

# Yash Kanoria

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EMPLOYMENT	Associate Professor (without tenure) Assistant Professor Decision, Risk and Operations Division, Graduate School of Business, Columbia University, New York, NY.	From July 2017 July 2013 - June 2017
	Schramm postdoctoral fellow Microsoft Research New England, Cambridge, MA.	Aug 2012 - June 2013
CONTACT	Uris Hall Columbia University New York, NY 10027	<i>Phone:</i> (650) 353-0476 <i>ykanoria AT columbia POINT edu</i> <i>http://www.columbia.edu/~yk2577</i>
EDUCATION	<b>Stanford University</b> , Stanford, CA PhD in Electrical Engineering <i>Adviser:</i> Andrea Montanari <i>Thesis title:</i> Learning in social and economic networks	Sep 2007 - Aug 2012
	<b>Indian Institute of Technology Bombay</b> , India (CPI 10.00/10.00) Bachelor of Technology in Electrical Engineering	Jul 2003 - May 2007
RESEARCH INTERESTS	Matching markets, design and operations of marketplaces and platforms	
DISTINCTIONS	NSF CAREER Award	2017
	Simons-Berkeley Research Fellowship	Fall 2015
	INFORMS JFIG Junior Faculty Paper Award (second prize)	2014
	Student Paper Award at IEEE Intl. Symposium on Information Theory	2010
	Numerical Technologies Founders' Prize for top score on the EE PhD Qualifying Examination at Stanford	2008
	President of India Gold Medal at IIT Bombay for standing first in the institute	2007
	Gold Medal and second overall at the International Physics Olympiad (IPhO)	2003
	Gold Medal and second overall at the International Chemistry Olympiad (IChO)	2003
	Ranked 2nd at the All India IIT Joint Entrance Examination	2003
JOURNAL PAPERS	Y. Kanoria, D. Saban and J. Sethuraman, "The size of the core in random assignment markets," to appear in <i>Operations Research</i> .	
	R. Anderson, I. Ashlagi, Y. Kanoria and D. Gamarnik, "Efficient dynamic barter exchange," <i>Operations Research</i> , 65(6), 1446-1459, 2017.	
	I. Ashlagi, Y. Kanoria and J. Leshno, "Unbalanced random matching markets: the stark effect of competition," <i>Journal of Political Economy</i> , 125(1), Feb 2017.	
	M. Bayati, C. Borgs, J. Chayes, Y. Kanoria, and A. Montanari, "Bargaining dynamics in exchange networks," <i>Journal of Economic Theory</i> , Vol. 156, pp. 417454, March 2015.	
	M. Ibrahimi, Y. Kanoria, M. Kraning and A. Montanari, "The Set of Solutions of Random XORSAT Formulae," to appear in the <i>Annals of Applied Probability</i> , Vol. 25, No. 5, Sep 2015.	

Y. Kanoria and A. Montanari, "Majority dynamics on trees and the dynamic cavity method," *Annals of Applied Probability*, Vol. 21, No. 5, Oct 2011.

Y. Kanoria and A. Montanari, "Optimal coding for the deletion channel with small deletion probability," *IEEE Transactions on Information Theory*, Vol. 59, No. 10, pp. 6192-6219, Oct. 2013.

Y. Kanoria and O. Tamuz, "Tractable Bayesian Social Learning," *IEEE Journal on Selected Areas in Communication*, Vol. 31, No. 4, pp. 756-765, April 2013.

WORKING PAPERS Y. Kanoria and H. Nazerzadeh, "Dynamic Reserves For Repeated Auctions: Learning from Bids," major revision at *Operations Research*, submitted.

Itai Feigenbaum, Yash Kanoria, Irene Lo and Jay Sethuraman, "Dynamic Matching in School Choice: Efficient Seat Reallocation After Late Cancellations," major revision at Management Science.

R. Johari, V. Kamble, and Y. Kanoria, "Matching while Learning," major revision at *Operations Research*.

I. Ashlagi, M. Braverman, Y. Kanoria and P. Shi, "Communication Requirements and Informative Signaling in Matching Markets"

Y. Kanoria and D. Saban, "Facilitating the search for partners on matching platforms: restricting agent actions"

N. Arnosti, R. Johari and Y. Kanoria, "Managing congestion in matching markets"

S. Banerjee, Y. Kanoria and P. Qian (2017), "The Value of State Dependent Control in Ride-sharing Systems," work in progress.

Y. Kanoria, I. Lobel and J. Lu (2017), "Dynamic Decision Making under Customer Abandonment Risk," work in progress.

REFEREED  
CONFERENCE  
PAPERS

R. Johari, V. Kamble, and Y. Kanoria, "Matching while Learning," *ACM Conference on Economics and Computation (EC)*, 2017.

I. Ashlagi, M. Braverman, Y. Kanoria and P. Shi, "Communication Requirements and Informative Signaling in Matching Markets," *ACM Conference on Economics and Computation (EC)*, 2017.

Y. Kanoria and D. Saban, "Facilitating the search for partners on matching platforms: restricting agent actions," *ACM Conference on Economics and Computation (EC)*, 2017.

Itai Feigenbaum, Yash Kanoria, Irene Lo and Jay Sethuraman, "Dynamic Matching in School Choice: Efficient Seat Reallocation After Late Cancellations," *Workshop on Internet and Network Economics (WINE)*, 2016.

Y. Kanoria, D. Saban and J. Sethuraman, "The size of the core in random assignment markets." *ACM-SIAM Symp. on Discrete Algorithms (SODA)*, 2015.

Y. Kanoria and H. Nazerzadeh, "Dynamic Reserves For Repeated Auctions: Learning from Bids," *Workshop on Internet and Network Economics (WINE)*, 2014.

N. Arnosti, R. Johari and Y. Kanoria, "Managing search in decentralized matching markets," *ACM Conference on Economics and Computation (EC)*, 2014.

I. Ashlagi, Y. Kanoria and J. D. Leshno, "Unbalanced random matching markets," *ACM Conference on Economics and Computation (EC)*, 2013.

- Y. Kanoria and O. Tamuz, “Tractable Bayesian Social Learning on Trees,” *IEEE Intl. Symposium on Information Theory (ISIT)*, 2012.
- M. Ibrahimi, Y. Kanoria, M. Kraning and A. Montanari, “The Set of Solutions of Random XORSAT Formulae,” *ACM-SIAM Symp. on Discrete Algorithms (SODA)*, 2012.
- M. Ibrahimi, A. Javanmard, Y. Kanoria and A. Montanari, “Robust max-product belief propagation,” *Asilomar Conference on Signals, Systems and Computers*, 2011 (Invited).
- Y. Kanoria, A. Montanari, D. Tse and B. Zhang, “Distributed Storage for Intermittent Energy Sources: Control Design and Performance Limits,” *Annual Allerton Conf. on Communication, Control and Computing*, 2011.
- Y. Kanoria and A. Montanari, “Subexponential convergence for information aggregation on regular trees,” *IEEE Conf. on Decision and Control and European Control Conf. (CDC-ECC)*, 2011.
- Y. Kanoria, “A FPTAS for Bargaining Networks with Unequal Bargaining Powers,” *Workshop on Internet and Network Economics (WINE)*, 2010.
- Y. Kanoria, M. Bayati, C. Borgs, J. Chayes and A. Montanari, “Fast Convergence of Natural Bargaining Dynamics in Exchange Networks,” *ACM-SIAM Symp. on Discrete Algorithms (SODA)*, 2011.
- Y. Kanoria and A. Montanari, “On the deletion channel with small deletion probability,” *IEEE Intl. Symposium on Information Theory (ISIT)*, 2010, Student Paper Award.
- Y. Kanoria, S. Mitra and A. Montanari, “Statistical Static Timing analysis using Markov chain Monte Carlo,” *Design, Automation and Test in Europe (DATE)*, 2010.
- C. Dutta, Y. Kanoria, D. Manjunath and J. Radhakrishnan, “A Tight Lower Bound for Parity in Noisy Communication Networks,” *ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2008.
- Y. Kanoria and D. Manjunath, “On Distributed Computation in Noisy Random Planar Networks,” *IEEE Intl. Symp. on Information Theory (ISIT)*, 2007.

INDUSTRY  
EXPERIENCE

- Microsoft Research New England**, Cambridge, MA Summer '10, '11, Aug '12 - Jun '13
- D.E. Shaw & Co**, Cupertino, CA Summer 2008  
Worked with high speed trades group
- Goldman Sachs Group, Inc.**, Bangalore, India & New York, NY Summer 2007  
Worked on limit order execution times

PROFESSIONAL  
SERVICE

- Associate Editor (since Aug 2016), Operations Research.
- Meritorious Service Award, 2013, Operations Research.
- Program Committee member for the World Wide Web conference (WWW), 2013, and ACM Conference on Economics and Computation, 2016, 2017 and 2018.
- Reviewer for Management Science, Operations Research, Mathematics of Operations Research, Econometrica, Review of Economic Studies, Probability Theory and Related Fields, Random Structures and Algorithms, Stochastic Systems, Annals of Applied Probability, Economic Theory, Games and Economic Behavior, Theoretical Economics, Automatica, SIAM Journal on Discrete Mathematics, IEEE Trans. on Information Theory, IEEE Trans. on Automatic Control, ACM Transactions on Algorithms, Electronic Journal of Probability, Internet Mathematics, IEEE Trans. on Computers

and IEEE Trans. on Communications. ACM-SIAM Symp. on Economics and Computation, ACM Symp. on Theory of Computing, ACM-SIAM Symp. on Discrete Algorithms, Workshop on Internet and Network Economics, Symp. on Algorithmic Game Theory, IEEE Intl. Symp. on Information Theory, Information Theory Workshop, Performance, IEEE Conf. on Decision and Control, Intl. Conf. on VLSI design, and Intl. Workshop on Algorithms and Computation.

Co-organizer of weekly DRO-IEOR seminar at Columbia since Spring 2017.

Organizer of “Learning and market design” seminar series at Simons Institute, Fall 2015, as part of Economics and Computation program.

Organizer of “Reverse Field Trip” involving speakers from local companies on Nov 9, 2015, at Simons Institute, as part of Economics and Computation program.

#### TEACHING

Computing for Business Research, Fall 2013 and Fall 2014, Columbia Business School.

Business Analytics, Spring 2015, Spring 2016, Spring 2017 and Fall 2017, Columbia Business School.

Co-taught a PhD class “Engineering online matching markets” with Jay Sethuraman in Spring 2017.

#### OUTSIDE ACTIVITIES

Successfully proposed new method for seat allocation in engineering colleges in India. Member of the Technical committee, responsible for the mechanism and algorithm for joint seat allocation/admissions for over 30,000 seats at 88 centrally funded engineering colleges in India including the Indian Institutes of Technology, National Institutes of Technology etc. Implemented successfully in summer 2015, and again, with further improvements suggested by me, in 2016. I continue to be involved.

Regular conversations with data scientists at Airbnb, Upwork, Uber, Lyft and other sharing economy platforms. Also, the New York City Department of Education regarding school choice.

#### GRANTS

NSF CAREER Award 2017. Funding runs until 2022.

Principal Investigator, Jerome A. Chazen Institute of International Business grant entitled “Centralized seat allocation for engineering colleges in India,” 2015-16.

#### INVITED TALKS

##### **Dynamic Reserves For Repeated Auctions: Learning from Bids**

INFORMS Annual meeting, Houston, TX	Oct 2017
Market Algorithms seminar, Google, NYC	Jul 2017
Algorithmic Game Theory and Data Science workshop, Cambridge, MA	Jun 2017
Marketplace Innovation Workshop, Stanford, CA	Jun 2017

##### **Facilitating the search for partners on matching platforms: restricting agent actions**

INFORMS Annual meeting, Houston, TX	Oct 2017
INFORMS Applied Probability Society Conference, Northwestern U	Jul 2017
MSOM Conference, UNC Chapel Hill	Jun 2017
Chicago Booth Operations Workshop	May 2017
Market Design workshop, Columbia University	Mar 2017
DRO Brown bag lunch, Columbia Business School	Mar 2017
MIT ORC seminar	Feb 2017
Networks, Matching, and Platforms workshop, Denver, CO	Jan 2017
Operations Management Seminar, USC Marshall School of Business	Oct 2016

##### **Communication Requirements and Informative Signaling in Matching Markets**

INFORMS Applied Probability Society Conference, Northwestern U	Jul 2017
Rutgers/DIMACS theory seminar	Feb 2017

INFORMS Annual Meeting, Nashville, TN	Nov 2016
<b>Matching while Learning</b>	
INFORMS Revenue Management conference	Jun 2016
DRO Brown bag lunch, Columbia Business School	Mar 2016
Statistics student seminar, Columbia University	Mar 2016
<b>Competition and choice in matching markets</b>	
OR seminar, Stanford Graduate School of Business	Nov 2015
<b>Matching markets: structure, dynamics and design (survey)</b>	
EconCS survey seminar, Simons Institute, UC Berkeley	Oct 2015
<b>Unbalanced random matching markets</b>	
Workshop on Graphical Models, Statistical Inference, & Algorithms, IMA, Minnesota	May 2015
CS seminar, IIT Kharagpur, India	Jan 2015
OM seminar, Rotman School of Management	Oct 2014
CS-Econ seminar, Duke University	Oct 2014
CS Theory seminar, Columbia University	Sep 2014
OM seminar, NYU Stern School of Business	Sep 2014
NYC Market design workshop, Columbia University	Dec 2013
Google Algorithms seminar, Google, New York	Nov 2013
IIT Bombay, Mumbai, India	Aug 2013
Tata Institute of Fundamental Research, Mumbai, India	Jul 2013
Stochastics and Applications seminar, MIT	Apr 2013
Microsoft Research Theory Group Seminar, Redmond, WA	Mar 2013
<b>Dynamic Matching in School Choice: Efficient Seat Reallocation After Late Cancellations</b>	
INFORMS Annual meeting, Philadelphia, PA	Nov 2015
<b>Managing congestion in dynamic matching markets</b>	
Columbia Business School Alumni Club of the Bay Area, San Francisco	Sep 2015
Econometric Society World Congress, Montreal, Canada	Aug 2015
Tata Institute of Fundamental Research, Mumbai, India	Jul 2015
INFORMS Applied Probability Society Conference, Istanbul, Turkey	Jul 2015
NYCE (NY Computer Science and Economics) Day	Dec 2014
Theory seminar, USC Economics	Nov 2014
Bray Theory Workshop, Caltech HSS	Nov 2014
<b>Efficient dynamic barter exchange</b>	
Market design seminar, Stanford Economics	Dec 2015
MSOM Conference, U Washington, Seattle	Jun 2014
Columbia Statistics student seminar	Nov 2013
Probability seminar, University of Chicago	Nov 2013
INFORMS Annual Meeting	Oct 2013
Workshop on Asymptotics of Large Scale Networks, BIRS, Banff, Canada	Mar 2013
<b>An internet experiment on bargaining</b>	
INFORMS Annual meeting, Phoenix, AZ	Oct 2012
Workshop on Computational & Applied Social Science, New York	Oct 2012
POMS Annual conference	Apr 2012

### **The set of solutions of random XORSAT formulae**

Probability seminar, Brown University	Feb 2013
Stanford probability seminar	Oct 2012
MIT probability seminar	Sep 2012

### **Bargaining dynamics in exchange networks**

ECE seminar, UCSD	Mar 2012
ECE seminar, Cornell	Mar 2012
EE seminar, UIUC	Feb 2012
ELE/Applied Math seminar, Princeton	Feb 2012
ORIE, Cornell	Feb 2012
DRO seminar, Columbia GSB	Jan 2012
MSR Redmond	Jan 2012
MSR New England	Jan 2012
OR seminar, MIT Sloan	Jan 2012
NCD seminar, EECS, UC Berkeley	Jan 2012
Microsoft Research India	Jan 2012
ECE, University of Maryland	Nov 2011
Markets & Social Systems Engineering seminar, UPenn	Nov 2011
INFORMS Annual meeting, Charlotte, NC	Nov 2011
IEOR seminar, IIT Bombay, India	Jan 2011
Econ-CS seminar, UC Berkeley	Apr 2010
Algorithms and Complexity seminar, MIT	Mar 2010
CS Theory Lunch, Stanford	Jan 2010

### **Distributed storage for intermittent energy sources**

INFORMS Annual meeting, Phoenix, AZ	Oct 2012
Information, Decisions and Algorithms meeting, Stanford	Oct 2011
Allerton conference, UIUC	Sep 2011

### **Social learning and the dynamic cavity method**

INFORMS Applied Probability Society meeting, Stockholm, Sweden	Jul 2011
Research on Algorithms for the Internet (RAIN) seminar, Stanford	Feb 2011
Workshop on Recent Trends in Social Networks, TIFR, Mumbai, India	Jan 2011
Theory lunch, Microsoft Research Redmond, Redmond, WA	Dec 2010
Microsoft Research New England Colloquium, Cambridge, MA	Nov 2010

### **Majority dynamics on trees and the dynamic cavity method**

Dept. of Electrical Engineering, IIT Bombay, India	Jun 2009
Tata Institute of Fundamental Research, Mumbai, India	Jun 2008
Workshop on Message Passing, Phase Transitions and Hard Combinatorial Problems, BIRS, Banff, Canada	Jun 2008