

Xiaoran Yan

Curriculum Vitae

1001 E SR 45/46 Bypass
Bloomington, IN 47408

(505) 554 4266

(812) 856 4159

✉ xiaoran.a.yan@gmail.com

🌐 <https://xiaoranyan.wordpress.com/>



Research interests

Network Science (methods, theories, applications); Data mining, Statistical Machine Learning; Dynamical Systems, Spectral Graph Theory, Linear Algebra.

Employment

- 2015–Present **Assistant Research Scientist**, *Network Science Institute*, INDIANA UNIVERSITY.
2013–2015 **Postdoctoral Research Associate**, *Information Sciences Institute*, UNIVERSITY OF SOUTHERN CALIFORNIA, Supervisor: Kristina Lerman.
2012–2013 **Graduate Fellow**, SANTA FE INSTITUTE, Supervisor: Cristopher Moore.
2009–2012 **Research Assistant**, *Computer Science Department*, UNIVERSITY OF NEW MEXICO, Supervisor: Cristopher Moore.
2012 & 2007–2009 **Teaching Assistant**, *Computer Science Department*, UNIVERSITY OF NEW MEXICO.

Education

- 2007–2013 **Ph.D. Computer Science**, *University of New Mexico*, USA, Advisor: Cristopher Moore.
Dissertation: Model Selection for Stochastic Block Models.
Both Frequentist and Bayesian approaches are employed to adapt traditional statistical measures for network data. Message passing based variational algorithms are implemented for efficient simulations. See publications for more details.
2003–2007 **B.S. Computer Science**, *Zhejiang University*, China.
Thesis: Dynamics of Cellular Automata on Small-World Networks.
Won an outstanding B.S. Thesis Award.

Peer-reviewed publications

* indicates when the order of authors does not reflect the contributions.

Lerman, K., Yan, X., and Wu, X. (2015b). The “Majority Illusion” in Social Networks (Accepted to appear at PLOS ONE)

Daianu, M., Steeg, G. V., Mezher, A. F., Jahanshad, N., Yan, X., Galstyan, A., Nir, T. M., Prasad, G., Lerman, K., and Thompson, P. M. (2015). Information-theoretic Characterization of Neuroimaging Derived Metrics for Cognitive Decline in the Elderly (Accepted, to appear at MICCAI Workshop on Medical Computer Vision: Algorithms for Big Data)

Gupta, S., Yan, X., and Lerman, K. (2015). Structural Properties of Ego Networks. In Agarwal, N., Xu, K., and Osgood, N., editors, *Social Computing, Behavioral-Cultural Modeling, and Prediction*, volume 9021 of *Lecture Notes in Computer Science*, pages 55–64. Springer International Publishing

* Ghosh, R., Teng, S.-h., Lerman, K., and Yan, X. (2014). The Interplay Between Dynamics and Networks: Centrality, Communities, and Cheeger Inequality. In *Proceedings of the 20th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, KDD '14, page 1406–1415, New York, NY, USA. ACM, ACM

Yan, X., Jensen, J. E., Krzakala, F., Moore, C., Shalizi, C. R., Zdeborová, L., Zhang, P., and Zhu, Y. (2014). Model selection for degree-corrected block models. *Journal of Statistical Mechanics: Theory and Experiment*, 2014(5):P05007

Zhu, Y., Yan, X., and Moore, C. (2014). Oriented and degree-generated block models: generating and inferring communities with inhomogeneous degree distributions. *Journal of Complex Networks*, 2(1):1–18

Zhu, Y., Yan, X., Getoor, L., and Moore, C. (2013). Scalable Text and Link Analysis with Mixed-topic Link Models. In *Proceedings of the 19th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, KDD '13, page 473–481, New York, NY, USA. ACM, ACM

Moore, C., Yan, X., Zhu, Y., Rouquier, J.-B., and Lane, T. (2011). Active Learning for Node Classification in Assortative and Disassortative Networks. In *Proceedings of the 17th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, KDD '11, page 841–849, New York, NY, USA. ACM, ACM

Workshop papers

Yan, X., Krzakala, F., Moore, C., Shalizi, C. R., Zdeborová, L., and Zhu, Y. (2012). Model selection for degree-corrected block models. NIPS Workshop on Social Network and Social Media Analysis: Methods, Models and Applications

Yan, X., Zhu, Y., Rouquier, J.-B., and Moore, C. (2009). Active Learning for Hidden Attributes in Networks. NIPS Workshop on Analyzing Networks and Learning with Graphs

Unpublished work

* Ghosh, R., Lerman, K., Teng, S.-h., and Yan, X. (2015). Capturing the interplay of dynamics and networks through parameterizations of Laplacian operators (under review)

* Lerman, K., Teng, S.-h., and Yan, X. (2015a). Network Composition from Multi-layer Data (under review)

Yan, X. and Moore, C. (2015). Bayesian Model Selection for Stochastic Block Models and the Minimum Description Length Principle

* Ekaterina Merkurjev, Andrea Bertozzi, Xiaoran Yan, and Kristina Lerman (2016). Modified Cheeger and Ratio Cut Methods Using the Ginzburg-Landau Functional for Classification of High-Dimensional Data, submitted

Yan, X. and Moore, C. (2013). Variational inference of stochastic block models using belief propagation

Invited talks

- 2015, Sep **Dynamical Processes and Graph Transformations**, *Senseable City Laboratory*, Massachusetts Institute of Technology, Parapancha Seminar.
- 2015, Mar **Centralities, Communities and Dynamics: The Generalized Laplacian Framework**, *Imaging Genetics Center, Laboratory of Neuro Imaging*, Keck School of Medicine, University of Southern California, Seminar.
- 2014, May **Centralities, Communities and Operators: A Framework for Network Dynamics**, *Santa Fe Institute*, Seminar.
- 2013, Aug **Variational Inference of Community Models: A Unifying Learning Framework**, *Information Sciences Institute*, Viterbi School of Engineering, University of Southern California, AI Seminar.
- 2013, Jun **Scalable Model Selection for Networks using Belief Propagation**, *Technical University of Denmark*, Netsci 2013, Satellite symposium: Complex Networks meet Machine Learning.
- 2013, May **Model Selection for Stochastic Block Models**, *Santa Fe Institute*, Workshop on Structure, Statistical Inference and Dynamics in Networks: From Graphs to Rich Data.

Conference activities

- 2015, Apr **Structural Properties of Ego Networks**, *SBP and BRiMS 2015 Conference*, Washington DC, US, Oral presentation.
- 2014, Aug **The Interplay Between Dynamics and Networks: Centrality, Communities, and Cheeger Inequality**, *ACM SIGKDD 2014 Conference*, New York, NY, US, Poster presentation.
- 2013, Aug **Scalable Text and Link Analysis with Mixed-topic Link Models**, *ACM SIGKDD 2013 Conference*, Chicago, IL, US, Poster presentation.
- 2012, Dec **Model selection for degree-corrected block models**, *NIPS 2012 Workshop on Social Networks and Social Media Analysis: Methods, Models and Applications*, Lake Tahoe, NV, US, Poster presentation.
- 2012, Jun **Oriented and degree-generated block models**, *NetSci 2012 Conference*, Evanston, IL, US, Poster presentation.
- 2011, Aug **Active Learning for Node Classification in Assortative and Disassortative Networks**, *ACM SIGKDD 2011 Conference*, San Diego, CA, US, Poster presentation.
- 2009, Dec **Active Learning for Hidden Attributes in Networks**, *NIPS 2009 Workshop on Analyzing Networks and Learning with Graphs*, Whistler, BC, Canada, Poster presentation.

Other professional activities

Peer review of manuscripts for Journal of Complex Networks, Physica A, IEEE Transactions on Signal Processing, ACM SIGKDD 2014, Socinfo 2014, WWW 2015.

Professional member of ACM since 2014.

Teaching experiences

- 2014 **Helped mentoring an undergraduate student (Gupta, S.) under the supervision of Kristina Lerman**, *University of Southern California*.
- 2012 **Introduction to the Theory of Computation**, *University of New Mexico*.
Teaching Assistant with lectures
- 2009 **Lab sessions of Computer Programming Fundamentals**, *University of New Mexico*.
Instructor
- 2008 **Design of Large Programs**, *University of New Mexico*.
Teaching Assistant
- 2007 **Data Structures and Algorithms**, *University of New Mexico*.
Teaching Assistant

Reference list

Cristopher Moore

Santa Fe Institute
1399 Hyde Park Road
Santa Fe, NM 87501, USA
✉ moore@santafe.edu

Kristina Lerman

Information Sciences Institute
University of Southern California
4676 Admiralty Way
Marina del Rey, CA 90292, USA
✉ kristina.lerman@gmail.com

Shanghai Teng

Computer Science Department
University of Southern California
941 Bloom Walk
Los Angeles, CA 90089, USA
✉ shanghai.teng@gmail.com

Lise Getoor

Department of Computer Science
University of California Santa Cruz
1156 High Street
Santa Cruz, CA 95064, USA
✉ getoor@ucsc.edu

Cosma Shalizi

Statistics Department
Carnegie Mellon University
5000 Forbes Avenue
Pittsburgh, PA 15213, USA
✉ cshalizi@cmu.edu