Sara K. Venkatraman

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Research interests

Dynamical systems and differential equations, time series analysis, spatiotemporal modeling, numerical analysis, network science

Education

2019 – 2024 **Cornell University** – Ithaca and New York, NY
PhD in Statistics
Dissertation: *Parameter estimation and inference for nonlinear dynamical systems*
Committee: Martin T. Wells, Sumanta Basu, Giles Hooker

2019 – 2022 **Cornell University** – Ithaca, NY
MS in Statistics

2017 – 2019 **Yale University** – New Haven, CT
MA in Statistics

2013 – 2017 **Cornell University** – Ithaca, NY
BA in Statistics
Minor in Computer Science

Academic appointments

2024 – Present **Senior Research Associate in Statistics** – New York, NY
Weill Cornell Medicine, Center for Global Health
Division of Clinical Epidemiology and Evaluative Sciences Research

Awards, grants, and fellowships

2024 International Society for Bayesian Analysis Travel Grant
2023 William Lewis Brown Scholarship (Cornell Bowers College of CIS)
2023 Cornell Graduate School Conference Travel Grant
2023 Predoctoral Fellowship, Cornell-Hunter Health Equity Research training program
2022 Distinguished Leadership in Service Award (Cornell Bowers College of CIS)
2022 Cornell Center for Pandemic Prevention and Response Seed Funding Grant, co-investigator
2022 Silver Award, Student Paper Competition (Upstate New York Statistics Conference)
2022 Cornell Tech Public Interest Technology Fellowship (link)
2022 International Society for Bayesian Analysis Travel Grant
2021 Student Paper Competition Winner (International Indian Statistical Association; link)
2020 Cornell Bowers College of Computing and Information Science (CIS) Dream Grant
2020 John J. Bartko Scholarship (American Statistical Association; link)
2016 Outstanding Teaching Assistant in Computer Science (Cornell)

Publications and preprints

* denotes co-first authorship.

2024 **A significance-driven approach to inferring partial differential equations from spatiotemporal data.** Sara Venkatraman, Sumanta Basu, Martin T. Wells. *In preparation.*

2024 **Clusters of long COVID among patients hospitalized for COVID-19 in New York City.** Sara Venkatraman, Jesus Maria Gomez Salinero, Adina Scheinfeld, Sean Houghton, David Redmond, Monika M. Safford, Mangala Rajan. *BMC Public Health*.

2023 **Inference for sparse reconstruction of ordinary differential equations.** Sara Venkatraman, Sumanta Basu, Martin T. Wells. *In submission*.
2nd place in 2022 Upstate New York Statistics Conference student paper competition.

2023 **An empirical Bayes approach to estimating dynamic models of co-regulated gene expression.** Sara Venkatraman, Sumanta Basu, Andrew G. Clark, Sofie Delbare, Myung Hee Lee, Martin T. Wells. *Data Science in Science.*
IISA Student Paper Competition winner.

2023 **Revisiting race stratification in the atherosclerotic cardiovascular pooled cohort risk equations.** Arnab K. Ghosh*, Sara Venkatraman*, Michael G. Nanna, Monika M. Safford, Lisandro D. Colantonio, Todd M. Brown, Laura Pinheiro, Eric D. Peterson, Ann Marie Navar, Madeline R. Sterling, Orysya Soroka, Musarrat Nahid, Samprit Banerjee, Parag Goyal. *JAMA Cardiology*.

2023 **Association of phenotypic frailty and hand grip strength with telomere length in systemic lupus erythematosus**. Sarah B. Lieber, Robyn A. Lipschultz, Syed S. Zahid, Mangala Rajan, Sara Venkatraman, Myriam Lin, M. Carrington Reid, Neal F. Lue, Lisa A. Mandl. *Lupus Science & Medicine*.

2022 **Time series transcriptome analysis uncovers regulatory networks and a role for the circadian clock in the *Drosophila melanogaster* female's response to sex peptide.** Sofie Delbare, Sara Venkatraman, Kate Scuderi, Martin T. Wells, Mariana F. Wolfner, Sumanta Basu, Andrew G. Clark. *PNAS*.

2022 **Association between city-wide lockdown and COVID-19 hospitalization rates in multigenerational households in New York City.** Arnab K. Ghosh*, Sara Venkatraman*, Evgeniya Reshetnyak, Mangala Rajan, Anjile An, John K. Chae, Mark A. Unruh, David Abramson, Charles DiMaggio, Nathaniel Hupert. *PLOS ONE*.

2021 **Association between neighborhood overcrowdedness, multigenerational households, and COVID-19 in New York City.** Arnab K. Ghosh*, Sara Venkatraman*, Orysya Soroka, Evgeniya Reshetnyak, Mangala Rajan, Anjile An, John K. Chae, Christopher Gonzalez, Jonathan Prince, Charles DiMaggio, Said Ibrahim, Monika M. Safford, Nathaniel Hupert. *Public Health*. Coverage: Cornell Statistics, Cornell Chronicle.

Conference and seminar presentations

Inference for sparse recovery of partial differential equations

August 2024	Joint Statistical Meetings, Uncertainty Quantification in Complex Systems Group
July 2024	World Meeting of the International Society of Bayesian Analysis
	Sparse recovery of dynamical systems and fixed point analysis
August 2023	Joint Statistical Meetings, Uncertainty Quantification in Complex Systems Group
November 2022	Time series research group, Professor David Matteson (Cornell)
	Clustering analysis of long COVID hospitalized patients in New York City
September 2023	Weill Cornell Medical College, Department of Medicine Research Retreat
	Exploratory data analysis and modeling for public buildings in New York City
March 2023	New York City Open Data Week
December 2022	New York City Department of Design and Construction
	Sparse recovery of dynamical systems with inference
September 2023	Cornell Celebration of Statistics and Data Science (poster)
May 2023	SIAM Conference on Applications of Dynamical Systems
May 2023	Graduate Student Research Conference, National Institute of Statistical Sciences
August 2022	Joint Statistical Meetings, Institute of Mathematical Statistics complex systems session
June 2022	World Meeting of the International Society for Bayesian Analysis (poster)
May 2022	Upstate New York Statistics Conference
March 2022	Cornell Statistics Graduate Society, student seminar
	A Bayesian approach to estimating dynamic models of gene expression
March 2022	Time series research group, Professor David Matteson (Cornell)
October 2021	Women in Statistics and Data Science Conference, American Statistical Association
August 2021	Joint Statistical Meetings, Section on Bayesian Statistical Science
July 2021	42nd Conference of the International Society for Clinical Biostatistics
June 2021	Women in Network Science at Networks 2021
June 2021	World Meeting of the International Society for Bayesian Analysis
June 2021	Graduate Student Research Conference, National Institute of Statistical Sciences
June 2021	Symposium on Data Science and Statistics, American Statistical Association
May 2021	SIAM Conference on Applications of Dynamical Systems
May 2021	2021 International Indian Statistical Association Conference
	The impact of crowded housing on COVID-19 transmission dynamics in NYC
April 2021	Upstate New York Statistics Conference
January 2021	Weill Cornell Medical College, General Internal Medicine Research Seminar

Tutorials

	Introduction to spatiotemporal modeling in R
February 2024	Conference on Statistical Practice, American Statistical Association
October 2022	New York City Office of Technology and Innovation, Analytics Learning Summit
	Introduction to creating R packages and using GitHub
March 2024	Undergraduate research group, Professor Sreyoshi Das, Cornell
October 2023	STSCI 6520 (Statistical Computing I) guest lecture, Cornell
November 2022	STSCI 6520 (Statistical Computing I) guest lecture, Cornell

Introduction to Mathematica for statistics
November 2021 Cornell Statistics Graduate Society, student seminar

Introduction to R
November 2016 Cornell Scientific Software Club

Introduction to LaTeX
September 2015 Women in Computing at Cornell

Teaching experience

Fall 2023 STSCI 6520: Statistical Computing I, Teaching assistant – Cornell
Summer 2023 STSCI 2100: Introductory Statistics, Teaching assistant – Cornell
Fall 2022 STSCI 6520: Statistical Computing I, Teaching assistant – Cornell
Fall 2021 BTRY 6010: Statistical Methods I, Teaching assistant – Cornell
Fall 2019 STSCI 5030: Linear Models with Matrices, Teaching assistant – Cornell
Spring 2019 S&DS 563: Multivariate Statistics, Teaching assistant – Yale
Fall 2018 S&DS 612: Linear Models, Teaching assistant – Yale
Fall 2017 S&DS 105: Introduction to Statistics for Medicine, Teaching assistant – Yale
Spring 2016 STSCI 2150: Statistics for Biology, Teaching assistant – Cornell
Fall 2014 – Spring 2017 CS 1112: Computing with Matlab, Teaching assistant – Cornell
Received 2016 departmental award for undergraduate teaching in computer science.

Industry experience

Summer 2018 **JPMorgan Chase & Co.**, Data Analysis/Engineering Intern – New York, NY
Equities trading analytics

Summer 2017 **JPMorgan Chase & Co.**, Software Engineering Intern – New York, NY
Equities electronic trading technology

Summer 2016 **JPMorgan Chase & Co.**, Software Engineering Intern – New York, NY
Investment management technology

Summer 2015 **Microsoft**, Software Engineering Intern – Redmond, WA
Windows operating systems group

Reviewing

2023 **Reviewer**, *Journal of the Royal Statistical Society: Series B*
2022 **Reviewer**, *Data Science in Science*

Service and mentorship

2021 – 2024 **Cornell Directed Reading Program**, Co-organizer and mentor
Received funding for a reading program that pairs undergraduates with PhD student mentors in the mathematical sciences to undertake semester-long reading projects

on topics of mutual interest. Supervised reading projects on population dynamics, ergodic theory, reinforcement learning, and statistical learning theory.

Fall 2021 **Cornell Statistics Graduate Society**, Professional development coordinator
Organized a biweekly graduate student research seminar in statistics.

Joint Statistical Meetings
August 2023 Conference session chair
July 2018 Conference docent (advised first-time JSM attendees on navigating the conference)

Professional memberships

2022 – Present International Society for Bayesian Analysis
2021 – Present Society for Industrial and Applied Mathematics
2018 – Present Institute of Mathematical Statistics
2016 – Present Caucus for Women in Statistics
2012 – Present American Statistical Association

Skills

Programming:
Proficient: R, Matlab, Mathematica, Java
Familiar: Python, OCaml, C

Software: LaTeX, Git

Languages: English (native), French (advanced)

Coursework

Statistics: Asymptotic statistics, mathematical statistics, nonparametric statistics, generalized linear models, functional data analysis, high-dimensional statistics, statistical computing, categorical data analysis, optimal transport

Mathematics: Real analysis, measure theory, functional analysis, measure-theoretic probability and martingales, numerical methods for differential equations, numerical linear algebra, perturbation theory

Computer science: Functional programming, systems programming, object-oriented programming and data structures, bioinformatics programming

Other: Invited to participate in the workshop "The Blessing of Dimensionality – High Dimensional Geometry, Concentration of Measure" at the University of Connecticut, July 2024.

Other interests

Distance running
Classical piano