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

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
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

External reviewer ICALP 2008, STOC 2010, ISIT 2010, FOCS 2011, SODA 2012, STOC 2012, CCC 2012, FOCS 2012, STOC 2013, SODA 2014, ITCS 2014

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

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 Hstad, 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

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

Mika Göös, Shachar Lovett, Raghu Meka, Thomas Watson, David Zuckerman
Rectangles are Nonnegative Juntas
SIAM Journal on Computing, Volume 45, Issue 5, 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: Algorithmic Machine Learning, Winter 2016, Fall 2016

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

CS180: Algorithms and Complexity, Spring 2015, Fall 2017

Foundations of Computer Science, Rutgers, Fall 2012

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

Invited Talks

Communication lower bounds by query lower bounds
SoCal Theory Day, Caltech, November 2016
Workshop on Computational Complexity, Banff International Research Station, September 2016

Pseudorandomness via Discrete Fourier Transform
Invited talk at Information Theory and Applications (ITA), San Diego Feb 2016

Pseudorandomness via Iterative Simplification
MIT theory seminar, Mar 2016
Caltech theory seminar, Jan 2016
Plenary talk RANDOM 2015

Non-negative Rectangles are Juntas
Oberwolach Complexity Workshop, Germany, November 2015

Seminar Simons institute for theory of computing, September 2015
Workshop on power of randomness, Atlanta March 2015
Invited talk at Information Theory and Applications (ITA), San Diego Feb 2015

A PTAS for Computing the Supremum of Gaussian Processes
Simons Symposia: Discrete Analysis - Beyond the Boolean Cube, Puerto Rico, March 2014

Association Schemes, Non-Commutative Polynomials and Lasserre Lower Bounds for Planted Clique
UT Theory Seminar, Austin, TX, Oct 2013
Workshop on Real Analysis, Simons Institute for the Theory of Computing, Berkeley, CA, Aug 2013

Recent Progress in Derandomization
Oberwolfach Complexity Workshop, Germany, Nov 2012

Better Pseudorandom Generators from Milder Pseudorandom Restrictions
New York University Theory Seminar, Sep 2012
Coding, Complexity and Sparsity Workshop, Ann Arbor, Aug 2012

Constructive Discrepancy Minimization by Walking the Edges
Columbia Theory Seminar, Dec 2012
Rutgers Discrete Math Seminar, Dec 2012
CMU Theory Lunch, Sep 2012
Microsoft Research, SVC, Aug 2012
Princeton Discrete Math Seminar, April 2012

DNF Sparsification and Determnistic Counting
Microsoft Research, SVC, July 2011

Making the Long Code Shorter
Microsoft Research, Bengaluru, Jan 2012
Institute for Advanced Study, I, II, Nov 2011
Princeton Theory Lunch, Oct 2011
DIMACS Theory Seminar, Sep 2011

Pseudorandom Generators for Combinatorial Shapes
Workshop on Expanders and Derandomization, Institut Henri Poincaré, Paris, March 2011

Pseudorandom Generators from Invariance Principles
Tel Aviv University, Israel, Feb 2011
Technion University, Israel, Feb 2011
Workshop on Analysis and Geometry of Boolean Threshold Functions, Princeton, Oct 2010

Deterministic Counting Algorithms for Knapsack
Microsoft Research, SVC, Sep 2010

An Invariance Principle for Polytopes
New York University, Probability Seminar, Oct 2012
China Theory Week, Beijing, China, Sep 2010

Pseudorandom Generators for Polynomial Threshold Functions
Microsoft Research, Bengaluru, Oct 2010
Harvard Theory Seminar, May 2010

Pseudorandom Generators and Sensitivity Bounds for Threshold Functions

UT Theory Seminar, Austin, TX