlebury College** **Middlebury, VT Sep 2015 - May 2019**
 - Bachelor of Arts in Mathematics, Bachelor of Arts in Computer Science
 - Summa cum laude (GPA: 3.83/4.00) ; Highest Honor in Mathematics
 - Honors Thesis: The Chevalley-Warning Theorem: Its Proofs, Generalisations, and Applications
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Core Technical Skills

Languages: Chinese (native), English (fluent), Spanish (intermediate), Italian (intermediate)

Tutoring: Teaching assistant for Macroeconomics Theory, Linear Algebra, and Calculus at Middlebury College

Programming Languages: Python, R, Matlab, Java, C, Javascript, Basic HTML, Basic SQL, \LaTeX , Maple

Certificates: Neural Networks and Deep Learning by deeplearning.ai on Coursera June, 2018

Research Experiences

- **Research on Applied Machine Learning** **The University of Chicago**
Supervised by Sendhil Mullainathan Aug 2020 -
 - Developed and built hierarchical Multidimensional Item Response Theory Models (MIRT).
 - Implemented latent variable models with Pymc3 using No-u-turn MCMC Sampler.
 - Applied customized spectral clustering algorithm to cluster high-dimensional students' test items.
 - Implemented customized Densenet model to predict abnormality from patients' X-rays, with >0.91 validation AUC.
 - Conviction history data cleaning, probabilistic matching with random forest algorithm.
 - **Research on Online Volunteers Market Matching** **Yale University**
Supervised by Vahideh Manshadi May 2020 - Aug 2020
 - Built pipeline to scrape, store, and analyze 100,000+ anonymized volunteers' devices activities.
 - Optimized sorting algorithms to maximize the probability of matching volunteers to nonprofits.
 - Built effective weighted KNN and XGBoost binary classifiers that can predict volunteer availability and the success rate of a given food delivery. Both models can achieve 0.88+ ROC-AUC scores.
 - **Astrostatistics Research on Spectrum Normalization Algorithms** **Yale University**
Research Assistant Summer 2019
 - Implemented two state of art astrostatistics algorithms for continuum normalization in Python.
 - Developed Python code for lab source smoothing using the AFS algorithm.
 - **Astrostatistics Research on Quasar Variability** **California Institute of Technology**
Supervised by George Djorgovski and Eilat Glikman Summer 2017
 - Implemented Python codes to analyze and compute different types of variability indices for radio-quiet and radio-loud quasars. Performed two-sample K-S and Anderson-Darling statistical tests.
 - Recipient of 2017 Caltech Visiting Undergraduate Research Award (VURP)
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Class Projects

- **Convex Optimization on Fastest Mixing Markov Chain**
 - Gave an original proof to deduce the optimal transition probability matrix P^* for star graphs analytically (See Conjecture 5.2). The proof was inspired by the proof of a similar result for line graphs.
- **Robust Estimation of Wasserstein Distance**
 - A detailed exposition of a recent paper on statistical optimal transport, in which the authors propose a robust estimator to approximate Wasserstein distance between two probability distributions under high-dimensional sampling noise.
- **3DKinect: 3D Reconstruction using RGB-D Images**
 - Implemented an easy-to-use software that streamlines essential steps in 3D reconstruction pipeline. The final product can save, visualize, capture, and edit point cloud data using Microsoft Kinect Camera. The software can also perform 3D registration powered by the iterative closed point algorithm.
- **Advanced Study on the Hausdorff Dimension of Brownian Path**
 - Studied the properties of fractal dimensions and various techniques to determine the Hausdorff dimensions of the zeros, range, and graph of the Brownian motion.