

RENYU RAO

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Education

University of North Carolina at Chapel Hill

Aug 2023 – May 2028

Ph.D. Statistics and Operation Research

Chapel Hill, NC

- Focus on Probability Theory
- Courses: Probability Theory, Stochastic Process, Statistics Theory, Applied Statistics, Optimization

Columbia University

Aug 2021 – Dec 2022

M.A. Statistics, GPA:3.8

New York, NY

- Statistics Opportunity Scholarship Award (Half-Ride \$50,000)
- Courses: Measure Theoretic Probability(Ph.D.), Statistical Machine Learning, Non-parametric Statistics, Stochastic Process, Convex Optimization, Neural Network and Deep Learning, Functional Analysis, Linear Regression, Statistical Inference

Stony Brook University

Aug 2018 – May 2021

B.S. Mathematics, GPA:3.95/4.00

Stony Brook, NY

- Pure Math, Double Major in Applied Math & Statistics, Major GPA: 4.00/4.00
- Honors: Sum Cum Laude; Dean's List, Top 20% in Putnam
- Courses: Analysis on Manifold, Real Analysis, Complex Analysis(Ph.D.), Math Statistics(Ph.D.), Number Theory, Abstract Algebra, Statistical Learning, Data Structure, Data Analysis, Linear Algebra, Math Finance, Econometric

Skills

Technical Skills: R, Java, L^AT_EX, Microsoft Office, WordPress, Adobe Art

Language: English, Mandarin, Cantonese

Experience

Columbia University Statistic Department

Sep 2022 – Dec 2022

Mentee

New York, NY

- Work under Prof Bodhisattva Sen's supervision on the Nonparametric Maximum Likelihood Estimator for the Gaussian Mixture Model.
- Examined academic papers and books on location mixture model and report weekly with mentor.
- Showed the optimizer's existence and a representation derived from the Carathéodory Theorem on the likelihood vector space.

PolyMath Summer Research Program(REU)

June 2021 – Aug 2021

Participant

Online

- Worked with Prof. Steven Miller from Williams College in a collaborative five people group on research relating to Benford's Law of digit bias on both theory and applications.
- Examined academic papers on topics about Benford's Law and attended weekly seminars given by other mentors.
- Explored simulation in R and simulated Weibull distributed precincts-wised election profile.
- Used Benford's Law and chi-square test for detecting frauds on simulated voting data in R with sensitivity about 5%.

Math Competitions

Sep 2016 – Present

Leader and Grader

New York, NY

- Participated in nationwide contests as part of the New York City Math Team which selects Top 40 high school students among New York and scored Top 30 in ARML.
- Ranked Top 3% in American Mathematics Competitions(AMC) 12, Invited for American Invitational Mathematics Examination(AIME) and Scored Top 30%.
- Independently taught Probability and Number Theory Courses for BEAM, summer camp of Art of Problem Solving.
- Grade USA Mathematical Talent Search, national proof-based high school competitions
- Led Francis Lewis High School Math Team in M3 Modeling Competitions and other major contests like NYSML, NYCIML.

Leadership / Extracurricular

New York City Interscholastic Math League

May 2018 – May 2021

Coordinator

New York, NY

- Wrote and reviewed problems for student run NYC's premier high school math contest that were given to 450 students between 35 schools around NYC.
- Designed an algorithmic scoring system that extracted data from coaches and ranked automatically using Google Sheet.
- Organized contests distribution, coach meeting, award ceremony and other events for NYCIML and managed to expand the organization by 30%.

Additional

Activities: MA2PHD Club, Putnam Seminar, TA for Modular Chemistry, Math Club

Interests: Math, Cooking, Cycling, Video Editing, Computer Hardware, Game Strategy