	Professor, Department of Statistics, Harvard University, 1 Oxford St, Cambridge MA, USA - 02138-2901 http://www.people.fas.har	Phone: (+1) 617-496-1085 pillai@fas.harvard.edu vard.edu/~pillai	
Professional Experience	Professor, Department of	Statistics, Harvard University, July 2017- Present.	
	Associate Professor, Depa June 2017.	rtment of Statistics, Harvard University, July 2014-	
	Assistant Professor, Department of Statistics, Harvard University, July 2010 - June 2014.		
	Post Doctoral Research Fe (CRiSM), Warwick Univer Mentors: Gareth O. Roberts a	llow, Center for Research in Statistical Methodology rsity, 2008 - 2010. nd Andrew M. Stuart.	
Education	Ph. D. in Statistics, Depar Advisor: Robert L. Wolpert Thesis title : Lévy Random M	easures: Posterior Consistency and Applications.	
	Masters in Statistics, Depa	artment of Statistical Sciences, Duke University. 2007	
	Bachelor of Technology, In	dian Institute of Technology, Chennai. 2003	
Industry	Chief Scientist, Correlation-	one.	
Affiliate Positions	s Harvard University Center	r for Environment, 2018 - Present.	
Awards and Honours	• IISA Young Research Indian Statistical Associa	her Award, Theory, 2018, Awarded by the International ation.	
	• Clarke Fund Research A	ward, Harvard University.	
	• Elected Fellow, International Statements of the second s	ational Statistical Institute.	
	• Winner, SBSS Studer Statistical Association, S Meetings, Salt Lake City	At Paper Competition, 2007 , Awarded by the American ection on Bayesian Statistical Science, at the Joint Statistical , Utah, 2007.	
Key Lectures/Talks	• Master Lecturer, Hali	cioglu Data Science Institute, UC Sandiego, 2019.	
	• Co-discussant for the Society. Talk presented a	Markov Lecture 2016, chosen by the Applied Probability at Informs, 2016.	
Editorial Work	• Associate Editor, Jou and Methods, 2014-Cv	rnal of the American Statistical Association - Theory rrent.	
	• Associate Editor, Jou Current.	rnal of the Royal Statistical Society, Series B, 2018-	
	• Associate Editor, SIA Current.	AM Journal on Mathematics of Data Science, 2018-	

- 1. Does Hamiltonian Monte Carlo mix faster than a random walk on multimodal densities? (Mangoubi, O., Pillai, N.S.and Smith, A.)
- 2. Simple conditions for metastability of continuous Markov chains (Mangoubi, O., Pillai, N.S.and Smith, A.)
- 3. Bias correction in daily maximum and minimum temperature measurements through Gaussian process modeling (Rischard, M., Mc Kinnon K. and Pillai, N.S.)
- 4. Optimal Scaling of the MALA algorithm with Irreversible Proposals for Gaussian targets (Ottobre, M., Pillai, N.S. and Spiliopoulos, K.)
- 5. A Divide and Conquer Strategy for High Dimensional Bayesian Factor Models (Sabnis, G., Pati, D., Engelhardt, B., and Pillai, N.S.)
- 6. Ratios and Cauchy distribution (Pillai, N.S.)
- 7. Principal stratification in the Twilight Zone: Weakly separated components in finite mixture models (Feller, A., Greif, E., Miratrix, L. and Pillai, N.S.)
- 8. Gaussian process regression with location errors (Cervone, D. and Pillai, N.S.)
- 9. Ergodicity of approximate MCMC and applications to large data sets (Pillai, N.S. and Smith, A.)
- 10. Degrees of freedom correction for combining regression with factor models (Perry, P.O. and Pillai, N.S.)
- 11. Finite sample properties of adaptive markov chains via curvature (Pillai, N.S. and Smith, A.)
- 12. Statistical inference for stochastic differential equations with memory (Pillai, N.S. and Lysy, M.)

Published/To Appear:

- 1. Diagnosing missing always at random in multivariate data (Bojanov, I., Rubin, D.B.) **Biometrika**, 2019, In Press.
- 2. Designs for estimating the treatment effects in networks with interference (Jagadeesan, R., Pillai, N.S. and Volfovsky, A.)**Annales of Statistics**, 2019, In Press.
- 3. Mixing Times for a Constrained Ising Process on the Two-Dimensional Torus at Low Density (Pillai, N.S. Smith, A.), Annales de l'Institut Henri Poincaré (B) Probabilités et Statistiques, 2018, In Press.
- 4. Inefficiency of Data Augmentation for Large Sample Imbalanced Data (Johndrow, J.E., Smith, A., Dunson, D.B. and Pillai, N.S.) Journal of the American Statistical Association, 2018, In Press.
- 5. On the mixing time of Kac's walk and other constrained Gibbs samplers (Pillai, N.S. and Smith, A) Annals of Probability, 2018, In Press.
- 6. Asymptotic analysis of the random walk Metropolis algorithm on ridged densities (Beskos, A., Roberts, G., Thiery, A. and Pillai, N.S.), **Annals of Applied Probability**, 2018, In Press.
- 7. Parallel local approximation MCMC for expensive models (Conrad, P., Davis, A., Marzouk, M., Pillai, N.S. and Smith, A.) **SIAM Journal of Uncertainty Quantification**, 2018, In Press.
- 8. Elementary bounds on mixing times for decomposable chains (Pillai, N.S. and Smith, A.) Stochastic Processes and Applications, 27(1), 631-650, 2017.
- 9. Kac's walk on the *n*-sphere mixes in $n \log n$ steps (Pillai, N.S. and Smith, A.) Annals of Applied Probability, 27(1), 631-650, 2017.
- Sub-optimality of some continuous shrinkage priors (Bhattacharya, A., Dunson, D.B., Pati, D. and Pillai, N.S.) Stochastic Processes and Applications, Special issue in memoriam Prof. Evarist Gine, 126(12), 3828-3842, 2016.
- 11. Parallel Markov Chain Monte Carlo via Spectral Clustering (Basse, G., Smith, A. and Pillai, N.S.) AI-Stats Conference, Oral Presentation, Proceedings of the 19th International Conference on Artificial Intelligence, 1318-1327, 2016.
- 12. More Powerful Multiple Testing in Randomized Experiments with Non-Compliance (Lee, J., Forastiere, L., Miratrix, L. and Pillai, N.S.) **Statistica Sinica**, 2017, In Press.

- Model comparison for single particle tracking in biological fluids (Lysy, M., Pillai, N.S., Hill, D.B., Forest, G., Mellnik, J., Vasquez, P. and Mckinley, S.A.) Journal of the American Statistical Association - Applications and Case Studies, 111 (516), 1413–1426, 2016.
- 14. The use of a single pseudo-sample in approximate bayes computation (Bornn, L., Pillai, N.S., Smith, A. and Woodard, D.) Statistics and Computing, 27(3), 583-590, 2017.
- 15. Single particle passive microrheology in biological fluids with drift (Mellnik, J.W., *et. al.*) Journal of Rheology, 60(3), 379-392, 2016.
- An unexpected encounter with Cauchy and Lévy (Pillai, N.S. and Meng, X-L.) Annals of Statistics, 44(5), 2089-2097, 2016.
- 17. Mixing times for a constrained Ising model on the torus at low density (Pillai, N.S. and Smith, A.) Annals of Probability, 45(2), 1003-1070, 2017.
- Asymptotically exact MCMC algorithms for local approximations of computationally intensive models. (Conrad, P.R., Marzouk, Y.M., Pillai, N.S. and Smith, A.) Journal of the American Statistical Association - Theory and Methods, 111, 1591-1607, 2017.
- 19. Statistical inference for dynamical systems: a review (McGoff, K., Mukherjee, S. and Pillai, N.S.) **Statistical Surveys**, 9, 209-252, 2015.
- Bayesian nonparametric weighted sampling inference (Si, Y., Pillai, N.S. and Gelman, A.) Bayesian Analysis, 10(3), 605-625, 2015.
- Hypothesis testing for sparse binary regression (Mukherjee, R., Pillai, N.S. and Lin, X.) Annals of Statistics, 43(1), 352-381, 2015.
- Dirichlet-Laplace priors for optimal shrinkage (Bhattacharya, A., Pati. D., Pillai, N.S. and Dunson, D.B.) Journal of the American Statistical Association Theory and Methods, 110 (52), 1479-1490, 2015.
- Consistency of maximum likelihood estimation for some dynamical systems (McGoff, K., Mukherjee, S., Nobel, A. and Pillai, N.S.) Annals of Statistics, 43(1), 1-29, 2015.
- Causal inference from 2^k factorial designs using the potential outcomes (Dasgupta, T., Pillai, N.S. and Rubin, D.B.) Journal of the Royal Statistical Society, Series-B, 77(4), 727-753, 2015.
- On the random walk metropolis algorithm for Gaussian random field priors and the gradient flow (Pillai, N.S., Stuart A.M. and Theiry A.H.) Stochastic Partial Differential Equations: Analysis and Computation, 2(2), 196-232, 2014.
- A location-mixture autoregressive model for online prediction of lung tumors (Cervone, D., Pillai, N.S., Pati, D., Berbeco, R. and Lewis, J.H.) Annals of Applied Statistics, 8(3), 1341-1371, 2014.
- A Function Space HMC algorithm with second order Langevin diffusion limit (Ottobre, M., Pillai, N.S., Pinski, F.J. and Stuart, A.M.) Bernoulli, 22(1), 60-106, 2016.
- Posterior contraction in sparse Bayesian factor models for massive covariance matrices (Pati, D., Bhattacharya, A., Pillai, N.S. and Dunson, D.B.) Annals of Statistics, 42(3), 1102-1130, 2014.
- Relevant statistics for Bayesian model choice (Marin, J.-M., Pillai, N.S., Robert C.P. and Rousseau, J.) Journal of the Royal Statistical Society, Series-B, 76(5), 833-859, 2014.
- Universality of covariance matrices (Pillai, N.S.and Yin, J.) Annals of Applied Probability, 24(3), 935-1001, 2014.
- Optimal Tuning of the Hybrid Monte Carlo Algorithm (Beskos, A., Pillai, N.S., Roberts, G.O., Sanz-serna, J.M., Stuart, A.M.), Bernoulli, 19 (5A), 1501-1534, 2013.
- 32. On a class of shrinkage priors for covariance estimation (Wang, H. and Pillai, N.S.) Journal of Computational and Graphical Statistics, 22(3), 689-707, 2013.
- 33. Regularity of Laws and Ergodicity of Hypoelliptic SDEs driven by Rough Paths (Hairer, M. and Pillai, N.S.) Annals of Probability, 41(4), 2544-2598, 2013.
- Edge Universality of Correlation Matrices (Pillai, N.S. and Yin, J.), Annals of Statistics, 40(3), 1737-1736, 2012.

	 Optimal Scaling and Diffusion Limits for the Langevin Algorithm in High Dimensions (Pillai, N.S., Stuart A.M. and Thiery A.H.), Annals of Applied Probability, 22(6), 2320-2356, 2012. 	
	36. Geometric ergodicity of a bead-spring system with stochastic Stokes forcing. (Mat- tingly, J.C., Mckinley, S.A., and Pillai, N.S.), Stochastic Processes and Applica- tions ,122(12), 3593-3979, 2012.	
	 Diffusion limits of the random walk Metropolis algorithm (Mattingly, J.C., Pillai, N.S. and Stuart, A.M.). Annals of Applied Probability, 22(3), 881-930, 2012. 	
	 Lack of Trust in (Approximate Bayes Computation) ABC Model Choice (Robert, C.P., Cornuet, J.M., Marin, J.M. and Pillai, N.S.) Proceedings of the National Academy of Sciences (PNAS), 108(37), 15112-15117, 2011. 	
	 Ergodicity of hypoelliptic SDEs driven by fractional Brownian motion (Hairer, M and Pillai, N.S.), Annales de l'Institut Henri Poincaré (B) Probabilités et Statistiques, 602-628, 2011. 	
	40. On the supremum of certain families of stochastic processes (Li, W.V., Pillai, N.S. and Wolpert, R.L.) Stastistics and Probability letters , Vol. 80, 916-921, 2010.	
	 Bayesian density regression (Dunson, D.B., Pillai, N.S. and Park, J.H.), Journal of the Royal Statistical Society, Series-B, Vol. 69, 163-183, 2007. 	
	 Characterizing the function space for bayesian kernel models (Pillai, N.S., Wu. Q, Liang F., Mukherjee, S. and Wolpert, R. L.), Journal of Machine Learning, 8, 1769–1797, 2007. 	
Other Publications:	• Bayesian Shrinkage (Bhattacharya, A., Pati. D. and Dunson, D.B.), available on arXiv .	
	• Discussion of Riemannian Hybrid Monte Carlo (by Girolami, M. and Calderhead, B.) (with Roberts, G.O.), Journal of the Royal Statistical Society, Series-B, 2011.	
	• The acceptance probability of the Hybrid Monte-Carlo algorithm in High Dimensional problems. (Beskos A., Roberts G.O., Stuart A.M., Sanzserna J.M.) American Insitute for Physics, Conf. Proc., 1281, Pages 23-27, 2010.	
Grants	• PI on NSF grant DMS-1107070, 2011-2014.	
	• PI on ONR grants, 2014-2017, 2015-2018.	
Society Memberships	• IMS, ISBA, ASA, IISA (lifetime member)	
Teaching	• Spring 2016: Advanced Probability	
	• Spring 2015: Advanced Probability, Introduction to Stochastic Processes	
	• Fall 2013: The art and practice of teaching statistics, (with Prof. Xiao-Li Meng)	
	• Fall 2012, Spring 2014, 2015: Topics in Missing Data, (with Prof. Donald B. Rubin)	
	• Spring 2011: Generalized linear models, Seminar Course on high dimensional compu- tation.	
	• Fall 2010, 2011: Advanced Stochastic Processes.	
Undergraduate Theses	• April Pei, 2010.	
	• Anirudha Balasubramanian, 2013. Title: Self-avoiding random walks – Counting and Criticality.	
	• Seth Neel, 2014.	
	• Theresa Gebert, 2014.	
	• Brandon Sim, 2014.	
	• Advik Sreekumar 2015.	
	• Walker Evans, 2016.	

Graduate Students	 Daniel Cervone, 2012 - 2015. First job: Post doctoral scholar, NYU. Iavor Bojanov, 2014- current. Evan Greif, 2015-2016. Chenguang Dai, 2015- Current. Rajarshi Mukherjee (biostat, in the thesis committee) Oren Mangoubi, 2016, MIT (in the thesis committee) 	
Post Docs Mentored	 Aaron Smith (Summer 2014); Professor at University of Ottawa Mingsuk Shin, 2017-Current Young Lee, 2018-Current 	
Professional Service:	 Organizer of the BayesComp invited session of talks for ISBA 2016. ISBA, BayesComp section Treasurer, 2014-16. Co-Director of Graduate Studies, Department of Statistics, Harvard University, Fall 2012 - 2014, 2015-16. Harvard Statistics Colloquium chair, 2010, 2014, 2015 Fall. Organized an IMS invited session titled "Random matrices and their applications in statistics", for JSM 2012. Organized an international conference titled "Optimisation of MCMC Algorithms", CRiSM, April 2009. Referee for various probability and statistics journals. 	
Selected Invited Talks	 IMS conference, Vilnius, Lithuania, 2018. Ohio State University, Probability Seminar, 2018. Department of Finance, Accounting and Statistics, Vienna, 2017. Section organized by BayesComp, ISBA, Sardinia, Italy, 2016. Brown University, Probability Seminar, 2015. Harvard University, Biostatistics, 2015, Colloquium. Boston University, 2015 Bocconi University, Italy, 2015 Prof. Evarist Gine's birthday conference, Cambridge University, UK, 2014 (could not attend due to visa issues) MIT, Probability Seminar, 2014. ORIE, Cornell, 2014 MCMSki, Chamonix, 2014 Stern school of business, NYU, 2013 Dimacs workshop, Rutgers University, 2013 SAHD workshop, Duke University, 2013 ICERM, Brown University, 2012 University of Texas, Austin, 2012 University of Chicago, 2012 Brown University, 2011 Paris 9, probability/statistics colloquium, France, 2011 Young researcher's conference, NCSU, 2011 Workshop for Recent Advances in Bayesian Computations, September 2010, National University of Singapore, Invited Speaker 	

• Stochastic Analysis seminar, Oxford University, March, 2010

- Department of Statistics, Warwick University, UK, February 2010
- Department of Statistics, Bristol University, UK, February 2010
- Department of Statistics, Harvard University, USA, January, 2010
- Department of Applied mathematics, University of Valladolid, Spain, October 2009
- Department of Statistics, Open University, UK, August 2009
- Statslab, Cambridge, UK, Feb 2009
- Department of Statistics, University of Kent, UK, Oct 2008
- Midlands Probability theory Seminar, UK, September 2008
- CRiSM seminar, Warwick University, UK, March 2008

Academic visits:

- IDSS, MIT, 2016-17.
- University of Dauphine, Paris, 2015.
- Brown University, Providence, USA, 2013
- CREST, Paris, France, 2011
- Courant Institute, NYU, USA, 2009
- Paris Telecom-tech, France, 2009
- University of Valladolid, Spain, 2009
- University of Pompeu-Fabra, Barcelona, Spain, 2009
- University of California, Berkeley, USA, 2006, 2008