Zhaoqi Li

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EDUCATION

UNIVERSITY OF WASHINGTON, SEATTLE, WA *Doctor of Philosophy, Expected Summer 2023*
Major: Statistics
MACALESTER COLLEGE, ST. PAUL, MN *2014 - 2018*
Bachelor of Arts, Mathematics and Computer Science *GPA: 3.98/4.00*
summa cum laude

PUBLICATIONS

- Rathe, J. A., Hemann, E. A., Eggenberger, J., **Li, Z.,** Knoll, M. L., Stokes, C., Hsiang, T. Y., Netland, J., Takehara, K. K., Pepper, M., & Gale, M., Jr (2021). SARS-CoV-2 Serologic Assays in Control and Unknown Populations Demonstrate the Necessity of Virus Neutralization Testing. *The Journal of infectious diseases*, 223(7), 1120–1131.
- B. Anzis, S. Chen, Y. Gao, J. Kim, **Z. Li,** & R. Patrias (2018). Jacobi-Trudi determinants over finite fields. *Annals of Combinatorics*, 22(3), 447-489.
- **Z. Li**, Y. Ma, C. Vajiac, Y. Zhang, "Exploration of Numerical Precision in Deep Neural Networks", (2018), arXiv:1805.01078 [stat.ML].
- Y. Gao, **Z. Li**, T. Vuong & L. Yang (2018). Toric Mutations in the dP2 Quiver and Subgraphs of the dP2 Brane Tiling. *The Electronic Journal of Combinatorics,* 26(2), P2-19.

RESEARCH EXPERIENCE

Research project on Statistical Estimation of a Mean Outcome February 2021 – Current
Advisor: Alex Luedtke *University of Washington*
- Proposed an efficient estimator for the mean outcome under a random policy
- Showed that this estimator is efficient under margin conditions
- Proposed a two-sided confidence interval for the estimator without margin conditions

Internship project on Adaptive Experimental Design for Time Variation June – September 2021
Manager: Houssam Nassif *Amazon Inc.*
Mentor: Lalit Jain *University of Washington, Amazon Inc.*
- Conducted real data analysis to demonstrate the existence of time variation phenomenon in real life
- Implemented bandit algorithms robust to time variation to help with auto decision making

Internship project on Structured Multivariate Testing June – September 2020
Manager: Houssam Nassif *Amazon Inc.*
- Considered alternative solvers, namely MAP inference in graphical models, to current greedy hill climbing algorithm used in standard multivariate testing (MVT) use case
- Implemented belief propagation algorithm, which incorporates graphical structure in optimization, on MVT
- Showed that when true model is complete, belief propagation algorithm only needs a relatively sparse model to have a similar performance to hill climbing through simulation experiments
- Showed that when true model is sparse, belief propagation algorithm can outperform hill climbing through simulation experiments

Research project on Kernel Methods in Machine Learning September 2019 – June 2020
Advisor: Dr. Zaid Harchaoui, Dr. Ali Shojaie *University of Washington*
- Showed an error bound for the Kernel Projection Machine algorithm
- Specialized the error bound to various kinds of kernels with the optimal choice of dimensionality
- Showed consistency between estimated eigenvalues using the gram matrix and the eigenvalues of the kernel
- Derive kernel methods to perform nonlinear regression and inference on structured data and network data

SKILLS

Programming Languages: Python, Java, R, Matlab, Mathematica

Operating Systems: Mac OS, Microsoft Windows, Linux Ubuntu

TEACHING EXPERIENCE

DEPARTMENT OF STATISTICS, UNIVERSITY OF WASHINGTON
Lead Tutor   September 2020 – Current
- Assist Director of the Statistics Tutor and Study Center
- Point of contact for tutoring requests and forward requests to Statistics graduate students via statgrads listserve
- Responsible for hiring new tutors and providing TA and tutor training
- Organize the quarterly schedule of tutors for the Statistics Tutor and Study Center

DEPARTMENT OF STATISTICS, UNIVERSITY OF WASHINGTON
Teaching Assistant   September 2018 – Current
- STAT 535: Statistical Learning: Modeling, Prediction, and Computing
- STAT 529: Sampling Survey Techniques
- STAT 221: Statistical Concepts and Methods for the Social Sciences
- STAT 340: Introduction to Probability and Mathematical Statistics I
- STAT 341: Introduction to Probability and Mathematical Statistics II
- STAT 391: Quantitative Introductory Statistics for Data Science

DEPARTMENT OF STATISTICS, UNIVERSITY OF WASHINGTON
Tutor   September 2019 – June 2020
- Host drop-in tutoring sessions in the Statistics Tutor and Study Center
- Help other tutors answer questions from 400-level and graduate classes
- Host online appointments when classes are not in-person

DEPARTMENT OF STATISTICS, UNIVERSITY OF WASHINGTON
Mentor   January – March 2020
- Mentor undergraduate students in the Directed Reading Program   September – December 2020
- Prepare reading materials and host meetings each week
- Help the student prepare their final presentation and write-up

DEPARTMENT OF MATHEMATICS, STATISTICS AND COMPUTER SCIENCE, MACALESTER COLLEGE
Teaching Assistant   September 2015 – May 2016
- MATH 378: Complex Analysis   September 2017 – May 2018
- MATH 494-01: Cryptography/Number Theory
- MATH 494: Projects in Data Science
- MATH/COMP 365: Computational Linear Algebra
- COMP 110: Data/Computing Fundamentals

LEADERSHIP EXPERIENCE

MATHEMATICAL PROBLEM SOLVING CLUB, MACALESTER COLLEGE
Co-chair   January 2017 – May 2018
- Organize a weekly meeting on mathematical problem solving
- Prepare interesting mathematics problems and presentations on famous mathematicians

CHINESE CULTURE CLUB, MACALESTER COLLEGE
Board Member and Representative   September 2015 – May 2018
- Organize a bi-weekly multi-language Karaoke and game night event and design puzzles for the escape room
- Attend weekly board meeting to discuss and help with relevant events

AWARDS

Summa Cum Laude, Degree Certification, Macalester College, 2018
Phi Beta Kappa, Macalester Honors Society, 2018
Konhauser Achievement Prize, Mathematics, Statistics and Computer Science Department Honor Prize, 2018
1st place, Konhauser Problemfest held among liberal arts colleges in Minnesota, 2018
Wagon Competition Prize, Mathematics, Statistics and Computer Science Department Honor Prize, 2017
Best in Show, ASA Datafest at Macalester College, 2017
Outstanding Student Poster, Student Poster Session at Joint Mathematics Meetings, 2017

36 points, **298th place**, out of 4164 participants in Putnam Competition, 2016
1st place, MAA North Central Section Math Team Competition, 2014