

Education

- 2009 - 2014:** **University of California, Berkeley**
PhD in Computer Science.
Thesis title: *Counting and Correlation Decay in Spin Systems*
Adviser: Prof. Alistair Sinclair.
- 2005 - 2009:** **Indian Institute of Technology Kanpur**
Bachelor of Technology (B. Tech.) in Computer Science and Engineering.

Employment

- **Post-doctoral scholar:** Center for the Mathematics of Information, California Institute of Technology (September 2014 - present).
- **Summer intern:** IBM Research, Almaden (Summer 2013).
- **Summer intern:** Microsoft Research, Bangalore (Summer 2011).
- **Graduate student researcher:** UC Berkeley (several times during May 2010 - July 2014).
- **Summer intern:** Microsoft Research, Bangalore (Summer 2009).
- **Visiting student:** California Institute of Technology (Summer Undergraduate Research Fellowship, with Prof. Christopher Umans and Prof. Leonard Schulman, Summer 2007).

Awards and fellowships

Research fellowships

- Center for the Mathematics of Information (CMI) post-doctoral fellowship at Caltech (current).
- Berkeley Fellowship for Graduate Study, 2009-2011.

Earlier awards

- President's Gold Medal for the year 2009 at IIT Kanpur.
- Gold Medal at the *International Physics Olympiad, 2005*.
- Ranked 1st in the *Joint Entrance Examination (JEE), 2005* of the Indian Institutes of Technology.
- Ranked 1st in the *Indian National Mathematical Olympiad, 2005*.

Publications

- I. Panageas, P. Srivastava, N. K. Vishnoi. Evolutionary dynamics in finite populations mix rapidly. Extended abstract in *Proceedings of the ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2016, pp. 480-497.
- L. J. Schulman, A. Sinclair, P. Srivastava. Symbolic integration and the complexity of computing averages. Extended abstract in *Proceedings of the IEEE Symposium on the Foundations of Computer Science (FOCS)*, 2015, pp. 1231-1245. Preprint available at [my webpage](#).
- A. Sinclair, P. Srivastava, D. Štefankovič, Y. Yin. Spatial mixing and the connective constant: Optimal bounds. To appear in *Probability Theory & Related Fields*. Extended abstract in *Proceedings of the ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2015, pp. 1549–1563. Full version available at <http://arxiv.org/abs/1410.2595>.
The results of this paper supersede those of the FOCS 2013 paper below, and also add new results for deterministic counting of matchings.
- A. Sinclair, P. Srivastava, and Y. Yin. Spatial mixing and approximation algorithms for graphs with bounded connective constant. Extended abstract in *Proceedings of the IEEE Symposium on the Foundations of Computer Science (FOCS)*, 2013, pp. 300–309. Full version available at <http://arxiv.org/abs/1308.1762>.
- A. Sinclair, P. Srivastava. Lee-Yang theorems and the complexity of computing averages. *Communications in Mathematical Physics*, **329** (3) (Aug. 2014), pp. 827–858. Extended abstract in *Proceedings of the ACM Symposium on the Theory of Computing (STOC)*, 2013, pp. 625–634. Full version available at <http://arxiv.org/abs/1211.2376>.
- N. M. Dixit, P. Srivastava, and N. K. Vishnoi. A finite population model of molecular evolution: Theory and computation. *Journal of Computational Biology* **19** (10), (Oct, 2012), pp. 1176–1202.
- A. Sinclair, P. Srivastava, and M. Thurley. Approximation algorithms for two-state anti-ferromagnetic spin systems on bounded degree graphs. *Journal of Statistical Physics*, **155** (4) (Mar. 2014), pp. 666–686. Extended abstract in *Proceedings of the ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2012, pp. 941–953. Full version available at <http://arxiv.org/abs/1107.2368>.

Short notes

- P. Srivastava. Approximating the hard core partition function with negative activities. April 2015. Available at [my webpage](#).
- P. Srivastava and M. Szegedy. July 2014. A simplified proof of a Lee-Yang type theorem. [arXiv:1407.5991](#).
- P. Srivastava. The Lee-Yang theory of phase transitions. October 2013. Available at [my webpage](#).
- P. Srivastava, Di Wang. Inferring graphical structures. May 2013. Available at [my webpage](#).

Selected talks

- The complexity of computing averages
 - Invited talk at a workshop on “*The classification program of counting complexity*” at the Simons Institute for the Theory of Computing, UC Berkeley. March 2016.
- Symbolic integration and the complexity of computing averages
 - IEEE Symposium on Foundations of Computer Science (2015), Berkeley. October 2015.
- Correlation decay, phase transitions, and counting
 - Invited talk at the *Information Theory and Applications* meeting at UC San Diego. February 2015
 - ACM-SIAM Symposium on Discrete Algorithms (SODA), San Diego. January 2015.
 - Theory Seminar, Indian Institute of Technology Delhi. December 2014.
 - Theory Seminar, Indian Institute of Technology Kanpur. December 2014.
- Phase transitions, zeros of polynomials and the computational complexity of problems in statistical physics
 - Invited talk at the Western States Mathematical Physics Meeting, California Institute of Technology. February 2015.
 - Invited talk at the IEEE Symposium on Foundations of Computer Science (FOCS) Workshop on “*Zeros of polynomials and their applications*”, Berkeley. October 2013.
 - Invited talk at the *Combinatorics of Hyperbolic and Real Stable Polynomials* mini-symposium at the SIAM Discrete Mathematics (DM) Conference, June 2014.
 - Algorithms and Randomness Center (ARC) Colloquium, Georgia Institute of Technology. February 2014.
- Lee-Yang theorems and the complexity of computing averages
 - ACM Symposium on the Theory of Computing (STOC), Palo Alto. June 2013.
 - Theory Seminar, IBM Research Almaden. March 2013.
 - Special Theory Lunch for incoming graduate students, UC Berkeley. March 2013.
 - Theory Seminar, UC Berkeley. November 2012.
- Spatial mixing and approximation algorithms for graphs with bounded connective constant
 - IEEE Symposium on Foundations of Computer Science (FOCS), Berkeley. October 2013.
 - Stanford Theory Lunch. May 2013.
- Approximation algorithms for two-state anti-ferromagnetic spin systems on bounded degree graphs
 - ACM-SIAM Symposium on Discrete Algorithms (SODA), Kyoto. January 2012.

Teaching

- **UC Berkeley, Fall 2013.** Teaching assistant for CS 170, *Efficient Algorithms and Intractable Problems*, with Prof. Satish Rao.
- **UC Berkeley, Spring 2012.** Teaching assistant for CS 172, *Computability and Complexity*, with Prof. Koushik Sen.

Programming languages

C++/C, Python and Mathematica. Some programming experience with Haskell, Java, Octave and R.