

SUCHETA SOUNDARAJAN

Syracuse University, Department of Electrical Engineering & Computer Science

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<http://soundarajan.org>

EDUCATION

Cornell University

Ph.D. in Computer Science

2013

Dissertation: Communities in Social Networks

Committee: John Hopcroft (chair), Dexter Kozen, David Pizarro

Minor in Psychology

Cornell University

M.S. in Computer Science

2010

The Ohio State University

B.S. in Computer/Information Science

B.S. in Mathematics

2005

EMPLOYMENT

Syracuse University

Assistant Professor, Dept. of Electrical Engineering & Computer Science

2015-current

Rutgers University

Postdoctoral Associate (Computer Science)

2013-2015

Supervisor: Tina Eliassi-Rad

Topic: Network Similarity, Longitudinal Network Analysis

GRANTS

National Science Foundation. "Resilience Analysis for Core Decomposition in Real-World Networks." PI: Erdem Sariyuce. Co-PI: Sucheta Soundarajan. \$250,000 (Syracuse University portion). 10/1/19 - 9/30/22.

Syracuse University CUSE Grant. "Identifying Susceptible Individuals in Online Social Media." PI: Sucheta Soundarajan. Co-PI: Lu Xiao. \$29,711. 5/1/18-4/30/20.

Syracuse University CUSE Grant. "Efficient Algorithms for Secure, Large-Scale Graph Mining." PI: Yuzhe Tang. Co-PI: Sucheta Soundarajan. \$28,281. 5/1/18-4/30/20.

Quanterion Solutions Incorporated. "Information Retrieval from Large Report Collections." PI: Mohan Chilukuri. Co-PI: Sucheta Soundarajan \$30,000. 1/1/18 – 8/31/18.

Army Research Office. "Modeling, Sampling, and Analyzing Adversarial Social Networks." PI: Sucheta Soundarajan. \$360,000. 1/1/18 – 12/31/20.

National Science Foundation. "AitF PI Meeting." PI: Sucheta Soundarajan. Co-PI: Martin Farach-Colton. \$28,278. 1/1/17 - 12/31/17.

National Science Foundation. "Fast and Accurate Memristor-Based Algorithms for Social Network Analysis." PI: Sucheta Soundarajan. Co-PI: Yanzhi Wang. \$576,784. 9/1/16 - 8/31/19.

National Science Foundation. "Connecting Women Faculty in Geotechnical Engineering: Thriving in a Networked World." PI: Shobha Bhatia. Co-PIs: Patricia Gallagher, Adda Athanasopoulos-Zekkos, Sucheta Soundarajan. \$513,019. 3/15/16 – 2/28/18.

AWARDS

Army Research Office Young Investigator Program Award, 2018.

SIAM Science Policy Fellowship, 2018.

TEACHING EXPERIENCE

Syracuse University:

CIS 400/600: Ethics of Machine Learning (Spring 2020, Spring 2018)

CIS 675: Design and Analysis of Algorithms (Spring 2020, Fall 2018, Fall 2017, Fall 2016, Spring 2016, Fall 2015)

CIS 477: Introduction to Design of Algorithms (Fall 2019, Fall 2018, Fall 2017)

CIS 700: The Structure of Complex Networks (Spring 2017)

SERVICE

Service Within the University:

CIS Program Committee (2017-present)

CISE PhD program director (2019-present)

WiSE (Women in Science and Engineering) Faculty Advisory Committee (2019-present)

Created online version of CIS 675 (2016)

Conference Organizing Committee Member:

DSAA (2020, 2019)

Conference Program Committee Member (partial list):

WWW (2020, 2019), ICDM PhD Forum (2017), MLG (2019, 2017), WebSci (2016), IJCAI (2016), AAI (2017, 2016), SIGKDD (2020, 2019, 2018, 2016, 2015), SDM (2020, 2019, 2016, 2015, 2014), ICCCN (2016), CIKM (2016, 2015), SIAM NS (2015)

Journal Reviewer (partial list):

ACM Transactions on Knowledge Discovery in Data (2020, 2019, 2018), ACM Transactions on Knowledge and Data Engineering (2020, 2019, 2018), Discrete Applied Mathematics (2017), Information (2016), Social Network Analysis and Mining (2015, 2017), Nature Scientific Reports (2015), Algorithms (2015, 2017), Data Mining and Knowledge Discovery (2014)

Other Service:

SIAM Science Policy Fellowship (2018-2020)

Organized PI Meeting for NSF Algorithms in the Field program (2017)

NSF Panelist IIS Division (2014, 2018)

COMMUNITY OUTREACH

Syracuse University Engineering & Computer Science High School Research Program
Faculty Mentor **2018-2019**

Advised high school students on summer research projects

Syracuse University Computer Science Exploration Day
Organizer **2017**

Organized HTML workshop for high school students from across New York

Douglass-DIMACS Computing Corps/Girl Scouts
Organizer/Mentor **2013-2015**

Led a collaboration between Girl Scouts, New Brunswick Schools, and Rutgers University

Supervised group of undergraduates teaching programming to middle school girls

Assisted in development of lesson plans

Advised undergraduate students in teaching

Girls Who Code/Girls, Inc.
Instructor **2013**

Taught JavaScript programming to Brooklyn inner-city middle school girls

Designed lesson plans

Tutored individually

Expand Your Horizons
Organizer **2010-2012**

Organized workshops at Cornell University to teach CS concepts to middle school girls

JOURNAL AND CONFERENCE PUBLICATIONS

(AVAILABLE AT <http://soundarajan.org/papers.html>)

1. Zeinab S. Jalali, Weixiang Wang, Myunghwan Kim, Hema Raghavan, and Sucheta Soundarajan. "On the Information Unfairness of Social Networks." SIAM International Conference on Data Mining (SDM). 2020 (forthcoming).
2. Ricky Laishram, Ahmet Erdem Sariyuçe, Tina Eliassi-Rad, Ali Pinar, and Sucheta Soundarajan. "Residual Core Maximization: An Efficient Algorithm for Maximizing the Size of the k-Core." SIAM International Conference on Data Mining (SDM). 2020 (forthcoming).
3. Pivithuru Wijegunawardana, Raluca Gera, and Sucheta Soundarajan. "Node Classification with Bounded Error Rates". International Conference on Complex Networks (CompleNet). 2020 (forthcoming).
4. Geng Yuan, Xiaolong Ma, Caiwen Ding, Sheng Lin, Tianyun Zhang, Zeinab S. Jalali, Yilong Zhao, Li Jiang, Sucheta Soundarajan, Yanzhi Wang. "An Ultra-Efficient Memristor-Based DNN Framework with Structured Weight Pruning and Quantization Using ADMM." IEEE/ACM International Symposium on Low Power Electronics and Design (ISLPED). 2019.
5. Pivithuru Wijegunawardana, Mario Taglic, Raluca Gera, and Sucheta Soundarajan. "An Experimental Framework for Characterizing Adversarial Behavior in Social Networks." International Conference on Social Computing, Behavioral-Cultural Modeling, and Prediction and Behavior Representation in Modeling and Simulation (SBP-BRiMS). 2019.
6. Katchaguy Areekijseree, Yuzhe Tang, and Sucheta Soundarajan. "Computing Node Clustering Coefficients Securely." IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM). 2019.

7. Katchaguy Areekijserree and Sucheta Soundarajan. "Measuring the Sampling Robustness of Complex Networks." IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM). 2019.
8. Katchaguy Areekijserree and Sucheta Soundarajan. "Crawling Complex Networks: An Experimental Evaluation of Data Collection Algorithms and Network Structural Properties." Journal of Web Science (JWS). 2019.
9. Humphrey Mensah, Lu Xiao, and Sucheta Soundarajan. "Characterizing Susceptible Users on Reddit's ChangeMyView." International Conference on Social Media and Society (SMS). 2019.
10. Ricky Laishram, Jeremy D. Wendt, and Sucheta Soundarajan. "Crawling the Community Structure of Multiplex Networks." AAAI Conference on Artificial Intelligence (AAAI). 2019.
11. Katchaguy Areekijserree and Sucheta Soundarajan. "DE-Crawler: A Densification-Expansion Algorithm for Online Data Collection." IEEE/ACM International Conference on Advances in Social Network Analysis and Mining (ASONAM). 2018.
12. Sucheta Soundarajan and Daniel Clausen. "Equal Protection Under the Algorithm: A Legal-Inspired Framework for Identifying Discrimination in Machine Learning." ICML Workshop on Fairness, Accountability, and Transparency in Machine Learning (FATML). 2018.
13. Chenghong Wang, Zeinab S. Jalali, Caiwen Ding, Yanzhi Wang, and Sucheta Soundarajan. "A Fast and Effective Memristor-Based Method for Finding Approximate Eigenvalues and Eigenvectors of Non-Negative Matrices." IEEE Annual Symposium on VLSI (ISVLSI). 2018.
14. Humphrey Mensah and Sucheta Soundarajan. "Sampling Community Structure in Dynamic Social Networks." International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems. 2018.
15. Ruizhe Cai, Ao Ren, Sucheta Soundarajan, and Yanzhi Wang. "A Low-Computation-Complexity, Energy-Efficient, and High-Performance Linear Program Solver Based on Primal Dual Interior Point Method Using Memristor Crossbars." Nano Communication Networks. 2018.
16. Katchaguy Areekijserree, Ricky Laishram, and Sucheta Soundarajan. "Guidelines for Online Network Crawling: A Study of Data Collection Approaches and Network Properties." ACM Web Science Conference (WebSci). 2018.
17. Ricky Laishram, Ahmet Erdem Sariyuce, Tina Eliassi-Rad, Ali Pinar, and Sucheta Soundarajan. "Measuring and Improving the Core Resilience of Networks." The Web Conference (WWW). 2018.
18. Pivithuru Wijegunawardana, Vatsal Ojha, Raluca Gera, and Sucheta Soundarajan. "Sampling Dark Networks to Locate People of Interest." Social Network Analysis and Mining (SNAM). 2018.
19. Kun He, Yingru Li, Sucheta Soundarajan, John Hopcroft. "Hidden Community Detection in Social Networks." Information Systems. 2018.
20. Sucheta Soundarajan, Tina Eliassi-Rad, Brian Gallagher, and Ali Pinar. "epsilon-WGX: Adaptive Edge Probing for Enhancing Incomplete Networks." ACM Web Science Conference (WebSci). 2017.
21. Yuzhe Tang and Sucheta Soundarajan. "Social-Aware Decentralization for Secure and Scalable Multi-Party Computations." ICDCS International Workshop on Privacy and Security in the BigData Ecosystem (PSBD). 2017.
22. Ricky Laishram, Katchaguy Areekijserree, and Sucheta Soundarajan. "Predicted Max Degree Sampling: Sampling in Directed Networks to Maximize Node Coverage through Crawling." INFOCOM Workshop on Network Science for Communication Network (NetSciCom). 2017.
23. Priya Govindan, Chenghong Wang, Chumeng Xu, Hongyu Duan, and Sucheta Soundarajan. "The k-Peak Decomposition: Mapping the Global Structure of Graphs." International Conference on the World Wide Web (WWW). 2017.
24. Pivithuru Wijegunawardana, Vatsal Ojha, Raluca Gera, and Sucheta Soundarajan. "Seeing Red: Locating People of Interest in Networks." Conference on Complex Networks (CompleNet). 2017.

25. Jeremy D. Wendt, Randy Wells, Richard V. Field Jr., and Sucheta Soundarajan. "On Data Collection, Graph Construction, and Sampling in Twitter." International Symposium on Foundations and Applications of Big Data Analytics (FAB). 2016.
26. Sucheta Soundarajan, Tina Eliassi-Rad, Brian Gallagher, and Ali Pinar. "MaxReach: Reducing Network Incompleteness through Node Probes." IEEE/ACM International Conference on Advances in Social Network Analysis and Mining (ASONAM). 2016.
27. Priya Govindan, Sucheta Soundarajan, Tina Eliassi-Rad, and Christos Faloutsos. "NIMBLECORE: A Space-Efficient External Memory Algorithm for Estimating Core Numbers." IEEE/ACM International Conference on Advances in Social Network Analysis and Mining (ASONAM). 2016.
28. Ruizhe Cai, Ao Ren, Yanzhi Wang, Sucheta Soundarajan, Qinru Qiu, Bo Yuan, and Paul Bogdan. "A Low-Computation-Complexity, Energy-Efficient, and High-Performance Linear Program Solver Using Memristor Crossbars." IEEE International System-on-Chip Conference (SOCC). 2016.
29. Sucheta Soundarajan, Acar Tamersoy, Elias B. Khalil, Tina Eliassi-Rad, Duen-Hornng Chau, Brian Gallagher, and Kevin Roundy. "Generating Graph Snapshots from Streaming Edge Data." International Conference on the World Wide Web (WWW). 2016.
30. Sucheta Soundarajan and John Hopcroft. "Use of Local Group Information to Identify Communities in Networks". ACM Transactions on Knowledge Discovery from Data (TKDD). 2015.
31. Sucheta Soundarajan, Tina Eliassi-Rad, Brian Gallagher, and Ali Pinar. "MaxOutProbe: An Algorithm for Increasing the Size of Partially Observed Networks." NIPS Workshop on Networks in the Social and Information Sciences. 2015.
32. Sucheta Soundarajan, Tina Eliassi-Rad, Brian Gallagher, and Ali Pinar. "Enriching Incomplete Networks." Workshop in Information Networks (WIN). 2015.
33. Sucheta Soundarajan, Tina Eliassi-Rad, and Brian Gallagher. "A Guide to Choosing a Network Similarity Method". SIAM Conference on Data Mining (SDM). 2014.
34. Bruno Abrahao, Sucheta Soundarajan, Robert Kleinberg, and John Hopcroft. "A Separability Framework For Analyzing Community Structure". ACM Transactions on Knowledge Discovery from Data (TKDD). 2014.
35. Priya Govindan, Sucheta Soundarajan, and Tina Eliassi-Rad. "Finding the Most Appropriate Auxiliary Data for Social Graph Deanonimization." KDD workshop on Data Ethics. 2014.
36. Sucheta Soundarajan and Tina Eliassi-Rad. "Which Network Similarity Method Should You Choose: An Empirical Study". Workshop on Information Networks (WIN). 2013.
37. Sucheta Soundarajan and John Hopcroft. "Use of Supervised Learning to Predict Directionality of Links in a Network". 8th International Conference on Advanced Data Mining Applications (ADMA). 2012.
38. Sucheta Soundarajan and Carla Gomes. "Using Community Detection Algorithms for Sustainability Applications". 3rd International Conference on Computational Sustainability (CompSust). 2012.
39. Bruno Abrahao, Sucheta Soundarajan, John Hopcroft, and Robert Kleinberg. "On the Separability of Structural Classes of Communities." 18th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD). 2012.
40. Bruno Abrahao, Sucheta Soundarajan, John Hopcroft, Robert Kleinberg. "On the Structure of Communities in Networks". Interdisciplinary Workshop on Information and Decision in Social Networks at MIT. 2012.
41. Sucheta Soundarajan and John Hopcroft. "Using Community Information to Improve the Precision of Link Prediction Methods." 21st International World Wide Web Conference (WWW). 2012.
- 2 algorithms from this paper have been added to the Networkx graph library for Python.**
42. John Hopcroft, Sucheta Soundarajan, and Liaoruo Wang. "The Future of Computer Science". International Journal of Software and Informatics (IJSI). 2011.
43. Sucheta Soundarajan and John Hopcroft. "Recovering Social Networks from Contagion Information". 7th Annual Conference on Theory and Applications of Models of Computation (TAMC). 2010.