Rajita Chandak

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Education

Princeton University **Princeton, NJ, USA**
Ph.D. in Operations Research and Financial Engineering *2019–Present*
Graduate Student in the Operations Research and Financial Engineering (ORFE) Department.
Advisor: Matias Cattaneo
Research Interests: Mathematical statistics, causal inference, theoretical machine learning, econometrics.

Princeton University **Princeton, NJ, USA**
M.Sc. in Operations Research and Financial Engineering *2019-2021*
Relevant Coursework: Statistical Theory, Probability Theory, Stochastic Calculus, Linear and Convex Optimization, Theory of Deep Learning, Mathematics of Data Science.

Brown University **Providence, RI, USA**
Sc.B. with Honors in Applied Mathematics-Economics *2015–2019*
Relevant coursework: Computational Probability and Statistics, Real Analysis, Operations Research (Probabilistic Models), Econometrics, Theory of General Equilibrium, Honors Linear Algebra, Partial and Ordinary Differential Equations, Honors Statistics and Inference.

Experience

Research Experience

Consistency of generalized regression trees **Princeton University**
Joint work with Matias Cattaneo and Jason Klusowski *2021-Present*
Working paper on consistency and applicability of generalized linear regression trees.

R and Python Software Development **Princeton University**
2021-Present
Contributing to the NP Packages and RD Packages collection with R and Python package development.

A Boundary Adaptive Conditional Density Estimator **Princeton University**
Joint work with Matias Cattaneo, Xinwei Ma and Michael Jansson *2020-Present*
Developed a new local polynomial kernel density estimation method. Proved uniform consistency and inference procedures using strong approximation methods. Paper and companion R and Python packages to be released soon.

Honors Thesis **Brown University**
Department for Applied Mathematics *2018-2019*
Researched *energy-aware optimization of scalable load balancing strategies* under guidance of Kavita Ramanan. Thesis focused on understanding stationary behaviour of TABS scheme under general service time distribution and identifying parameters to achieve greater efficiency and lower energy costs. Explored long term stationary behaviour of the system under the TABS scheme through limit theorems.

Research Experience for Undergraduates (REU) **Worcester Polytechnique Institute**
Center for Industrial Mathematics and Statistics, Worcester Polytechnic Institute *2018*
8-week summer research sponsored by NSF on financial modelling under the mentorship of Marcel Blais and Stephan Sturm and industry liaisons Doherty Advisors LLC and State Street Global Services. (*Award DMS 1757685*)
Doherty Advisors LLC Project: Created options pricing model for VIX and TYVIX with real-time data scraping from Bloomberg Terminal for investment strategies. Programming in Python and R.
State Street Project: Worked on methodology to automate trade exception processing with the use of machine learning tools. All programming done in Python.

Research Experience for Undergraduates (REU) **CSU Chico**
California State University, Chico *2017*
7-week research sponsored by NSF on Stochastic Processes with Dr. Ben Nolting. Developed Spatial Point Analysis of racially segregated communities and environmental justice factors using 2010 Census and EPA data. All programming done in Mathematica. (*Award NSF 1559788*)

Teaching Experience

Graduate Assistant in Instruction **Princeton, NJ**
ORFE Department, Princeton University *2020-Present*
Graduate AI for the following courses:
ORF 524 (Fall 2021)
ORF 245 (Fall 2020, Spring 2021)

Senior Thesis Writer's Group Co-Leader **Princeton, NJ**
ORFE Department, Princeton University *2020-Present*
Host programming workshops and office hours to support 4th year undergraduate students in the ORFE department with Thesis research, development and writing.

Undergraduate Teaching Assistant **Providence, RI**
Applied Mathematics Department, Brown University *Fall 2017, Spring 2019*
TA for Dr. Ben Kunsberg's APMA 1650 (Fall 2017).
TA for Dr. Debankur Mukherjee's APMA1720: Monte Carlo Simulations with Applications to Finance (Spring 2019).
TA for Dr. Srikar Prasad's MPA2065:Intro. to Data Science for the Masters of Public Affairs program (Spring 2018).

Tutor Leader and Peer Tutor **Providence, RI**
Member of Tutor Advisory Board, Dean of the College, Brown University *2017–2019*
Tutored for ECON1110 Intermediate Microeconomics, ECON1210 Macroeconomics and ECON1629 Research Methods courses throughout the academic year. As a Tutor Leader, I organized monthly check-ins with and provided support to other Economics tutors.

Programming Skills

Advanced Proficiency: Python, R, LaTeX, MATLAB, Mathematica
Intermediate Proficiency: C++, STATA, Java

Conferences

Joint Mathematics Meeting **Baltimore, MD**
AMS, MAA *16-19 January, 2019*
Presented results of research done during REU at WPI (Summer 2018)

Graduate Research Opportunities for Women **Ann Arbor, MI**
University of Michigan *26-28 October, 2018*

Women in Mathematics in New England (WIMIN) **Northampton, MA**
Smith College *22 September, 2018*
Delivered a talk based on research done during REU at WPI.

MIST Workshop **Worcester, MA**
WPI, Applied and Industrial Mathematics Institute for Secondary Teaching *16 July, 2018*
Delivered a talk titled *Option Pricing for the VIX Using a Risk-Neutral Historical Distribution* based on research done during REU at WPI.

Symposium for Undergraduates in Mathematical Sciences (SUMS) **Providence, RI**
Brown University *17 March, 2018*
Delivered a talk based on research done during REU at CSU, Chico.

Joint Mathematics Meeting **San Diego, CA**
AMS, MAA *9-13 January, 2018*
Presented research work done during REU at CSU, Chico.

Languages

English: Native Proficiency **Hindi:** Native Proficiency