

Siddharth Vishwanath

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Current Position

University of Virginia, Department of Statistics
Tenure-Track Assistant Professor

09/2026–Present

Education

Penn State University

Ph.D. in Statistics

2017–2023

- Dissertation: “Statistical Learning for Robust Topological Inference”
- Advisor: Bharath Sriperumbudur

Indian Institute of Technology (IIT) Kanpur

B.S. + M.Sc. (Integrated) in Mathematics

2010–2015

- Thesis: “Bayesian Inference and Optimal Schemes for Progressive Censoring”

Previous Positions

University of California San Diego, Department of Mathematics
Stefan E. Warschawski Visiting Assistant Professor

08/2023–08/2026

IBM Research

AI Research Intern

05/2022–08/2022

Statistical Consulting Center, Penn State

Research Assistant & Consultant

08/2019–05/2022

The Institute of Statistical Mathematics, Tokyo

Visiting Student Researcher

- Host: Prof. Kenji Fukumizu
- Host: Prof. Kenji Fukumizu & Prof. Satoshi Kuriki

11/2019–01/2020
06/2018–08/2018

Goldman Sachs

Senior Quantitative Analyst

07/2016–08/2017

Nomura

Quantitative Analyst

06/2015–07/2016

Honors & Awards

Travel Award

NSF National Artificial Intelligence Research Resource (NAIRR) Workshop

01/2026*

NSF ACCESS Award (MTH250063)

Expanding Repelling-Attracting Hamiltonian Monte Carlo for Large-Scale Bayesian Inference Problems
750,000 Credits $\approx$ \$20,000/1 year

10/2025

Alumni Association Dissertation Award

Penn State University

04/2023

Travel Award

Geometric Data Analysis Conference, University of Chicago

06/2019

Proficiency Medal

IIT Kanpur

06/2015

Academic Excellence Award

IIT Kanpur

05/2015

KVPY Fellowship

Department of Science & Technology (Government of India)

07/2010–06/2015

- [1] **Confidence Sets For Multidimensional Scaling**
Siddharth Vishwanath and Ery Arias-Castro
Under Review at the Annals of Statistics (arXiv:2510.22452). 2025.
- [2] **Minimax Optimality Of Classical Scaling Under General Noise Conditions**
Siddharth Vishwanath and Ery Arias-Castro
Information & Inference: A Journal of the IMA (To appear; preprint: arXiv:2502.00947). 2026.
- [3] **Signal Recovery From Random Dot-Product Graphs Under Local Differential Privacy**
Siddharth Vishwanath and Jonathan Hehir
AISTATS. 2025.
- [4] **Stability Of Sequential Lateralization And Of Stress Minimization In The Presence Of Noise**
Ery Arias-Castro and Siddharth Vishwanath
SIAM Journal on Mathematics of Data Science (SIMODS). 2025.
- [5] **On The Limits Of Topological Data Analysis For Statistical Inference**
Siddharth Vishwanath, Kenji Fukumizu, Satoshi Kuriki, and Bharath K Sriperumbudur
Foundations of Data Science. 2025.
- [6] **Repelling-Attracting Hamiltonian Monte Carlo**
Siddharth Vishwanath and Hyungsuk Tak
Under revision at JMLR (arXiv:2403.04607). 2024.
- [7] **Adversarially Robust Topological Inference**
Siddharth Vishwanath, Bharath K Sriperumbudur, Kenji Fukumizu, and Satoshi Kuriki
Journal of Machine Learning Research (To appear; preprint: arXiv:2206.01795). 2026+.
- [8] **The Shape Of Edge Differential Privacy**
Siddharth Vishwanath and Jonathan Hehir
Theory and Practice of Differential Privacy Workshop. ICML. 2021.
- [9] **Robust Persistence Diagrams Using Reproducing Kernels**
Siddharth Vishwanath, Kenji Fukumizu, Satoshi Kuriki, and Bharath K Sriperumbudur
NeurIPS. 2020.
- [10] **Monolith Soil Core Sampling To Develop Nitrate Testing Protocol For Manure Injection**
Robert J Meinen, Douglas B Beegle, Siddharth Vishwanath, Peter JA Kleinman, Louis S Saporito, et al.
Soil Science Society of America Journal. 2023.
- [11] **Bayesian Inference And Optimal Censoring Scheme Under Progressive Censoring**
Siddharth Vishwanath and Debasis Kundu
Advances In Reliability And System Engineering. 2016.

Selected Talks & Presentations

Invited Talks

ASA Statistical Learning and Data Science Conference (SLDS 2026: Inference and Intelligence) <i>Confidence Sets for Multidimensional Scaling</i>	11/2026*
International Symposium on Nonparametric Statistics (ISNPS 2026) <i>Minimax Signal Recovery in Random Dot-Product Graphs under Local Differential Privacy</i>	06/2026
Combinatorics & Probability Seminar, UC Irvine <i>A Statistical Framework for Multidimensional Scaling</i>	02/2026*
Statistics Seminar, UC San Diego <i>A Statistical Framework for Multidimensional Scaling</i>	12/2025

*upcoming

BayesComp 2025*Repelling-Attracting Hamiltonian Monte Carlo*

07/2025

Flatiron Institute, Center for Computational Mathematics*Repelling-Attracting Hamiltonian Monte Carlo*

06/2024

Center for Astrostatistics (CAst) Seminar, Penn State*Repelling-Attracting Hamiltonian Monte Carlo*

08/2022

Stochastic Modeling and Computational (SMAC) Statistics Seminar, Penn State*Statistical Inference for Topological Data Analysis*

09/2021

Contributed Talks & Presentations**Joint Math Meetings (JMM 2025)***Outwitting Outliers: A framework for computing persistence diagrams under adversarial contamination*

01/2025

JuliaCon 2023*Automatic Differentiation for Statistical and Topological Losses*

07/2023

Joint Statistical Meetings (JSM 2021)*Efficient and Robust Topological Inference using Reproducing Kernels*

08/2021

IMSI Workshop on Topological Data Analysis*Robust Persistence Diagrams using Reproducing Kernels*

04/2021

NeurIPS 2020*Robust Persistence Diagrams using Reproducing Kernels*

12/2020

Joint Statistical Meetings (JSM 2020)*Statistical Invariance of Betti Numbers in the Thermodynamic Regime*

08/2020

Applied Topology: Methods, Computation, and Sciences (ATMCS) Conference*Statistical Invariance of Betti Numbers in the Thermodynamic Regime*

04/2021

Geometric Data Analysis Conference, University of Chicago*Statistical Invariance of Betti Numbers in the Thermodynamic Regime*

05/2019

Teaching**Data Analysis and Inference***UC San Diego, Math 189**Winter 2024, Spring 2024, Fall 2024, Winter 2025***Statistical Methods***UC San Diego, Math 183**Fall 2023, Winter 2024, Fall 2024, Spring 2025***Data Science Through Statistical Reasoning***Penn State, Stat 380**Spring 2023***Foundations of Mathematical Statistics***Penn State, Math/Stat 319**Fall 2022*

Service & Leadership

Workshops & Meetings**AMS Special Session on the Mathematics of Interpretable, Explainable and Adversarial AI (JMM 2025)***Organizer*

01/2025

Bioinformatics Workshop at Maharani Laxmi Ammanni College for Women*Tutorial Organizer*

06/2016

Conducted a three day session on statistical analysis for biostatistics with hands-on experience using R.

Professional Service

Reviewer

05/2019–Present

- Journals: Journal of Machine Learning Research, Annals of Statistics, Electronic Journal of Statistics, Foundations of Data Science.
- Conferences: NeurIPS, ICML, AISTATS, ICLR.

Professional Membership

05/2018–Present

- American Mathematical Society (AMS), American Statistical Association (ASA), Institute of Mathematical Statistics (IMS), International Society for Bayesian Analysis (ISBA).

Mentoring

Student Foundation Investment Committee (SFIC), UC San Diego

Faculty Advisor

11/2024–09/2025

Penn State Statistics Graduate Students' Association (SGSA)

Graduate Mentor

05/2018–05/2020

- Research and professional mentoring for incoming PhD students, and served on student discussion panels.
- Organized the workshops on Tidyverse & Functional Programming in R (2018, 2019, 2020, 2021), Git & version control (2022), Topological Data Analysis (2020).

Statistical Learning Theory Working Group Penn State

Co-Organizer

08/2018–05/2019

Students' Senate, IIT Kanpur

Finance Convener & Undergraduate Senate Representative

07/2013–05/2015

Miscellaneous

Open Source Projects

-  TDAOpt.jl: Julia package for automatic-differentiation of statistical & topological loss functions.
-  RobustTDA.jl: Julia package for flexible & robust computation of persistent homology in the presence of noise.
-  RA-HMC.jl: Julia package for sampling from high-dimensional multimodal distributions using RA-HMC.
-  Robust PDs: R codebase for computing robust persistence diagrams using reproducing kernels.

Programming Julia, Python, R ■■■■■ C/C++, SQL, HTML, CSS ■■■■ $\text{\LaTeX}$ ■■■■■

Frameworks (F)Lux.jl, Turing.jl, SciML, JAX, PyTorch, NumPy, Pandas, SciPy, Polars, Data.Table, Tidyverse