

### Academic Positions

- Since July '19 **Assistant Professor**, *Department of Mathematics and Statistics, IIT Kanpur.*
- Jun 2017 - **NSF Postdoctoral Fellow**,  
Jul 2019 *Department of Statistics, University of California, Riverside. Mentor: Prof. James Flegal,*  
*Department of Statistics, University of Warwick. Mentor: Prof. Gareth Roberts.*
- Mar 2017 - **Postdoctoral Research Associate**, *Department of Statistics, University of Warwick,*  
May 2017 *Project: "Intractable Likelihood: New Challenges from Modern Applications (i-like)".*  
*Advisor: Prof. Gareth Roberts*

### Education

- Feb 2017 **PhD, Statistics**, *The University of Minnesota, Twin-Cities, MN.*  
*Advisor: Prof. Galin Jones*
- Nov 2016 **MS, Statistics**, *The University of Minnesota, Twin-Cities, MN.*
- May 2012 **MS, Statistics**, *Rutgers University, New Brunswick, NJ.*
- May 2010 **BA(honors), Mathematics**, *University of Delhi, Lady Shri Ram College, India.*

### Research Interests

Markov chain Monte Carlo, Bayesian Computation, Covariance Matrix Estimation, Bayesian Variable Selection, Intractable Likelihood Problems

### Publications

**Vats, D.**, Flegal, J.M., Jones, G.L., Multivariate Output Analysis for Markov Chain Monte Carlo, *Biometrika*, 106:321-337.

**Vats, D.**, Flegal, J.M., Jones, G.L., (2018) Strong Consistency of Multivariate Spectral Variance Estimators in Markov Chain Monte Carlo, *Bernoulli*, 24:1860-1909.

**Vats, D.**, (2017) Geometric Ergodicity of Gibbs Samplers in Bayesian Penalized Regression Models, *Electronic Journal of Statistics*, 11:4033-4064.

#### Preprints

**Vats, D.**, Robertson, N., Flegal, J.M., Jones, G.L., Analyzing MCMC Output, arXiv.

Robertson, N., Flegal, J.M., Jones, G.L., **Vats, D.**, New Visualizations for Monte Carlo Simulations, arXiv.

Liu, Y., **Vats, D.**, Flegal, J.M., Optimal Batch Sizes for Variance Estimators in MCMC, arXiv.

**Vats, D.**, Knudson, C., Revisiting the Gelman-Rubin Diagnostic, arXiv.

**Vats, D.**, Flegal, J.M., Lugsail Lag Windows and their Application to MCMC, arXiv.

**Vats, D.**, Andrieu, C., Multivariate Ordering of Markov Chains.

## Book Reviews

**Vats, D.**, *Simulation and the Monte Carlo Method*, 3rd ed. by Reuven Y. Rubinstein and Dirk P. Kroese (2019), Journal of the American Statistical Association, DOI.

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## R Software

Maintainer **mcmcse**, Flegal, J.M., Hughes, J., **Vats, D.**, Dai, N..  
Contributor **stableGR**, Knudson, C., **Vats, D.**

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## Presentations

### Invited Talks

- Nov 2019 Director's Colloquium, Indian Institute of Science Education and Research, Bhopal, India, "*Statistics and Data Science: How big is the intersection?*".
- Oct 2019 Statistics I course, Indian Statistical Institute, Bangalore Center, Bengaluru, India, "*Monte Carlo Simulation*".
- May 2019 Department of Statistical Science, University College London, London, UK, "*Revisiting the Gelman-Rubin diagnostic*".
- Nov 2018 Indian Statistical Institute, Bangalore Center, Bengaluru, India, "*Multivariate Output Analysis for Markov Chain Monte Carlo*".
- Oct 2018 Department of Mathematics, IISc Bangalore, Bengaluru, India, "*Lugsail Lag Windows and their Application to MCMC*".
- Sep 2018 Department of Mathematics and Statistics, IIT Kanpur, Kanpur, India, "*Lugsail Lag Windows and their Application to MCMC*".
- Sep 2018 Department of Mathematics, IIT Delhi, Delhi, India, "*Lugsail Lag Windows and their Application to MCMC*".
- Sep 2018 Department of Mathematics, IIT Bombay, Mumbai, India, "*Lugsail Lag Windows and their Application to MCMC*".
- Aug 2018 (Topics contributed) Joint Statistical Meeting, Vancouver, Canada, "*MCMC Convergence Rate for High-Dimensional Bayesian Regression*".
- June 2018 Stochastic Processes and their Applications, Gothenburg, Sweden, "*MCMC Convergence Rate for High-Dimensional Bayesian Regression*".
- May 2018 IISA Conference on Statistics, Gainesville, USA, "*MCMC Convergence Rate for High-Dimensional Bayesian Regression*".
- Sep 2018 Department of Mathematics and Statistics, University of Lancaster, Lancaster, UK, "*Lugsail Lag Windows and their Application to MCMC*".
- Feb 2018 Department of Statistics, University of Bath, Bath, UK, "*Multivariate Output Analysis for Markov Chain Monte Carlo*".
- Jan 2018 Department of Mathematics, Lady Shri Ram College, New Delhi, India, "*Integration is Old School*".
- Dec 2017 IISA Conference on Statistics, Hyderabad, India, "*MCMC Convergence Rate for High-Dimensional Bayesian Regression*".
- March 2016 Department of Warwick, University of Warwick, Coventry, UK, "*Multivariate Output Analysis for Markov Chain Monte Carlo*".

### Contributed Talks

- Dec 2018 Greek Stochastics  $\kappa'$ , Athens, Greece, "*Lugsail Lag Windows and their Application to MCMC*".

- Dec 2018 11th International Conference of the ERCIM WG on Computational and Methodological Statistics, Pisa, Italy, “*Lugsail Lag Windows and their Application to MCMC*”.
- June 2018 Monte Carlo and Quasi-Monte Carlo, Rennes, France, “*Geometric Ergodicity of Gibbs Samplers in Bayesian Penalized Regression Models*” .
- July 2017 Joint Statistical Meeting, Baltimore, USA, “*Geometric Ergodicity of Gibbs Samplers in Bayesian Penalized Regression Models*”.
- June 2017 User!2017, Brussels, Belgium, “*MCMC Output Analysis Using R Package mcmcse*”.
- Aug 2016 12th International Conference on Monte Carlo and Quasi-Monte Carlo, Palo Alto, USA, “*Multivariate Output Analysis for Markov Chain Monte Carlo*”.
- Aug 2016 IISA Conference, Corvallis, USA, “*Multivariate Spectral Variance Estimators in Markov Chain Monte Carlo*”.
- July 2016 Joint Statistical Meeting, Chicago, USA, “*Multivariate Output Analysis for Markov Chain Monte Carlo*”, Winner, SBSS Student Paper Competition.
- June 2016 Spring Research Conference, Chicago, USA, “*Multivariate Output Analysis for Markov Chain Monte Carlo*”.
- Dec 2015 IISA Conference, Pune, India, “*Multivariate Output Analysis for Markov Chain Monte Carlo*”, Winner, Student paper competition.
- July 2015 Joint Statistical Meeting, Seattle, USA, “*MCMC Output Analysis*”.

## Awards

### Awarded by University of Minnesota

- 2016 Director’s Award, awarded for outstanding service to the School of Statistics
- Summer 2016 Graduate Research Partnership Program Fellowship
- 2016–2017 Louise T. Dossdall Fellowship, endowed fellowship for women in STEM
- 2015–2016 School of Statistics Alumni Fellowship, awarded to an outstanding student
- Fall 2015 Martin - Buehler Fellowship in Statistics, for travel support
- Spring 2014 Bernard W. Lindgren Graduate Student Teaching Award, for excellence in teaching
- Summer 2014 Lynn Lin Fellowship in Statistics, for promise in statistical consulting

### Awarded by Statistical Associations

- JSM 2016 Student Paper Competition Winner, ASA’s Section on Bayesian Statistical Science
- IISA 2015 Student Paper Competition Winner, International Indian Statistical Association

### Travel Awards

- August 2017 Scholarship, Sequential Monte Carlo Workshop, Uppsala, Sweden
- July 2017 Diversity Scholarship, useR!2017, Brussels, Belgium
- August 2016 International Indian Statistical Association Conference, Corvallis, OR
- August 2016 SAMSI, Optimization Summer School, Raleigh, NC
- August 2016 SAMSI, Monte Carlo and Quasi Monte Carlo, Stanford, CA
- June 2016 NSF, Statistical Challenges in Modern Astronomy VI, Pittsburgh, PA
- May 2016 Spring Research Conference, Chicago, IL
- April 2016 SAMSI, Spring Opportunities Workshop for Women in Math Sciences, Raleigh, NC
- January 2016 ISBA, MCMSki V, Lenzerheide, Switzerland
- June 2015 SAMSI, Bayesian Nonparametrics Workshop, Raleigh, NC
- June 2011 NSF, Machine Learning Summer School, West Lafayette, IN

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## Teaching

### University of Minnesota

- Spring 2015 **Instructor**, STAT 3011 - Introduction to Statistical Analysis.  
2012–2015 Teaching Assistant, *for undergrad and grad statistics courses*.  
Summer 2013 Resource Instructor, College of Science and Engineering, New Grad Student Orientation.

### Rutgers University

- 2011–2012 Part Time Lecturer, *Calculus and pre-calculus*.  
Fall 2010 Grader, *Introduction to Mathematical Reasoning*.

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## Experience

- Summer 2015 Google Summer of Code Participant, *R package mcmcse*.  
Summer 2011 Mathematical Statistician, *United States Department of Energy*, Washington, D.C..  
Summer 2010 Statistical Intern, *ESPN Cricinfo*, Bengaluru, India.

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## Service

### Reviewer

Electronic Journal of Statistics (3), Biometrika (1), Computational and Mathematical Methods (1), Harvard Data Science Review (1), Journal of the American Statistical Association (1), Journal of Applied Probability (1), Journal of Computational and Graphical Statistics (4), NeurIPS (1), Sankhya (1), Scandinavian Journal of Statistics (1), Statistics and Computing (1), Statistics and Probability Letters (1).

### Statistical Associations

- Jan 2019 Member of Review Panel, *American Statistical Association's Section on Bayesian Statistical Sciences' (SBSS) Student paper competition*.  
Jan 2018 Member of Review Panel, *American Statistical Association's Section on Bayesian Statistical Sciences' (SBSS) Student paper competition*.

### Conference

- May 2018 Session organizer for “Recent Advances in Markov Chain Monte Carlo”, *2018 IISA International Conference on Statistics*, Gainesville, USA.  
Dec 2017 Scientific Program Committee member, Session chair and organizer for “Bayesian Computation”, *2017 IISA International Conference on Statistics*, Hyderabad, India.  
July 2017 Session Chair, *JSM 2017*.

### University of Warwick

- 2017-2019 Co-organizer, *Algorithms & Computationally Intensive Inference seminar series*.

### School of Statistics, University of Minnesota

- Summer 2016 Curriculum Co-organizer and Convener, *Teaching Assistant Training*.  
Spring 2016 Graduate Student Representative, *Search Committee for New Faculty*.  
Spring 2016 Organizer, *Student Talks Seminar Series*.  
2015–16 Student Co-organizer, *Prospective Student Visit Day*.  
Fall 2015 Student Co-organizer, *Advisory Panel Discussion*.

### Lady Shri Ram College

- August 2010 Organizer, *LaTeX Workshop for Undergraduates*.  
Spring 2010 Student Co-editor, *Eclat - A Mathematical Journal Volume I*.  
2009–2010 President, *Residence Hall*.