Raghu Meka

CONTACT INFORMATION

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Los Angeles, CA-90095

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RESEARCH INTERESTS

complexity theory, pseudorandomness, algorithms, learning, probability, data mining

EDUCATION

University of Texas at Austin, Austin, TX USA

Ph.D., Computer Science, August 2011

- Dissertation: "Computational Applications of Invariance Principles"
- **Bert Kay Best Dissertaton award**
- Advisor: David Zuckerman

Indian Institute of Technology Madras, Chennai, India

Bachelor of Technology, Computer Science, May 2005

POSITIONS

Visiting Associate Professor — August 2018 - present
Department of Mathematics,
Massachusetts Institute of Technology (MIT)

Associate Professor — July 2017 - present
Department of computer science,
University of California, Los Angeles

Assistant professor — Nov 2014 - 2017
Department of computer science,
University of California, Los Angeles

Researcher, Microsoft Research, Silicon Valley. — Sep 2013 - Nov 2014

Postdoctoral member, — Sep 2011 - Aug 2013
Institute for Advanced Study, Princeton and DIMACS, Rutgers.

Consulting researcher, Microsoft Research, Silicon Valley. — Aug 2012

Intern, Microsoft Research, Silicon Valley. — May 2011 - July 2011

Intern, Microsoft Research, Silicon Valley. — June 2010 - Sep 2010

Research assistant, University of Texas at Austin. — June 2007 - Aug 2011

HONORS AND AWARDS

NSF CAREER award, 2016

Plenary speaker, RANDOM 2015

Bert Kay Best Dissertation award, University of Texas at Austin, 2011

PROFESSIONAL EXPERIENCE

Program committee member
Conference on Learning Theory (**COLT**) 2019
34th Conference on Computational Complexity (**CCC**) 2019
59th Symposium on Foundations of Computer Science (**FOCS**) 2018

57th Symposium on Foundations of Computer Science (**FOCS**) 2016
43rd International Colloquium on Automata, Languages, and Programming (**ICALP**) 2016
55th Symposium on Foundations of Computer Science (**FOCS**) 2014
33rd Foundations of Software Technology and Theoretical Computer Science (**FSTTCS**) 2013
54th Symposium on Foundations of Computer Science (**FOCS**) 2013
15th International Workshop on RANDOM 2012

Editor SIAM Journal on Computing Special Issue on FOCS 2013

Grant Reviews NSF Panelist, Israel Science Foundation

Journal reviews SIAM Journal on Computing, Computational Complexity, SIAM Journal on Scientific Computing, Theory of Computing

External support NSF Career award, National Science Foundation 2016 - present

Publications

Raghu Meka, Omer Reingold, Avishay Tal
Pseudorandom Generators for Width 3 Branching Programs
Symposium on Theory of Computing (**STOC**), 2019.

Nikhil Bansal, Raghu Meka
On the Discrepancy of Random Low-Degree Set Systems.
SIAM Symposium on Discrete Algorithms (**SODA**), 2019.

Surbhi Goel, Adam R. Klivans, Raghu Meka
Learning One Convolutional Layer with Overlapping Patches.
International Conference on Machine Learning (**ICML**), 2018

Adam R. Klivans, Pravesh K. Kothari, Raghu Meka
Efficient Algorithms for Outlier-Robust Regression
30th Conference on Learning Theory (**COLT**), 2018

Adam Klivans, Raghu Meka
Learning Graphical Models Using Multiplicative Weights
58th IEEE Symposium on Foundations of Computer Science (**FOCS**), 2017

Pravesh Kothari, Raghu Meka, Prasad Raghavendra
Approximating Rectangles by Juntas and Weakly-Exponential Lower Bounds for LP Relaxations of CSPs
49th ACM Symposium on Theory of Computing (**STOC**), 2017

Raghu Meka
Explicit Resilient Functions matching Ajtai-Linial
ACM-SIAM Symposium on Discrete Algorithms (**SODA**), 2017

Parikshit Gopalan, Daniel Kane, Raghu Meka
Pseudorandomness via the discrete Fourier transform
56th IEEE Symposium on Foundations of Computer Science (**FOCS**), 2015
Invited to SICOMP Special Issue on FOCS 2015

Raghu Meka, Aaron Potechin, Avi Wigderson
Sum-of-squares lower bounds for planted clique
47th ACM Symposium on Theory of Computing (**STOC**), 2015

Invited to SICOMP Special Issue on STOC 2015

Pravesh Kothari, Raghu Meka
Almost Optimal Pseudorandom Generators for Spherical Caps
47th ACM Symposium on Theory of Computing (**STOC**), 2015

Mika Göös, Shachar Lovett, Raghu Meka, Thomas Watson, David Zuckerman
Rectangles are Nonnegative Juntas
47th ACM Symposium on Theory of Computing (**STOC**), 2015

Clement Canonne, Venkatesan Guruswami, Raghu Meka, Madhu Sudan
Communication with Imperfectly Shared Randomness
6th Innovations in Theoretical Computer Science (**ITCS**), 2015

Raghu Meka, Omer Reingold, Guy Rothblum, Ron Rothblum
Fast Pseudorandomness for Independence and Load Balancing
41st International Colloquium on Automata, Languages and Programming (**ICALP**), 2014

Elad Hazan, Zohar Karnin, Raghu Meka
Volumetric Spanners an Exploration Basis for Learning
27th Conference on Learning Theory (**COLT**) 2014

Moritz Hardt, Raghu Meka, Prasad Raghavendra, Benjamin Weitz
Computational Limits for Matrix Completion
27th Conference on Learning Theory (**COLT**) 2014

Raghu Meka, Omer Reingold, Yuan Zhou
Deterministic Coupon Collection and Better Strong Dispersers
17th International Workshop on Approx-Random (**RANDOM**), 2014

Daniel M. Kane, Adam Klivans, Raghu Meka
Learning Half Spaces Under Log-Concave Densities
26th Conference on Learning Theory (**COLT**) 2013

Daniel Kane, Raghu Meka
A PRG for Lipschitz Functions of Polynomials with Applications to Sparsest Cut
45th Symposium on Theory of Computing (**STOC**), 2013

Parikshit Gopalan, Raghu Meka, Omer Reingold, Luca Trevisan, Salil Vadhan
Better Pseudorandom Generators from Milder Pseudorandom Restrictions
53rd Symposium on Foundations of Computer Science (**FOCS**), 2012

Russell Impagliazzo, Raghu Meka, David Zuckerman
Pseudorandomness from Shrinkage
53rd Symposium on Foundations of Computer Science (**FOCS**), 2012

Shachar Lovett, Raghu Meka
Constructive Discrepancy Minimization by Walking on The Edges
53rd Symposium on Foundations of Computer Science (**FOCS**), 2012
Invited to SICOMP Special Issue on STOC 2010

Raghu Meka
A PTAS for Computing the Supremum of Gaussian Processes
53rd Symposium on Foundations of Computer Science (**FOCS**), 2012

Boaz Barak, Parikshit Gopalan, Johan Hästad, Raghu Meka, Prasad Raghavendra, David Steurer
Making the long code shorter, with applications to the Unique Games Conjecture
53rd Symposium on Foundations of Computer Science (**FOCS**), 2012
Invited to SICOMP Special Issue on STOC 2010

Parikshit Gopalan, Adam Klivans, Raghu Meka
Learning Functions of Halfspaces using Prefix Covers
25th Conference on Learning Theory (**COLT**), 2012

Parikshit Gopalan, Raghu Meka, Omer Reingold
DNF Sparsification and Faster Deterministic Counting
27th Conference on Computational Complexity (**CCC**), 2012
Invited to Computational Complexity Special Issue on CCC 2012

Daniel M. Kane, Raghu Meka, Jelani Nelson
Almost Optimal Explicit Johnson-Lindenstrauss Families
14th International Workhopy on Approx-Random (**RANDOM**), 2011

Parikshit Gopalan, Adam Klivans, Raghu Meka, Daniel Stefankovic, Santosh Vempala, Eric Vigoda
An FPTAS for #Knapsack and Related Counting Problems
52nd Symposium on Foundations of Computer Science (**FOCS**), 2011

Parikshit Gopalan, Raghu Meka, Omer Reingold, David Zuckerman
Pseudorandom Generators for Combinatorial Shapes
43rd Symposium on Theory of Computing (**STOC**), 2011

Raghu Meka, David Zuckerman
Pseudorandom Generators for Polynomial Threshold Functions
42nd Symposium on Theory of Computing (**STOC**), 2010
Invited to SICOMP Special Issue on STOC 2010

Ilias Diakonikolas, Prahladh Harsha, Adam Klivans, Raghu Meka, Prasad Raghavendra, Rocco Servedio, Li-Yang Tan
Bounding the Average Sensitivity and Noise Sensitivity of Polynomial Threshold Functions
42nd Symposium on Theory of Computing (**STOC**), 2010
Invited to Special Issue of Theory of Computing

Prahladh Harsha, Adam Klivans, Raghu Meka
An Invariance Principle for Polytopes
42nd Symposium on Theory of Computing (**STOC**), 2010

Prateek Jain, Raghu Meka, Inderjit S. Dhillon
Guaranteed Rank Minimization via Singular Value Projection
24th Conference on Neural Information Processing Systems (**NIPS**), 2010

Raghu Meka, David Zuckerman
Small-Bias Spaces for Group Products
12th International Workshop on Approx-Random (**RANDOM**), 2009

Raghu Meka, Prateek Jain, Inderjit S. Dhillon
Matrix Completion from Power-Law Distributed Samples
23rd Conference on Neural Information Processing Systems (**NIPS**), 2009

Raghu Meka, Prateek Jain, Constantine Caramanis, Inderjit S. Dhillon
Rank minimization via online learning
25th International Conference on Machine Learning (**ICML**), 2008

Prateek Jain, Raghu Meka, Inderjit S. Dhillon
Simultaneous Unsupervised Learning of Disparate Clusterings
Siam Conference on Data Mining (**SDM**), 2008. Best Paper Runner-Up Award
Invited to Statistical Analysis and Data Mining

Journal Publications

Russell Impagliazzo, Raghu Meka, David Zuckerman
Pseudorandomness from Shrinkage.
J. ACM 66(2): 11:1-11:16 (2019)

Parikshit Gopalan, Daniel M. Kane, Raghu Meka
Pseudorandomness via the Discrete Fourier Transform.
SIAM J. Comput. 47(6): 2451-2487 (2018)

Clément L. Canonne, Venkatesan Guruswami, Raghu Meka, Madhu Sudan
Communication With Imperfectly Shared Randomness.
IEEE Trans. Information Theory 63(10): 6799-6818 (2017)

Mika Göös, Shachar Lovett, Raghu Meka, Thomas Watson, David Zuckerman
Rectangles Are Nonnegative Juntas.
SIAM J. Comput. 45(5): 1835-1869 (2016)

Raghu Meka, Oanh Nguyen, Van Vu
Anti-concentration for Polynomials of Independent Random Variables
Theory of Computing, Volume 12, Number 1, 2016

Boaz Barak, Parikshit Gopalan, Johan Håstad, Raghu Meka, Prasad Raghavendra, David Steurer
Making the Long Code Shorter
SIAM Journal on Computing, Volume 44, Issue 5, 2015

Shachar Lovett, Raghu Meka
Constructive Discrepancy Minimization by Walking on the Edges
SIAM Journal on Computing, Volume 44, Issue 5, 2015

Prahladh Harsha, Adam Klivans, Raghu Meka
Bounding the Sensitvity of Polynomial Threshold Functions
Theory of Computing, Volume 10, 2014

Parikshit Gopalan, Raghu Meka, Omer Reingold
DNF Sparsification and a Faster Deterministic Counting Algorithm
IEEE Journal on Computational Complexity, Volume 22, Issue 2, 2013

Parikshit Gopalan, Raghu Meka, Omer Reingold, David Zuckerman
Pseudorandom Generators for Combinatorial Shapes
SIAM Journal on Computing, Volume 42, Issue 3, 2013

Raghu Meka, David Zuckerman
Pseudorandom Generators for Polynomial Threshold Functions

SIAM Journal on Computing, Volume 42, Issue 3, 2013

Prahladh Harsha, Adam Klivans, Raghu Meka
An Invariance Principle for Polytopes
Journal of the Association for Computing Machinery, Volume 59, Issue 6, 2012

Prateek Jain, Raghu Meka, Inderjit S. Dhillon
Simultaneous Unsupervised Learning of Disparate Clusterings
Statistical Analysis and Data Mining, Volume 1, Issue 3, 2009

Teaching

CS289RT: Great Theory Hits of Twenty-First Century, Winter 2018

CS289RT: Algorithmic Machine Learning, Winter 2016, Fall 2016, Fall 2017

CS289PR: Pseudorandomness and Explicit Constructions, Winter 2016, Spring 2017

CS180: Algorithms and Complexity, Spring 2015, Fall 2017, Spring 2018

Foundations of Computer Science, Rutgers, Fall 2012

Tutorial on Discrepancy Theory as part of *Research Experience for Undergraduates* (**REU**), Rutgers, Summer 2013