Matthew Miller

Data Scientist and Statistician

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Education

North Carolina State University   *Raleigh, NC*
PhD Statistics   *Expected May 2021*

North Carolina State University   *Raleigh, NC*
M.R. Statistics   *May 2018*

Duke University   *Durham, NC*
M.A. Teaching, *Secondary Mathematics Concentration*   *June 2014*

St. Mary's College of Maryland   *St. Mary's City, MD*
B.A. Mathematics, *Magna Cum Laude*   *May 2011*

Skills

Computer	R (advanced), Matlab (proficient), SAS (some knowledge), C++ (some knowledge), Keras (some knowledge), Git
Data Analysis	Bayesian analysis, spatial data analysis, spectral methods, Markov chain Monte Carlo, causal inference, deep learning
Communication	statistical consulting, presenting, technical writing, teaching, interdisciplinary collaboration, LaTeX, Overleaf, Google office suite

Experience

NC State University   *Raleigh, NC*
Research Assistant   *August 2019 - Present*
- Using machine learning and Bayesian optimization techniques to discover materials with desirable properties
- Collaboration with Carnegie Mellon University Materials Science and Engineering researchers

Fellow, NSF Data-Enabled Science and Engineering of Atomic Structure   *August 2017 - July 2019*
- Developed new Bayesian spatial measurement error modeling method to study atomic-scale properties of ferroelectric materials from scanning transmission electron microscope images

Teaching Assistant   *August 2016 - May 2017*
- Held office hours to assist students with homework and online quizzes
- Graded exams for undergraduate intro statistics courses and SAS assignments for graduate statistics courses

Durham Public Schools   *Durham, NC*
High School Mathematics Teacher   *August 2013 - June 2016*
- Taught nearly all math courses from remedial pre-algebra through AP Calculus BC in two high-needs public schools in Durham, NC
- Long-term substitute and student teacher during the 2013-2014 school year and M-Level Licensed teacher from August 2014 through June 2016

Fidelity Investments   *Research Triangle Park and Cary, NC*
Senior Defined Benefit Specialist   *September 2012 - August 2013*
- Performed non-standard pension calculations for large clients in Fidelity's Benefit Plan Services group
- Resolved difficult situations with our clients' pension plan participants
- Promoted to "senior" status after ten months

C2 Education   *Olney and Germantown, MD*
Tutor   *July 2011 - June 2012*
- Taught mathematics, reading and writing to grade school students (K-12) with a focus on high school and SAT math

Publications

- **MJ Miller**, MJ Cabral, EC Dickey, JM LeBeau, and BJ Reich. "Accounting for Location Measurement Error in Atomic Resolution Images of Crystalline Materials," *in review*.

Projects

Huckberry - Statistical Consultant
- Performed statistical analysis for A/B test and provided written report and recommendation based on analysis for online clothing retailer

EPA - Statistical Consultant
- Created a spatiotemporal statistical model with two other graduate students that uses Gaussian Processes to improve particulate matter concentration predictions based on the EPA's CMAQ climate model and provided a written report and oral presentation to our clients

Spatial Causal Inference and Deforestation in Costa Rica
- Developing a spatial point process causal inference framework to study the impact of government programs for farmers on deforestation in Costa Rica with researchers at the USDA Forest Service and NC State Department of Forestry and Environmental Resources

Spectral Spatial Statistics Method Development
- Creating a new method for performing statistical inference on spatial Gaussian processes using spectral methods

Atomic Disorder Simulation - University of New South Wales Collaboration
- Spent Summer 2019 in Sydney, Australia developing new methods to simulate atomic-scale disorder in crystalline materials

Teaching Statistical Thinking Coursera Course - Duke University
- Designed, created activites, filmed and wrote scripts for pedagogy videos for teachers to integrate what they learn in the course into their lessons

National Institute of Standards and Technology - Summer Fellowship
- Researched viscoelastic properties of polymer thin films exposed to solvent vapor

NASA Goddard Space Flight Center - Summer Internship
- Created MATLAB scripts to time parallel processor performance (through Star-P Supercomputing) on decomposing and recomposing images for group working on the James Webb Space Telescope.

Awards and Funding

Financial Awards
- NSF Data-Enabled Science and Engineering of Atomic Structure Fellowship: *$34,000 per year plus tuition and fees for 2 years*
- NSF US-Australia International Research Experience for Students: *$8200 stipend for flight, accommodation, and per diem*
- NSF Robert Noyce Teaching Fellowship: *$15,000 plus tuition and fees*
- Duke University Durham Teaching Fellowship: *In conjunction with Noyce Fellowship above*

Service Awards
- Riverside High School Teacher of the Month
- St. Mary's College of Maryland Mathematics Foundation Service Prize

Notable Conferences and Workshops

Conferences
- UNCG Regional Mathematics and Statistics Conference, November 2019 (Oral Presentation Abstract Accepted)
- ASA Conference on Statistical Practice, February 2019 (Short Course: *Big Data, Data Science, and Deep Learning for Statisticians)*
- Noyce National Conference, June 2014 (Presented Poster: *Teaching High School Freshmen about Surveys and Missing Data*)

Workshops
- NISS Ingram Olkin Statistics Serving Society Form: Gun Violence, The Statistical Issues, June 2019 (Received Funding to Attend)
- STATMOS Workshop on Spatial and Spatio-temporal Statistical Extreme Value Analysis and Oceanography, May 2019 (Received funding to Attend)
- AAAS CASE Science Policy and Advocacy Workshop, March 2019 (Attendance funded by the American Statistical Association)
- MAA PREP Workshop: Teaching Mathematical Modeling, July 2015