ANA-ANDREEA STOICA

617 CEPSR, Columbia University, New York, NY 10027, USA
astoica@cs.columbia.edu | www.columbia.edu/∼as5001 | (609)-937 9044

Research Interests — *Machine Learning, Social Networks, Random Graph Theory.*

My work focuses on mathematical models, data analysis, and policy implications for algorithm design in social networks. I am particularly interested in studying the effect of learning algorithms of biased network by employing graph theoretical and machine learning techniques.

EDUCATION

Columbia University, New York, NY, USA — September, 2016–
Ph.D. Candidate, Computer Science Department
Advisor: Associate Professor Augustin Chaintreau

Columbia University, New York, NY, USA — September, 2016–June, 2018
M.Sc., Computer Science Department — GPA: 4.00/4.00
Advisor: Associate Professor Augustin Chaintreau

Princeton University, Princeton, New Jersey, USA — September, 2012–May, 2016
B.A., Mathematics Department — GPA: 3.7/4.00
Graduated *magna cum laude.*
Undergraduate Advisor: Professor Emmanuel Abbe
Certificates: *Applied & Computational Mathematics*, *Applications of Computing*

SELECTED FELLOWSHIPS, AWARDS, AND HONORS

J.P. Morgan AI Research PhD Fellowship 2019–2020

Andrew P. Kosoresow Memorial Award for excellence in teaching, Columbia University 2018

International Zhautykov Mathematics Olympiad, Bronze Medal 2010

Romanian National Mathematics Olympiad, 1 Gold, 2 Silver, and 3 Bronze medals 2007–2012

Diploma of Excellence awarded by Prime Minister of Romania 2008

PREPRINTS

Mihir Nanavati, **Ana-Andreea Stoica**, Lloyd Brown, Nathan Taylor, Siddhartha Sen. "HAIbrid data structures." *Manuscript in preparation.*

CONFERENCE AND JOURNAL PUBLICATIONS

Ana-Andreea Stoica, Abhijnan Chakraborty, Palash Dey, Krishna P. Gummadi. "Minimizing Margin of Victory for Fair Political and Educational Districting." Proceedings of the 19th International Conference on Autonomous Agents and MultiAgent Systems. International Foundation for Autonomous Agents and Multiagent Systems, 2020. [pdf]

Ana-Andreea Stoica, Jessy Xinyi Han, Augustin Chaintreau. "Strategic influence maximization in networks with partial information." Proceedings of the 2020 World Wide Web Conference. International World Wide Web Conferences Steering Committee, 2020. [pdf]

Ana-Andreea Stoica, Christopher Riederer, and Augustin Chaintreau. "Algorithmic Glass Ceiling in Social Networks: The effects of social recommendations on network diversity." Proceedings of the 2018 World Wide Web Conference. International World Wide Web Conferences Steering Committee, 2018. [pdf]

Assimakis A. Kattis, Alexander Holiday, **Ana-Andreea Stoica**, and Ioannis G. Kevrekidis. "Modeling epidemics on adaptively evolving networks: A data-mining perspective." Virulence 7.2 (2016): 153-162. [pdf]

PEER-REVIEWED WORKSHOPS

Jessie Finocchiaro*, Roland Maio*, Faidra Monachou*, Gourab K Patro*, Manish Raghavan*, **Ana-Andreea Stoica*** and Stratis Tsirtsis*. "Fairness and Discrimination in Mechanism Design and Machine Learning ." AI for Social Good Workshop, Center for Research on Computation and Society, Harvard University, 2020. **Equal contribution. Full version currently under review.* [pdf]

Ana-Andreea Stoica and Augustin Chaintreau. "Hegemony in Social Media and the effect of recommendations." 1st Workshop on Fairness, Accountability, Transparency, Ethics and Society on the Web (FATES on the Web, WWW'19 Companion), companion proceedings of the 2019 World Wide Web Conference. International World Wide Web Conferences Steering Committee, 2019. [pdf]

Ana-Andreea Stoica and Augustin Chaintreau. "Fairness in the Social Influence Maximization Problem." 1st Workshop on Fairness, Accountability, Transparency, Ethics and Society on the Web (FATES on the Web, WWW'19 Companion), companion proceedings of the 2019 World Wide Web Conference. International World Wide Web Conferences Steering Committee, 2019. [pdf]

Ana-Andreea Stoica, Christopher Riederer, and Augustin Chaintreau. "Algorithmic Glass Ceiling in Social Networks: The effects of social recommendations on network diversity." Preliminary version showed at

- **Mechanism Design for Social Good Workshop** (MD4SG '18) Poster and presentation session.
- **Highlights of Algorithms** (HALG 2018) Poster and presentation session, Vrije University, Amsterdam, Netherlands. June 4-6th, 2018.

Ana-Andreea Stoica and Emmanuel Abbe. "Community Detection in the Hypergraph Stochastic Block Model." Princeton University Undergraduate Thesis, 2016. [pdf] Presented at:

- **New York Computer Science and Economics Day** (NYCE 2017) Poster session, New York University, New York, NY, USA. May 19th, 2017.
- **Fifth Networking Networking Women Workshop** (N^2 Women) Poster session, City University of New York, New York, NY, USA. October 3rd, 2016.

PROFESSIONAL EXPERIENCE

Research Intern Spring, 2019
Advisor: Siddhartha Sen *Microsoft Research, NYC*

· Worked at the intersection of machine learning and databases, developing machine learning algorithms for building a universal data index that is able to adapt to different workloads in an online fashion. *Manuscript in preparation.*

Research Intern Summer, 2019
Advisor: Professor Krishna Gummadi *Max Planck Institute for Software Systems, Germany*

· Designed voting mechanisms for clustering individuals into districts without creating disparate impact.

Graph Clustering Algorithms 2015–2016
Senior Thesis with Prof. Emmanuel Abbe *Princeton University, NJ*

· Extended random graph algorithms for recovering communities in the general hypergraph stochastic block model.

Modeling epidemics on adaptively evolving networks 2015–2016
Independent Work with Prof. Yannis Kevrekidis *Princeton University, NJ*

· Implementated of dimensionality reduction techniques on random graph algorithms modeling epidemics.

TALKS

Invited panelist, World Summit AI, Amsterdam, Netherlands	October, 2020
Invited seminar, Rising Stars in Computer Science Seminar, UMass Amherst	September, 2020
Invited panelist, NIH Biomedical Informatics Coordinating Committee	August, 2020
Invited speaker, MGGG Graphs & Networks Workshop, Tufts University	July, 2020
Invited speaker, BitHacks hackathon, New York	June, 2020
Invited speaker, Impact Fellowship, New York	January, 2020
Invited panelist, Fordham IPLJ Symposium, Fordham University, New York, NY	October, 2019
Invited speaker, Women in Data Science Workshop at the Web Conference '18, Lyon, France	April, 2018
Invited seminar, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland	May, 2018
Invited seminar, Cambridge University, Cambridge, UK	May, 2018
Invited seminar, Alan Turing Institute, London, UK	May, 2018

LEADERSHIP AND PROFESSIONAL SERVICE

Program Committee

· AAAI'20, AAAI'21 Conference, AI for Social Good track
· MD4SG'20 Workshop
· FILA'20: International Workshop on Fair and Interpretable Learning Algorithms
· NeurIPS'19 Workshop on AI for Social Good
· WWW'20 and WWW'19 Fairness, Accountability, Transparency, Ethics, and Society Workshop
· SIGIR'19 Workshop on Fairness, Accountability, Confidentiality, Transparency, and Safety in IR
· IJCAI'19 Workshop on AI for Social Good

Mechanism Design for Social Good [website] Fall, 2019–

· Co-organizer for an interdisciplinary research initiative that includes workshops, colloquiums, and partnerships with NGO's and think tanks on the topics of inequality, development, online markets and social good.
· Member of the Steering Committee and AI Area Chair for the 4th Mechanism Design for Social Good Workshop, August 2020

Cyber 9/12 Student Challenge March 17–18, 2017
Washington D.C.

· Team leader. Drafted policy proposals for a given international cybersecurity challenge, organized by the Atlantic Council.

Black in AI 2019–2020

· Mentor for undergraduate students, assisting with graduate applications questions related to Ph.D. programs in Computer Science and AI, with a focus on underrepresented groups.

Engineering Graduate Student Council Fall, 2016
Columbia University, New York, NY

· Department Representative.

Principia: The Princeton Undergraduate Mathematics Journal 2014–2015
Princeton University, Princeton, NJ

· Editor. Reviewed undergraduate submissions and assisted in preparing a monthly issue.

TEACHING EXPERIENCE

Guest Lectures

· Invited guest lectures on social networks and ethics in A.I. at Columbia University:

- Introduction to Social Networks — Spring 2018
- AI Safety, Ethics, and Policy — Spring 2018
- Introduction to Networks and Crowds — Spring 2020

Introduction to Social Networks — Fall, 2016; Spring 2018
Columbia University, New York, NY

· Teaching Assistant. Held weekly office hours, graded homework assignments, and assisted with final projects.

Awesome Math Summer Program — Summer, 2011
University of Santa Cruz, CA

· Teaching Assistant. Held weekly office hours, prepared lecture notes and homework assignments.

MEDIA COVERAGE

Algorithmic Glass Ceiling in Social Networks:

· Columbia Engineering News, la Republica, The Tribune, The Times of India, The Morning Paper.

Community detection in the hypergraph stochastic block model:

· Undergraduate Profile in Fine Hall Letters, Princeton University