
Curriculum Vitae

Nisheeth K. Vishnoi

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Research Interests

My research spans several areas of theoretical computer science, optimization, and machine learning. I am also interested in understanding and addressing some of the key questions that arise in nature and society from a computational viewpoint, including emergence of intelligence and the interface of artificial intelligence, ethics, and society.

Education

Georgia Institute of Technology <i>Ph.D. in Algorithms, Combinatorics and Optimization</i>	Atlanta, GA 1999-2004
Indian Institute of Technology Bombay <i>Bachelor of Technology in Computer Science and Engineering</i>	Mumbai, India 1995-1999

Employment

Yale University <i>A. Bartlett Giamatti Professor of Computer Science</i>	USA January 2021-
Yale University <i>Professor of Computer Science</i>	USA January 2019-2020
École Polytechnique Fédérale de Lausanne (EPFL) <i>Associate Professor</i>	Switzerland June 2014-December 2018
Microsoft Research <i>Researcher</i>	India March 2009-May 2014
CNRS <i>Chargé de Recherche, 1st Class,</i>	France September 2008-March 2009
University of California, Berkeley <i>Visiting Researcher</i>	Berkeley, CA January 2007-December 2007
Georgia Institute of Technology <i>Visiting Researcher</i>	Atlanta, GA March 2006-December 2006
IBM Research <i>Research Staff Member</i>	India September 2004-September 2008

Other Affiliations and Appointments

Cowles Foundation for Research in Economics <i>Research Staff</i>	Yale University 2021-Present
Institution for Social and Policy Studies <i>Faculty Fellow</i>	Yale University 2021-Present
Computation and Society Initiative <i>co-founder</i>	Yale 2019-Present
A+ Alliance <i>Advisory Board Member</i>	Geneva 2019-Present
Thurman Arnold Project at Yale <i>Affiliated Faculty</i>	Yale University 2019-Present
Indian Institute of Technology Goa <i>Adjunct Professor</i>	Goa, India 2019-Present
Simons Institute for the Theory of Computing <i>Visiting Scientist - Foundations of Deep Learning</i>	Berkeley, CA Summer 2019
Simons Institute for the Theory of Computing <i>Visiting Scientist - Geometry of Polynomials</i>	Berkeley, CA March 2019
School of Mathematics, Institute for Advanced Study <i>Short-Term Scholar</i>	Princeton, NJ January-February 2018
Simons Institute for the Theory of Computing <i>Visiting Scientist - Bridging continuous and discrete optimization</i>	Berkeley, CA August-September 2017
Computation, Nature and Society Think Tank <i>Co-Founder</i>	Switzerland June 2017-2018
Indian Institute of Technology Kanpur <i>Adjunct Faculty</i>	Kanpur, India 2012-2015, 2017-2019
Indian Institute of Technology Delhi <i>Adjunct Faculty</i>	New Delhi, India 2016-2018
Simons Institute for the Theory of Computing <i>Visiting Scientist - Algorithmic spectral graph theory</i>	Berkeley, CA September-October 2014
Simons Institute for the Theory of Computing <i>Visiting Scientist - Evolutionary biology and the theory of computing</i>	Berkeley, CA March-May 2014
International Centre for Theoretical Sciences <i>Associate</i>	Bangalore, India 2013-2018

Selected Awards

Co-PI in a 20,000,000 USD NSF funded AI Institute	2021-2026
Fellow, ACM	2019
Best Technical Paper Award, ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT)	2019
IIT Bombay Young Alumnus Achievers Award http://www.iitb.ac.in/alumni/en/content/young-alumnus-achiever-awards	2016
Indian National Science Academy Young Scientist Medal http://www.insaindia.org/aa4young1.php	2011
IBM Research Pat Goldberg Memorial Award http://researcher.watson.ibm.com/researcher/view_group.php?id=5855	2006
Best Paper Award, IEEE Foundations of Computer Science (FOCS)	2005

Publications

An up-to-date list can be found at <http://cs.yale.edu/homes/vishnoi/Publications.html>.

(a) Monographs and Surveys

1. Jonathan Leake, Nisheeth K. Vishnoi. *Optimization and Sampling Under Continuous Symmetry: Examples and Lie Theory*. Available online at <https://arxiv.org/abs/2109.01080>. Sep., 2021.
2. Nisheeth K. Vishnoi. *An Introduction to Hamiltonian Monte Carlo Method for Sampling*. Available online at <https://arxiv.org/abs/2108.12107>. Sep., 2021.
3. Nisheeth K. Vishnoi. *Geodesic convex optimization: differentiation on manifolds, geodesics, and convexity*. Available online at <https://arxiv.org/abs/1806.06373>. May, 2018.
4. Nisheeth K. Vishnoi. *Algorithms for Convex Optimization*. A preliminary draft of this book is available online at <https://convex-optimization.github.io/>. Cambridge University Press, 2021.
5. Nisheeth K. Vishnoi. *Geodesic convex optimization: differentiation on manifolds, geodesics, and convexity*. Available online at <https://arxiv.org/abs/1806.06373>. May, 2018.
6. Sushant Sachdeva, Nisheeth K. Vishnoi. *Faster algorithms via approximation theory*. Foundations and Trends in Theoretical Computer Science, 9(2):125–210, 2014.
7. Nisheeth K. Vishnoi. $Lx = b$. Foundations and Trends in Theoretical Computer Science, 8(1-2):1–141, 2013.
8. Nisheeth K. Vishnoi. *Zeros of polynomials and their applications to theory: A primer*. Survey accompanying a tutorial at FOCS 2013. Available online at http://cs.yale.edu/homes/vishnoi/Publications_files/ZerosIntro.pdf.

(b) Published

9. Lingxiao Huang, K. Sudhir, Nisheeth K. Vishnoi. Coresets for clustering with time series data.. **Spotlight** in the *Thirty-fifth Annual Conference on Neural Information Processing Systems (NeurIPS)*, 2021.
10. L. Elisa Celis, Anay Mehrotra, Nisheeth K. Vishnoi. Fair classification with adversarial perturbations. In the *Thirty-fifth Annual Conference on Neural Information Processing Systems (NeurIPS)*, 2021.
11. L. Elisa Celis, Vijay Keswani, Lingxiao Huang, Nisheeth K. Vishnoi. Fair classification with noisy protected attributes: A framework with provable guarantees. In *Proceedings of the 37th International Conference on Machine Learning (ICML)*, 2021.
12. Rohit Gurjar, Nisheeth K. Vishnoi. On the number of near-shortest circuits in regular matroids. In *SIAM J Discrete Math*, 35(3), 1688–1705, 2021.
13. Rohit Gurjar, Thomas Thierauf, Nisheeth K. Vishnoi. Isolating a vertex via lattices: Polytopes with totally unimodular faces. In *SIAM Journal of Computing*, 50(2), 636–661, 2021.
14. Damian Straszak, Nisheeth K. Vishnoi. IRLS and Slime Mold: Connection and Convergence. In *Mathematical Programming, Series A*, 2021. **Invited Paper** in *8th Innovations in Theoretical Computer Science (ITCS)*, 2017. Full version available at <https://arxiv.org/abs/1601.02712>. MIT Technology Review “Best of the arXiv”: <https://goo.gl/ShLBKY>.

15. Weiming Feng, Nisheeth K. Vishnoi, Yitong Yin. Dynamic sampling from graphical models. In *SIAM Journal of Computing*, 50(2), 350–381, 2021.
16. Jonathan Leake, Colin McSwiggen, Nisheeth K. Vishnoi. Sampling Matrices from Harish-Chandra–Itzykson–Zuber Densities with Applications to Quantum Inference and Differential Privacy In *ACM 53rd ACM Symposium on Theory of Computing (STOC)*, 2021. Available online at <https://arxiv.org/abs/2011.05417>.
17. Oren Mangoubi, Nisheeth K. Vishnoi. Greedy Adversarial Equilibrium: An Efficient Alternative to Nonconvex-Nonconcave Min-Max Optimization In *ACM 53rd ACM Symposium on Theory of Computing (STOC)*, 2021. Available online at <https://arxiv.org/abs/2006.12363>.
18. L. Elisa Celis, Chris Hays, Anay Mehrotra, Nisheeth K. Vishnoi. The effect of the Rooney Rule on implicit bias in the long term. In *ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT)*, 2021. Available online at <https://arxiv.org/abs/2010.10992>.
19. Javad Ebrahimi, Damian Straszak, Nisheeth K. Vishnoi. Sub-determinant maximization via non-convex relaxations and anti-concentration. In *SIAM Journal of Computing*, 49(6): 1249–1270, 2020.
20. Lingxiao Huang, K. Sudhir, Nisheeth K. Vishnoi. Coresets for regressions with panel data. In *the Thirty-fourth Annual Conference on Neural Information Processing Systems (NeurIPS)*, 2020.
21. L. Elisa Celis, Vijay Keswani, Nisheeth K. Vishnoi. Data preprocessing to mitigate bias: A maximum entropy based approach. In *Proceedings of the 36th International Conference on Machine Learning (ICML)*, 2020.
22. Jonathan Leake, Nisheeth K. Vishnoi. On the computability of continuous maximum entropy distributions with applications. In *ACM 52nd ACM Symposium on Theory of Computing (STOC)*, 2020. Available online at <https://arxiv.org/abs/2004.07403>.
23. Lingxiao Huang, Nisheeth K. Vishnoi. Coresets for clustering in Euclidean spaces: Importance sampling is nearly optimal. In *ACM 52nd ACM Symposium on Theory of Computing (STOC)*, 2020. Available online at <https://arxiv.org/abs/2004.06263>.
24. L. Elisa Celis, Anay Mehrotra, Nisheeth K. Vishnoi. Interventions for ranking in the presence of implicit bias. In *ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT)*, 2020. Available online at <https://arxiv.org/abs/2001.08767>.
25. Lingxiao Huang, Shaofeng Jiang, Nisheeth K. Vishnoi. Coresets for clustering with fairness constraints. In *the Thirty-third Annual Conference on Neural Information Processing Systems (NeurIPS)*, 2019.
26. Holden Lee, Oren Mangoubi, Nisheeth K. Vishnoi. Online sampling from log-concave distributions. In *the Thirty-third Annual Conference on Neural Information Processing Systems (NeurIPS)*, 2019.
27. Oren Mangoubi, Nisheeth K. Vishnoi. Faster algorithms for polytope rounding, sampling, and volume computation via a sublinear "Ball Walk". In *60th IEEE Foundations of Computer Science (FOCS)*, 2019.
28. L. Elisa Celis, Anay Mehrotra, Nisheeth K. Vishnoi. Toward controlling discrimination in online ads. In *Proceedings of the 36th International Conference on Machine Learning (ICML)*, PMLR 97:4456–4465, 2019. **Awarded Best Student Paper** in the 3rd workshop on Mechanism Design for Social Good, 2019 (MD4SG).
29. Lingxiao Huang, Nisheeth K. Vishnoi. Stable and fair classification. In *Proceedings of the 36th International Conference on Machine Learning (ICML)*, PMLR 97:2879–2890, 2019.

30. Oren Mangoubi, Nisheeth K. Vishnoi. Nonconvex sampling with the Metropolis-adjusted Langevin algorithm . In *Conference On Learning Theory (COLT)*, 2019. Available online at <https://arxiv.org/abs/1902.08452>.
31. Damian Straszak, Nisheeth K. Vishnoi. Maximum entropy distributions: Bit complexity and stability. In *Conference On Learning Theory (COLT)*, 2019. Available online at <https://arxiv.org/abs/1711.02036>.
32. Nisheeth K. Vishnoi. Isolating a matching when your coins go missing. **Invited Technical Perspective** in *Communications of the ACM*, March 2019.
33. Damian Straszak, Nisheeth K. Vishnoi. Belief propagation, Bethe approximation and polynomials. In *IEEE Transactions on Information Theory*, 2019.
34. L. Elisa Celis, Sayash Kapoor, Farnood Salehi, Vijay Keswani, Nisheeth K. Vishnoi. A dashboard for controlling polarization in personalization. **Invited** for publication in *AI Communications*, vol. 32, no. 1, pp. 77-89, 2019.
35. Weiming Feng, Nisheeth K. Vishnoi, Yitong Yin. Dynamic sampling from graphical models. In *ACM 51st ACM Symposium on Theory of Computing (STOC)*. Available online at <https://arxiv.org/abs/1807.06481>.
36. L. Elisa Celis, Lingxiao Huang, Vijay Keswani, Nisheeth K. Vishnoi. Classification with fairness constraints: a meta-algorithm with provable guarantees. In *ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT)*, 2019. Available online at <https://arxiv.org/abs/1806.06055>.
37. L. Elisa Celis, Farnood Salehi, Sayash Kapoor, Nisheeth K. Vishnoi. An algorithmic framework to control polarization in personalization. **Awarded Best Technical Paper** at *ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT)*, 2019. Available online at <https://arxiv.org/abs/1802.08674>. Preliminary version appeared as (50).
38. Rohit Gurjar, Nisheeth K. Vishnoi. On the number of near-shortest circuits in regular matroids. In *ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2019.
39. Oren Mangoubi, Nisheeth K. Vishnoi. Dimensionally tight bounds for second-order Hamiltonian Monte Carlo. In *the Thirty-second Annual Conference on Neural Information Processing Systems (NeurIPS)*, 2018.
40. Suvrit Sra, Nisheeth K. Vishnoi, Ozan Yildiz. On geodesically convex formulations for the Brascamp-Lieb constant. In *the 21st International Conference on Approximation Algorithms for Combinatorial Optimization Problems (APPROX)*, 2018.
41. L. Elisa Celis, Vijay Keswani, Damian Straszak, Amit Deshpande, Tarun Kathuria, Nisheeth K. Vishnoi. Fair and diverse DPP-based data summarization. In *Proceedings of the 35th International Conference on Machine Learning (ICML)*, 2018.
42. Oren Mangoubi, Nisheeth K. Vishnoi. Convex optimization with nonconvex oracles using simulated annealing. In *Conference On Learning Theory (COLT)*, pages 1086–1124, 2018.
43. L. Elisa Celis, Lingxiao Huang, Nisheeth K. Vishnoi. Multiwinner voting with fairness constraints. In *27th International Joint Conference on Artificial Intelligence (IJCAI) and the 23rd European Conference on Artificial Intelligence (ECAI)*, 2018. Available online at <https://arxiv.org/abs/1710.10057>.

44. Sayash Kapoor, Vijay Keswani, Nisheeth K. Vishnoi, L. Elisa Celis. Balanced news using constrained bandit-based personalization. In *27th International Joint Conference on Artificial Intelligence (IJ-CAI) and the 23rd European Conference on Artificial Intelligence (ECAI) (Demo track)*, 2018.
45. Rohit Gurjar, Thomas Thierauf, Nisheeth K. Vishnoi. Isolating a vertex via lattices: Polytopes with totally unimodular faces. In *45th International Colloquium on Automata, Languages, and Programming (ICALP)*, 2018. Available online at <https://arxiv.org/abs/1708.02222>.
46. L. Elisa Celis, Damian Straszak, Nisheeth K. Vishnoi. Ranking with fairness constraints. In *45th International Colloquium on Automata, Languages, and Programming (ICALP)*, 2018. Available online at <https://arxiv.org/abs/1704.06840>.
47. L. Elisa Celis, Mina Dalirrooyfard, Nisheeth K. Vishnoi. A dynamics for advertising on networks. In *13th Conference on Web and Internet Economics (WINE)*, 2017.
48. Javad Ebrahimi, Damian Straszak, Nisheeth K. Vishnoi. Sub-determinant maximization via non-convex relaxations and anti-concentration. In *58th IEEE Foundations of Computer Science (FOCS)*, pages 1020–1031, 2017.
49. Damian Straszak, Nisheeth K. Vishnoi. Belief propagation, Bethe approximation and polynomials. **Invited for presentation at the 55th Annual Allerton Conference on Communication, Control, and Computing**, 2017. Full version available at <https://arxiv.org/abs/1708.02581>
50. L. Elisa Celis, Nisheeth K. Vishnoi. Fair personalization. In *4th Workshop on Fairness, Accountability, and Transparency in Machine Learning (FAT/ML)*, 2017.
51. L. Elisa Celis, Amit Deshpande, Tarun Kathuria, Damian Straszak, Nisheeth K. Vishnoi. On the complexity of constrained determinantal point processes. In *Proceedings of the 20th APPROX-RANDOM*, 36, pages 1–22, 2017.
52. L. Elisa Celis, Peter M. Krafft, Nisheeth K. Vishnoi. A distributed learning dynamics in social groups. In *Proceedings of the ACM Symposium on Principles of Distributed Computing (PODC)*, pages 441–450, 2017.
53. Damian Straszak, Nisheeth K. Vishnoi. Real Stable Polynomials and Matroids: Optimization and counting. In *49th ACM Symposium on Theory of Computing (STOC)*, pages 370–383 2017.
54. Yuval Peres, Mohit Singh, Nisheeth K. Vishnoi. Random walks in polytopes and negative dependence. In *8th Innovations in Theoretical Computer Science (ITCS)*, 2017.
55. L. Elisa Celis, Amit Deshpande, Tarun Kathuria, Nisheeth K. Vishnoi. How to be fair and diverse? In *3rd Workshop on Fairness, Accountability, and Transparency in Machine Learning (FAT/ML)*, 2016.
56. Sushant Sachdeva, Nisheeth K. Vishnoi. The Mixing time of the Dikin walk in polytopes – A simple proof. In *Operations Research Letters*, 44(5), pages 630–634, 2016.
57. Ioannis Panageas, Nisheeth K. Vishnoi. Mixing time of Markov chains, dynamical systems and evolution. In *International Colloquium on Automata, Languages, and Programming (ICALP)*, 63, pages 1–14, 2016.
58. Christos H. Papadimitriou, Nisheeth K. Vishnoi. On the computational complexity of limit cycles in dynamical systems. In *7th Innovations in Theoretical Computer Science (ITCS)*, 2016. Full version available at <https://arxiv.org/pdf/1511.07605>.

59. Damian Straszak, Nisheeth K. Vishnoi. On a natural dynamics for linear programming. In *7th Innovations in Theoretical Computer Science (ITCS)*, 2016. Full version available at <https://arxiv.org/abs/1511.07020>.
60. Damian Straszak, Nisheeth K. Vishnoi. Natural algorithms for flow problems. In *Proceedings of the 27th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 1868–1883, 2016.
61. Ioannis Panageas, Piyush Srivastava, and Nisheeth K. Vishnoi. Evolutionary dynamics in finite populations mix rapidly. In *Proceedings of the Twenty-Seventh Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 480–497, 2016.
62. Subhash Khot and Nisheeth K. Vishnoi. The unique games conjecture, integrality gap for cut problems and embeddability of negative-type metrics into ℓ_1 . In *Journal of the ACM*, 62(1): pages 8:1–8:39, 2015.
63. Nisheeth K. Vishnoi. The speed of evolution. In *Proceedings of the Twenty-sixth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 1590–1601, 2015.
64. Subhash A. Khot, Preyas Popat, Nisheeth K. Vishnoi. Almost polynomial factor hardness for Closest Vector Problem with Preprocessing. In *SIAM Journal of Computing*, 43(3), pages 1184–1205, 2014.
65. Mohit Singh and Nisheeth K. Vishnoi. Entropy, optimization and counting. In *Symposium on Theory of Computing, (STOC)*, pages 50–59, 2014.
66. Nisheeth K. Vishnoi. Making evolution rigorous- the error threshold. In *5th Innovations in Theoretical Computer Science (ITCS)*, 2013. Full version available at http://cs.yale.edu/homes/vishnoi/Publications_files/VError.pdf.
67. Jugal Garg, Ruta Mehta, Milind A. Sohoni, and Nisheeth K. Vishnoi. Towards polynomial simplex-like algorithms for market equilibria. In *Proceedings of the Twenty-Fourth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 1226–1242, 2013.
68. Nisheeth K. Vishnoi. A permanent approach to the Traveling Salesman Problem. In *53rd Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, pages 76–80, 2012.
69. Kushal Tripathi, Rajesh Balagam, Nisheeth K. Vishnoi, and Narendra M. Dixit. Stochastic simulations suggest that HIV-1 survives close to its error threshold. *PLoS Computational Biology*, 8(9):e1002684, 09, 2012.
70. Narendra Dixit, Piyush Srivastava, and Nisheeth K. Vishnoi. A finite population model of molecular evolution: Theory and computation. *Journal of Computational Biology*, 19(10):1176–1202, 2012.
71. Michael W. Mahoney, Lorenzo Orecchia, and Nisheeth K. Vishnoi. A local spectral method for graphs: with applications to improving graph partitions and exploring data graphs locally. *Journal of Machine Learning Research*, 13: pages 2339–2365, 2012.
72. Lorenzo Orecchia, Sushant Sachdeva, and Nisheeth K. Vishnoi. Approximating the exponential, the Lanczos method and an $\tilde{O}(m)$ -time spectral algorithm for balanced separator. In *44th ACM Symposium on Theory of Computing (STOC)*, pages 1141–1160, 2012.
73. Subhash Khot, Preyas Popat, Nisheeth K. Vishnoi. $2^{\log^{1-\epsilon} n}$ hardness for closest vector problem with preprocessing. In *44th ACM Symposium on Theory of Computing (STOC)*, pages 277–288, 2012.
74. Mikhail Alekhovich, Subhash Khot, Guy Kindler, Nisheeth K. Vishnoi. Hardness of approximating the closest vector problem with pre-Processing. In *Computational Complexity*, 20(4): pages 741–753, 2011.

75. Subhransu Maji, Nisheeth K. Vishnoi, and Jitendra Malik. Biased normalized cuts. In *24th IEEE Conference on Computer Vision and Pattern Recognition, (CVPR)*, pages 2057–2064, 2011.
76. Amit Kumar, Rajsekar Manokaran, Madhur Tulsiani, and Nisheeth K. Vishnoi. On LP-based approximability for strict CSPs. In *ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 1560–1573, 2011.
77. Lorenzo Orecchia and Nisheeth K. Vishnoi. Towards an SDP-based approach to spectral methods: A nearly-linear-time algorithm for graph partitioning and decomposition. In *ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 532–545, 2011.
78. Amit Deshpande, Madhur Tulsiani, Nisheeth K. Vishnoi. Algorithms and hardness for subspace approximation. In *ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 482–496, 2011.
79. Anand Louis, Nisheeth K. Vishnoi. Improved algorithm for degree bounded survivable network design problem. In *the 12th Scandinavian Symposium and Workshops on Algorithm Theory (SWAT)*, pages 408–419, 2010.
80. Mihail N. Kolountzakis, Richard J. Lipton, Evangelos Markakis, Aranyak Mehta, Nisheeth K. Vishnoi. On the Fourier spectrum of symmetric Boolean functions. In *Combinatorica*, 29(3), pages 363–387, 2009.
81. Markus Blaser, Moritz Hardt, Richard J. Lipton, Nisheeth K. Vishnoi. Deterministically testing sparse polynomial identities of unbounded degree. In *Information Processing Letters*, 109(3), pages 187–192, 2009.
82. Lorenzo Orecchia, Leonard J. Schulman, Umesh V. Vazirani, and Nisheeth K. Vishnoi. On partitioning graphs via single commodity flows. In *40th ACM Symposium on Theory of Computing (STOC)*, pages 461–470, 2008.
83. Sanjeev Arora, Subhash Khot, Alexandra Kolla, David Steurer, Madhur Tulsiani, and Nisheeth K. Vishnoi. Unique games on expanding constraint graphs are easy. In *40th ACM Symposium on Theory of Computing (STOC)*, pages 21–28, 2008.
84. Nisheeth K. Vishnoi. The impact of noise on the scaling of collectives: The nearest neighbor model. In *the 14th International Conference on High Performance Computing (HiPC)*, pages 476–487, 2007.
85. Nikhil R. Devanur, Subhash Khot, Rishi Saket, and Nisheeth K. Vishnoi. Integrality gaps for sparsest cut and minimum linear arrangement problems. In *38th ACM Symposium on Theory of Computing (STOC)*, pages 537–546, 2006.
86. Subhash Khot and Nisheeth K. Vishnoi. The unique games conjecture, integrality gap for cut problems and embeddability of negative type metrics into ℓ_1 . **Best Paper at the 46th Annual IEEE Symposium on Foundations of Computer Science (FOCS)**, pages 53–62, 2005.
87. Mikhail Alekhnovich, Subhash Khot, Guy Kindler, and Nisheeth K. Vishnoi. Hardness of approximating the closest vector problem with pre-processing. In *the 46th Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, pages 216–225, 2005.
88. Parikshit Gopalan, Howard J. Karloff, Aranyak Mehta, Milena Mihail, Nisheeth K. Vishnoi. Caching with expiration times for internet applications. In *Internet Mathematics*, 2(2), pages 165–184, 2005.
89. Saurabh Agarwal, Rahul Garg, Nisheeth K. Vishnoi. The Impact of Noise on the Scaling of Collectives: A Theoretical Approach. *the 12th International Conference on High Performance Computing (HiPC)*, pages 280–289, 2005.

90. Richard J. Lipton, Evangelos Markakis, Aranyak Mehta, Nisheeth K. Vishnoi. On the Fourier Spectrum of Symmetric Boolean Functions with Applications to Learning Symmetric Juntas. In *IEEE Conference on Computational Complexity (CCC)*, pages 112–119, 2005.
91. Nikhil R. Devanur, Richard J. Lipton, and Nisheeth K. Vishnoi. On the complexity of Hilbert’s 17th problem. In *Foundations of Software Technology and Theoretical Computer Science (FSTTCS)*, pages 237–249, 2004.
92. Nisheeth K. Vishnoi. Non uniform random walks. In *Discrete Mathematics and Theoretical Computer Science, vol. AC (2003)*, pages 345–358, Discrete Random Walks 2003. Editors: Cyril Banderier and Christian Krattenthaler.
93. Who’s *The Weakest Link?* Nikhil R. Devanur, Richard J. Lipton, Nisheeth K. Vishnoi. In *the 2nd Symposium on Stochastic Algorithms, Foundations and Applications*, pp. 108–116, 2003.
94. Parikshit Gopalan, Howard Karloff, Aranyak Mehta, Milena Mihail, Nisheeth K. Vishnoi. Caching with expiration times. In *the 13th ACM-SIAM ACM Symposium on Discrete Algorithms (SODA)*, pages 540–547, 2002.
95. Milena Mihail, Nisheeth K. Vishnoi. On generating graphs with prescribed degree sequences for complex network modeling applications. In *Approximation and Randomized Algorithms for Communication Networks*, 2002.
96. An algebraic proof of Alon’s Combinatorial Nullstellensatz. Nisheeth K. Vishnoi. In *Congressus Numerantium*, vol. 152, pages 89–91, 2001.

(d) Technical Reports

97. Damian Straszak, Nisheeth K. Vishnoi. On convex programming relaxations for the permanent. Available online at <https://arxiv.org/abs/1701.01419>, 2017.
98. Rahul Jain, Troy Lee, Nisheeth K. Vishnoi. A quadratically tight partition bound for classical communication complexity and query complexity. Available online at <https://arxiv.org/abs/1401.4512>, 2014.
99. Sushant Sachdeva, Nisheeth K. Vishnoi. Matrix inversion is as easy as exponentiation. Available online at <https://arxiv.org/abs/1305.0526>, 2013.
100. David Steurer, Nisheeth K. Vishnoi. Connections between Unique Games and Multicut. ECCC Technical Report TR09-125. Available online at <https://eccc.weizmann.ac.il/report/2009/125/>, 2009.
101. Rohit M. Khandekar, Subhash A. Khot, Lorenzo Orecchia, Nisheeth K. Vishnoi. On a cut-matching game for expansion. University of California, Berkeley Technical Report No. UCB/EECS-2007-177. Available online at <http://vm133.lib.berkeley.edu:90/reports/TRWebData/accessPages/EECS-2007-177.html>, 2007.
102. Richard J. Lipton, Nisheeth K. Vishnoi. A Generalization of the Characteristic Polynomial of a Graph. Presented in *35th Southeastern International Conference on Combinatorics, Graph Theory and Computing*, Boca Raton, 2004. Available online at http://cs.yale.edu/homes/vishnoi/Publications_files/LVgraphpoly.pdf, 2004.
103. Joseph M. Landsberg, Jacob Taylor, Nisheeth K. Vishnoi. The geometry of matrix rigidity. Available online at <https://smartech.gatech.edu/bitstream/handle/1853/6514/GIT-CC-03-54.pdf>, 2003.

Selected Media Coverage

1. Interview on bias in AI: “Hard choices: AI in health care”. Yale Medicine, 2021 Issue 166. <https://medicine.yale.edu/news/yale-medicine-magazine/hard-choices-ai-in-health-care/>
2. Interview and article on our work on controlling bias in AI: “Artificial intelligence could deepen biases and make us more mechanical”. March 13, 2021. <https://timesofindia.indiatimes.com/artificial-intelligence-could-deepen-biases-and-make-us-more-mechanical/articleshow/81472179.cms>
3. Interview and article on our work on reducing polarization: “When our view of the world is distorted by algorithms”. March 28, 2019. <https://www.pbs.org/wgbh/nova/article/radical-ideas-social-media-algorithms>
4. Links to extensive media coverage on our work on Fair Elections in September 2018 can be found at <https://nisheethvishnoi.wordpress.com/2018/09/16/fair-elections/>.
5. An article on reducing polarization: “When our view of the world is distorted by algorithms”. April 19, 2018. <https://actu.epfl.ch/news/when-our-view-of-the-world-is-distorted-by-algorit/>
6. An interview on Algorithm dynamics: Asking Google, Facebook and others to be “fair”. January 26, 2018. *The Ken*. Available at <https://the-ken.com/relook-google-facebook-algorithm/>.
7. An interview on the deployment of Artificial Intelligence in India. October 30, 2017. *The Ken*. Available at <https://the-ken.com/you-can-bring-bullet-train-from-japan-but-not-artificial-intelligence/>.
8. An interview on Algorithmic Bias. August 9, 2017. *livemint*. Available at <http://www.livemint.com/Technology/VXCMwOVfilaw0aIIInD1v20/When-artificial-intelligence-goes-wrong.html>.
9. An interview on Algorithmic Bias. January 23, 2017. *The Ken*. Available at <https://the-ken.com/humanising-algorithms/>.

Professional Activities

(a) At Yale

1. **Member of the Strategic Planning Committee** Yale
School of Engineering and Applied Sciences 2020-2021
2. **Member of the Ph.D. student recruiting committee** Yale
Department of Computer Science 2020
3. **Member of the faculty recruiting committee** Yale
Department of Computer Science 2020
4. **Member of the PSE Area and Tenure Appointments Committee** Yale
Physical Science and Engineering 2019-2020

(b) At EPFL

1. **Member of the Research Commission** EPFL
Official body of the Swiss Nat. Science Found. and advisory to the EPFL direction 2017-Present
2. **Chair of the Doctoral Dissertation Awards Committee** EPFL
School of Computer and Communication Sciences 2017
3. **Chair of the School of Computer and Communication Sciences Research Day** EPFL
Title: The Computational Universe 2015
4. **Organization of Summer@EPFL** EPFL
Helped with internship program of the School of Computer and Communication Sciences 2015
5. **Member of the Committee that runs the Doctoral Program (EDIC)** EPFL
School of Computer and Communication Sciences 2014-Present
6. **Member of the Faculty Hiring Committee** EPFL
School of Computer and Communication Sciences 2014

(d) Panels/Conference/Workshop/Semester Organization

7. **Co-Organizer of Semester on Geometric Methods for Optimization & Sampling** Simons
2021
8. **Committee member for XPrize at AI for Good Global Summit** AI for Good Summit
2020
9. **Co-Organizer of Workshop on Dynamical Systems and Computation** Gump Station
2019
10. **NSF Panels**
2018, 2019
11. **Co-Organizer of the 1st Yale workshop on AI, Ethics, and Society** Yale
2019
12. **Panelist in ICRC/IIT Delhi Initiative on Humanitarian Policy and Technology, (New Delhi, 2019).**
13. **Round tables on Governance of Decision Making Algorithms organized by IRGC (Zurich, 2018), AI and Global Health organized by Wilton Park (London, 2018).**
14. **Panels of Philanthropy Impact panel on Artificial Intelligence (Zurich, 2018), Responsible Finance & Investment Summit (Zurich, 2018).**
The goal of these panels is to direct philanthropy and investment in AI
15. **Steering Committee Member of the “DIMACS/Simons Collaboration in Bridging Continuous and Discrete Optimization”.**
16. **Co-organizer of a semester at the Bernoulli Center, Lausanne on “Computational Aspects of Partition Functions”**
17. **Co-Organizer of an interdisciplinary workshop** EPFL
Title: Computation and Society 2018
18. **Organizer of a session at the International Symposium on Math. Prog. (2018) on “Algorithmic Fairness and Optimization”**

19. **Co-Organizer of a workshop** ICTS, Bangalore, India
Title: Algorithms and Optimization 2018
20. **Co-Organizer of a Banff Workshop** Banff, Canada
Title: Approximation and Hardness of Approximation 2017
21. **Co-Organizer of a Bellairs workshop** EPFL
Title: Algorithmic Aspects of Dynamical Systems 2017
22. **Co-Organizer of an interdisciplinary workshop** Mysore
Title: Computation, Sciences and Society 2017
23. **Co-Organizer of a Dagstuhl Seminar** Dagstuhl, Germany
Title: Evolution and Computing 2016
24. **Co-Organizer of a workshop series** India
Title: Breakthroughs in Theoretical Computer Science 2011, 2013
25. **Co-Organizer of a winter school** Bangalore, India
Title: The 2011 School of Approximability 2011

(c) Committees

26. PC Chair of IEEE Foundations of Computer Science (FOCS) 2021
27. PC Member of FORC: Foundations of Responsible Computing 2020
28. Program Committee of India Science Festival, Pune, India 2020-2021
29. PC Member of CRAFT: Critiquing and Rethinking Accountability, Fairness and Transparency 2020
30. PC Member of ACM Conference on Fairness, Accountability, and Transparency (FAccT) 2020
31. PC Member of ACM-SIAM Symposium on Discrete Algorithms (SODA) 2020
32. PC Member of Computational Learning Theory (COLT) 2019
33. PC Member of ACM Conference on Fairness, Accountability, and Transparency (FAccT) 2019
34. PC Member of IEEE Foundations of Computer Science (FOCS) 2018
35. PC Member of Foundations of Software Technology and Theoretical Computer Science 2018
36. PC Member of ACM-SIAM Symposium on Discrete Algorithms (SODA) 2018
37. PC Member of Innovations in Theoretical Computer Science (ITCS) 2016
38. PC Member of Innovations in Theoretical Computer Science (ITCS) 2015
39. PC Member of ACM-SIAM Symposium on Discrete Algorithms (SODA) 2014
40. PC Chair of Foundations of Software Technology and Theoretical Computer Science 2013
41. PC Member of ACM Symposium on Theory of Computing (STOC) 2011
42. PC Member of Foundations of Software Technology and Theoretical Computer Science 2011
43. PC Member of Foundations of Software Technology and Theoretical Computer Science 2009

Selected Talks (in Last 7 years)

Bootcamp talk at Simons semester on Geometric Methods for Optimization and Sampling <i>Title: Optimization and Sampling Under Symmetry: Examples.</i>	Sep. 2021 <i>Virtual</i>
Bootcamp talk at Simons semester on Geometric Methods for Optimization and Sampling <i>Title: An introduction to Hamiltonian Monte Carlo method for sampling.</i>	Sep. 2021 <i>Virtual</i>
Invited talk at Theory Lunch at Dept. of Economics, Yale <i>Title: Selection problems in the presence of implicit biases.</i>	May 2021 <i>Virtual</i>
Invited talk at Franke Ideas Salon <i>Title: A Minimalist Approach to Intelligence</i>	January 2021 <i>Virtual</i>
Keynote at Walmart AI Summit <i>Title: Controlling bias in algorithmic decision making</i>	January 2021 <i>Virtual</i>
Tutte Colloquium at University of Waterloo <i>Title: Sampling under Symmetry</i>	November 2020 <i>Virtual</i>
Invited Talk at Google Brain <i>Title: Efficient Alternatives to Min-Max Models</i>	October 2020 <i>Virtual</i>
Invited talk in the Law & Tech Series at Yale Law School <i>Title: Challenges of Making Unbiased Decisions in a World of Data and Algorithms</i>	September 2020 <i>Virtual</i>
Invited talk in the Convening Yale series at Yale SOM <i>Title: Challenges of Making Unbiased Decisions in a World of Data and Algorithms</i>	September 2020 <i>Virtual</i>
Invited talk ML Seminar at JHU <i>Title: Equilibrium in Min-Max Optimization</i>	September 2020 <i>Virtual</i>
Keynote talk at Highlights of Algorithms <i>Title: Controlling Bias in Algorithms</i>	September 2020 <i>Virtual</i>
Invited talk in Simons reunion workshop on Deep Learning, Berkeley <i>Title: Equilibrium in Min-Max Optimization</i>	August 2020 <i>Virtual</i>
Invited presentation to European Commission <i>Title: Controlling Bias in AI</i>	May 2020 <i>Virtual</i>
Invited Webinar of A+ Alliance <i>Title: Virtual Algorithms 101</i>	April 2020 <i>Virtual</i>
Trusted AI Seminar at IBM Research <i>Title: Optimization-Based Approaches to Control Algorithmic Bias</i>	February 2020 <i>New York</i>
Invited talk at India Science Festival <i>Title: Humans are not alone, AI discriminates too</i>	January 2020 <i>Pune</i>
Invited talk at ICTS <i>Title: Physics-Inspired Algorithms</i>	January 2020 <i>Bangalore</i>
Keynote talk at LinkedIn-IISC workshop <i>Title: Towards Controlling Bias in AI/ML</i>	January 2020 <i>Bangalore</i>
Invited talk at Rice University <i>Title: Towards Controlling Bias in AI</i>	October 2019 <i>Houston</i>

Invited talk at University of Colorado <i>Title: Physics-inspired Algorithms: Hamiltonian Monte Carlo for Sampling</i>	October 2019 Boulder
Invited talk at Google ML Theory Day <i>Title: Physics-inspired Algorithms: Hamiltonian Monte Carlo for Sampling</i>	September 2019 New York City
Invited talk at Courant Institute <i>Title: Entropy, Optimization and Symmetry</i>	August 2019 NYU
Invited talk at Facebook <i>Title: Towards Controlling Bias in AI Systems</i>	July 2019 Seattle
HCI and Data Visualization PIC Seminar Series <i>Title: Towards controlling bias in machine learning</i>	May 2019 IBM Research, Cambridge
Invited talk at Jump Trading <i>Title: Towards controlling bias in machine learning</i>	May 2019 Jump Trading, Chicago
Invited talk at Collaboration on Algorithms and Geometry Annual Meeting <i>Title: Physics-inspired Algorithms: Hamiltonian Monte Carlo for Sampling</i>	May 2019 Simons Foundation, NY
Department Seminar at the Statistics and Data Science Dept. <i>Title: Physics-Inspired Algorithms for Sampling</i>	April 2019 Yale University
Invited talk at the Workshop on Deterministic counting <i>Title: Entropy, Capacity, and Counting</i>	March 2019 Simons Institute, UC Berkeley
Invited talk at the Geometry of Polynomials seminar <i>Title: Bethe approximation for partition functions</i>	March 2019 Simons Institute, UC Berkeley
CMI seminar <i>Title: Towards controlling bias in AI systems</i>	March 2019 Caltech
ACO Alumni Colloquium <i>Title: Opportunities at the intersection of AI and society</i>	January 2019 Georgia Tech
CSE Department Talk <i>Title: Algorithms for Machine Learning, Inspired from Physics</i>	November 2018 IIT Delhi
CSE Department Talk <i>Title: Algorithms from Physics</i>	October 2018 IIT Goa
STCS Colloquium <i>Title: Algorithms from Physics</i>	October 2018 TIFR, Mumbai
CSE Department Talk <i>Title: Algorithms from Physics</i>	October 2018 IIT Bombay
Invited talk at the FOCS workshop on Scaling Algorithms and Applications <i>Title: On the Computability of Maximum Entropy Distributions</i>	June 2018 Paris
Invited talk at AWS <i>Title: Algorithms and Bias</i>	August 2018 New York
Invited talk at ISMP <i>Title: Fair and Diverse DPP-based Sampling</i>	July 2018 Bordeaux
Invited talk at the workshop on Optimization, Complexity and Invariant Theory <i>Title: An Introduction to Geodesic Convexity</i>	June 2018 IAS, Princeton

DSI Colloquium <i>Title: Optimization, Sampling, and Physics</i>	May 2018 Boston University
Center for Quantum Technologies Seminar <i>Title: Algorithms from Physics</i>	April 2018 National University of Singapore
CSE Seminar <i>Title: Algorithms, Nature, and Society</i>	February 2018 U Michigan
CS Colloquium <i>Title: Algorithms and Bias</i>	February 2018 Yale University
DSI Distinguished Lecture <i>Title: Algorithms, Nature, and Society</i>	February 2018 Boston University
CS Colloquium <i>Title: Algorithms, Nature, and Society</i>	February 2018 Northeastern University
DCS Colloquia <i>Title: Algorithms, Nature, and Society</i>	February 2018 Rutgers University
CS Seminar <i>Title: Algorithms from Physics</i>	February 2018 Princeton University
Invited talk at ICTS at TEN <i>Title: The mathematics of bias</i>	January 2018 Bangalore
Distinguished speakers lecture <i>Title: Algorithms, complexity, and bias</i>	December 2017 Max Planck Institute for Informatics
Invited Presentation to delegates from United Nations OHCHR and Women@TheTable <i>Title: Bias in AI</i>	November 2017 Geneva
Invited talk in the Theory seminar in the Computer Science department <i>Title: Entropy, optimization and polynomials (to counter algorithmic bias)</i>	October 2017 UIUC
Invited talk at Allerton <i>Title: Belief propagation, Bethe approximation and polynomials</i>	October 2017 Illinois
Invited talk at the Workshop on Fast Iterative Methods <i>Title: Slime molds and sparse recovery</i>	October 2017 Simons Institute, UC Berkeley
Invited talk at the Workshop on Discrete Opt. via Continuous Relaxations <i>Title: Subdeterminant maximization via nonconvex relaxations</i>	September 2017 Simons Institute, UC Berkeley
Invited talk in the Optimization Seminar at the Simons Institute <i>Title: Entropy, optimization and polynomials</i>	September 2017 Simons Institute, UC Berkeley
Invited talk at Google <i>Title: Fair algorithms</i>	September 2017 Mountain View, CA
Invited talk at the Workshop on Learning Theory at Foundations of Computational Math. <i>Title: Learning in nature</i>	July 2017 Barcelona
Plenary talk at the “Special Year on Complexity Theory and Cryptography” <i>Title: Computational aspects of partition functions</i>	January 2017 IISc, Bangalore
Invited talk at the Innovations in Theoretical Computer Science (ITCS) conference <i>Title: IRLS and slime molds: Equivalence and convergence</i>	Jan. 2017 Berkeley

Invited talk at the meeting “The Interface of Biology & TCS” <i>Title: Evolution and computation</i>	December 2016 <i>Simons Center, NCBS</i>
Invited talk at the MIT Theory of Computation Colloquium <i>Title: Slime molds, sparse recovery and beyond</i>	November 2016 <i>MIT</i>
Invited talk at the Yale Applied Math Seminar <i>Title: Slime molds, sparse recovery and beyond</i>	November 2016 <i>Yale</i>
Invited talk at the CS/IEOR Seminar <i>Title: Slime molds, sparse recovery and beyond</i>	November 2016 <i>Columbia</i>
Plenary talk at “Probabilistic Structures in Deterministic Population Genetics” <i>Title: Evolutionary dynamics in finite populations</i>	November 2016 <i>Vienna</i>
Invited Talk at FOCS 2016 Workshop on Orthogonal Polynomials <i>Title: Orthogonal polynomials and spectral algorithms</i>	October 2016 <i>New Brunswick</i>
Invited talk at the meeting on Discrete Optimization <i>Title: Sparse recovery, iteratively reweighed least squares and beyond</i>	August 2016 <i>ETH Zurich</i>
Invited talk at 5th Mysore Park Workshop <i>Title: Sparse recovery, iteratively reweighed least squares and beyond</i>	August 2016 <i>Mysore</i>
Invited talk at Algebraic and Spectral Graph Theory Workshop <i>Title: IRLS, sparse recovery and beyond</i>	August 2016 <i>Banff</i>
Invited talk at the ICML Workshop on Advances in Nonconvex Analysis and Optimization <i>Title: Slime molds and sparse recovery</i>	June 2016 <i>New York</i>
Invited talk at the Computational Complexity Conference <i>Title: Evolution and computation</i>	June 2016 <i>Tokyo</i>
Ng Kong Beng Public Lecture at the Institute of Mathematical Sciences <i>Title: Evolution and computation</i>	March 2016 <i>IMS-NUS, Singapore</i>
Keynote at the meeting on “Computation and Optimization in Science and Engineering” <i>Title: Evolution and computation</i>	February 2016 <i>IIT Kanpur</i>
Invited talk at the meeting “Population Genetics and Evolution” <i>Title: Evolution and computation</i>	January 2016 <i>ICTS, Bangalore</i>
Invited talk at the workshop Fast Algorithms via Spectral Methods <i>Title: Faster spectral algorithms via approximation theory</i>	December 2015 <i>Simons Institute, UC Berkeley</i>
Invited talk at the OR Seminar <i>Title: Natural algorithms for flows and linear programming</i>	December 2015 <i>LSE</i>
Distinguished Speaker at the 6th Cargese workshop on Combinatorial Optimization <i>Title: Three lectures on linear solvers and convex optimization</i>	September 2015 <i>Corsica</i>
Invited Talk at the Department of Computer Science <i>Title: Evolution, dynamical systems and computation</i>	July 2015 <i>Princeton</i>
Invited talk at the 22nd International Symposium on Mathematical Programming <i>Title: Natural algorithms for flow problems</i>	July 2015 <i>Pittsburgh</i>
Invited talk at the Theory Seminar <i>Title: Natural algorithms for flow problems</i>	April 2015 <i>Columbia, NY</i>

Plenary talk at the Bellairs Workshop on Combinatorial Optimization <i>Title: Natural algorithms for flow problems</i>	April 2015 Barbados
Invited talk at the Computer Science/Discrete Mathematics Seminar <i>Title: Natural algorithms for flow problems</i>	April 2015 IAS, Princeton
Invited Lecture Series at the Department of Computer Science and Engineering <i>Title: Three lectures on convex optimization</i>	December 2014 IIT Kanpur
Invited Lecture Series at the Department of Computer Science and Engineering <i>Title: Three lectures on convex optimization</i>	December 2014 IIT Madras
Invited talk at the Workshop on Flexible Network Design <i>Title: On the computability of max-entropy distributions for combinatorial problems</i>	July 2014 Lugano
Keynote talk at ARC Theory Day <i>Title: Entropy, optimization and counting</i>	April 2014 Georgia Tech
Invited talk at the workshop “Electrical Flows, Graph Laplacians, and Algorithms ...” <i>Title: Faster algorithms via approximation theory</i>	April 2014 ICERM, Brown
Invited talk at the Ideas and Problems Seminar <i>Title: How could life have emerged?</i>	March 2014 Simons Institute, UC Berkeley
Plenary talk at the meeting “Population Genetics and Evolution” <i>Title: Making evolution rigorous?</i>	February 2014 ICTS, Bangalore
Invited talk at RIMS <i>Title: Entropy, optimization and counting</i>	January 2014 Kyoto
Plenary talk at the ELC Workshop in Inapproximability <i>Title: Inapproximability</i>	January 2014 Tokyo
Invited talk at the Department of Mathematics <i>Title: Approximation theory and the design of fast algorithms</i>	January 2014 Indian Institute of Science
Invited talk at the Chennai Mathematical Institute <i>Title: Zeros of polynomials and their applications to theory</i>	January 2014 Chennai
Invited talk in the International Center for Theoretical Sciences Colloquium <i>Title: Asexual evolution through the lens of theory</i>	November 2013 ICTS, Bangalore
Invited talk at the FOCS Workshop on Zeros of Polynomials and their Applications to Theory <i>Title: Introduction to real stability and strongly Rayleigh measures</i>	Oct. 2013 Berkeley
School of Natural Science Colloquium <i>Title: Asexual evolution through the lens of theory</i>	September 2013 TIFR, Mumbai
Invited talk at TCS+ <i>Title: Evolution through the lens of theory</i>	March 2013 Online seminar