

Shikha Singh

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EDUCATION

Stony Brook University, New York 2013–2018
PhD in Computer Science,
Advisors: Prof. Michael Bender and Prof. Jing Chen

Indian Institute of Technology, Kharagpur 2008–2013
Integrated MSc. in Mathematics and Computing,
Advisor: Prof. Pratima Panigrahi

PROFESSIONAL EXPERIENCE

Assistant Professor, Williams College, Williamstown 2019–Present

Assistant Professor, Wellesley College, Wellesley 2018–2019

Research Assistant, Stony Brook University, Stony Brook 2014–2018

Chateaubriand Fellow, University of Évry Val d'Essonne, France Oct–Feb 2016

Visiting Researcher, Max-Planck-Institute Saarbrucken, Germany Aug–Oct 2015

Research Intern, Xerox Research Center India, Bangalore June–Aug 2014

Technical Intern, Yahoo! India, Bangalore May–July 2012

TEACHING EXPERIENCE

Williams College 2019–Present
Algorithm Design and Analysis, Fall 2019, Spring 2020 & 21
Introduction to Computer Science, Spring 2020 & Fall 2021
Algorithmic Game Theory, Fall 2021 & Spring 2022
Exploring Bias in Computing, Winter 2022

Wellesley College 2018–2019
Languages and Automata, Fall 2018
Introduction to Programming and Problem Solving, Spring 2019

FELLOWSHIPS AND GRANTS

NSF CISE Research Initiation Initiative (CRII) Grant 2020–2022
Two-year award in the amount \$154,597

John Marburger III Fellowship for Science, Engineering, and Mathematics 2017
Graduate school award, in the amount of \$5,000, offered by Stony Brook University

Chateaubriand Fellowship (STEM) <i>Offered by the Embassy of France in the U.S. to conduct research in France</i>	2015–2016
Renaissance Technology Fellowship , Stony Brook University <i>3-year grant offered to one outstanding incoming CS PhD student each year</i>	2013–2016
Stony Brook Computer Science Fellowship	2013–2014
Innovation in Science Pursuit for Inspired Research Scholarship <i>Offered to top 1% of the students pursuing sciences in India</i>	2008–2013

PUBLICATIONS IN CONFERENCE PROCEEDINGS

Verifiable Crowd Computing: Coping with Bounded Rationality <i>International Joint Conference on Theoretical Computer Science</i> L. Dong, M. A. Mosteiro, and S. Singh	IJTCS 2022
Telescoping Filter: A Practical Adaptive Filter <i>European Symposium on Algorithms</i> D. Lee, S. McCauley, S. Singh, and M. Stein.	ESA 2021
Microteaching: Semantics, definition of a computer, running times, fractal trees, classes as encapsulation, and P vs NP <i>Technical Symposium on Computer Science Education</i> C. M. Lewis, K. Fisler, J. Hinz, D. J. Malan, J. E. Paley, M. A. Perez-Quinones, and S. Singh.	SIGCSE 2021
Timely Reporting of Heavy Hitters using External Memory <i>International Conference on Management of Data</i> P. Pandey*, S. Singh*, M. A. Bender, J. W. Berry, M. Farach-Colton, R. Johnson, T. Kroeger, & C. Phillips. * Joint first authors, non-alphabetical ordering	SIGMOD 2020
A Scheduling Approach to Incremental Maintenance of Datalog Programs <i>International Parallel and Distributed Processing Symposium</i> Shikha Singh*, Sergey Madaminov, Michael Bender, Michael Ferdman, Ryan Johnson, Benjamin Moseley, Hung Ngo, Dung Nguyen, Soeren Olesen, Kurt Stirewalt, Geoffrey Washburn. * First author, non-alphabetical ordering	IPDPS 2020
Non-Cooperative Rational Interactive Proofs <i>European Symposium on Algorithms</i> J. Chen, S. McCauley, and S. Singh	ESA 2019
Bloom Filters, Adaptivity, and the Dictionary Problem <i>Foundations of Computer Science</i> M. A. Bender, M. Farach-Colton, M. Goswami, R. Johnson, S. McCauley, and S. Singh	FOCS 2018
Efficient Rational Proofs with Strong Utility-Gap Guarantees <i>Symposium on Algorithmic Game Theory</i> J. Chen, S. McCauley, and S. Singh	SAGT 2018
Approximating k-Forest with Resource Augmentation <i>Conference on Combinatorial Optimization and Applications</i> E. Angel, K. T. Nguyen, and S. Singh (Best Paper Runner-Up Award)	COCOA 2017

Anti-Persistence on Persistent Storage <i>Principles of Database Systems</i> M. A. Bender, J. Berry, R. Johnson, T. M. Kroger, S. McCauley, C. A. Phillips, B. Simon, S. Singh, and D Zage	PODS 2016
Rational Proofs with Multiple Provers <i>Innovations in Theoretical Computer Science</i> J. Chen, S. McCauley, and S. Singh	ITCS 2016
Resource Optimization for Program Committee Members <i>Fun with Algorithms</i> M. A. Bender, S. McCauley, B. Simon, S. Singh, and F. Vivien	FUN 2016
The I/O Complexity of Computing Prime Tables <i>Latin American Theoretical Informatics Symposium</i> M. A. Bender, R. Chowdhury, A. Conway, M. Farach-Colton, P. Ganapathi, R. Johnson, S. McCauley, B. Simon, and S. Singh	LATIN 2016
Run Generation Revisited: What Goes Up May or May Not Come Down <i>International Symposium on Algorithms and Computation</i> M. A. Bender, S. McCauley, A. McGregor, S. Singh, and H. Vu	ISAAC 2015

JOURNAL PUBLICATIONS

Using Advanced Data Structures to Enable Responsive Security Monitoring <i>Cluster Computing</i> J. Vorobyeva*, D. Delayo*, M. A. Bender, M. Farach-Colton, P. Prashant, C. A. Phillips, S. Singh, E. Thomas, and T. Kroeger. * Joint first authors, non-alphabetical ordering	Cluster 2021
Timely Reporting of Heavy Hitters using External Memory <i>ACM Transactions on Database Systems</i> S. Singh*, P. Pandey*, M. A. Bender, J. W. Berry, M. Farach-Colton, R. Johnson, T. Kroeger, & C. Phillips. * Joint first authors, non-alphabetical ordering	TODS 2021
Approximating k-Forest with Resource Augmentation <i>Theoretical Computer Science</i> E. Angel, K. T. Nguyen, and S. Singh	TCS 2019

PROFESSIONAL SERVICE

Colloquium Chair Computer Science Department, Williams College	2020-2022
Selection Committee Member Williams-Exeter Programme in Oxford	2021-2022
Grant Review Panelist National Science Foundation	June 2021
Program Committee Member	
Symposium on Experimental Algorithms (SEA)	2022
European Symposium on Algorithms Track S (ESA-S)	2022
Mathematical Foundations of Computer Science (MFCS)	2021

Symposium on Algorithmic Engineering and Experiments (ALENEX)	2021
European Conference on Parallel and Distributed Computing (Euro-Par)	2020
Fun with Algorithms (FUN)	2020
Symposium on Simplicity in Algorithms (SOSA)	2020
Group Coordinator Inclusive Williams Roundtable Program	Spring 2021
Faculty Member Committee on Diversity and Community, Williams College	2020-2021
Faculty Coordinator Women in Computer Science, Williams College	2019-2020, 2021-2022
Grant Review Panelist National Science Foundation	April 2019

INVITED TALKS AND PANELS

Faculty Orientation Program, Williams College <i>Perspectives on Teaching and Learning Panel</i>	Sep 2021
SIGCSE Technical Symposium <i>Microteaching Panel: P vs NP</i>	Mar 2021
Economics Department, Williams College <i>The Mechanism Design Approach to Interactive Proofs</i>	Jan 2021
Harvard University <i>The Mechanism Design Approach to Interactive Proofs</i>	Nov 2020
University of Massachusetts Amherst <i>Timely Detection of Heavy Hitters in External Memory</i>	Oct 2019
Weizmann Institute of Technology, Israel <i>Non-Cooperative Rational Proofs</i>	Jul 2019
Bar-Ilan University, Israel <i>The Online Event Detection Problem</i>	Jun 2019
Indian Institute of Technology, Kanpur <i>Exact Heavy-hitters in External Memory</i>	May 2019
Rutgers University, New Jersey <i>Bloom Filters, Adaptivity and the Dictionary Problem</i>	Feb 2019
Max-Planck-Institute Saarbrücken, Germany <i>Rational Proofs</i>	Aug 2015
LIP6, Sorbonne University, Paris <i>Competitive Analysis of Online and Offline Sorting with a Buffer</i>	Feb 2016