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EDUCATION

University of Notre Dame
Department of Computer Science and Engineering
PhD

Notre Dame, IN
August 2010 - May 2015

Nanjing University
Bachelor of Science in Software Engineering

Nanjing, China
2003 - 2007

PROFESSIONAL EXPERIENCE

Postdoctoral Fellow
Kellogg School of Management, Northwestern University

Sept 2015 – Now
Evanston, IL

Research Fellow
University of Notre Dame

May 2015 – Aug 2015
Notre Dame, IN

Graduate Research Assistant
University of Notre Dame

Fall 2011 – May 2015
Notre Dame, IN

Teaching Assistant
University of Notre Dame

Fall 2010 - Fall 2011
Notre Dame, IN

Software Engineer
Infosys Corporation

2007 - 2010
Shanghai, China

Software Engineer Intern
Infosys Corporation - Microsoft Tech Centre

Fall 2006 - Spring 2007
Bangalore, India

RESEARCH AREAS

My principal research interest is in large-scale information and social networks. More generally, I study data mining, statistics, and network science, with a focus on the link prediction problem, social influence analysis, and social network evolution.

- **Link Prediction**

- ✓ *Link Prediction in Heterogeneous Networks*: Perform time series analysis to model temporal information in link prediction problems and combine these approaches with social influence analysis to estimate link likelihood in multi-relational and heterogeneous networks.
- ✓ *Evaluating Link Prediction Methods*: Provide theoretical proofs and empirical examples demonstrating how most of current link prediction evaluations lead to questionable conclusions. Develop recommendations for consistent, standard, and applicable evaluation metrics for the link

prediction problem. This shed new light on the link prediction problem and has high impact on the development of link analysis.

- **Social Network Analysis**

- ✓ *Traders Alliance Network Evolution in Unstable Economic Conditions*: Investigate and model the relationship between traders' behavior and traders' network dynamics, and prevailing political and regulatory conditions. Provide theoretical understandings of economic group behaviors and for policies addressing the role and resilience of the emergent behaviors and institutions in unstable economic conditions.
- ✓ *Gender Difference Analysis of Human Communication Networks*: Study gender-specific differences in a multi-dimensional social system, which contains cell phone contacts, instant messaging, traces of locations, log of app usages, log of music listening, and etc., casting new light on the control of gender-specific information spreading, in marketing, or for smooth implementation of online social networks.

- **Global Terrorism Network Analysis**

- ✓ *Terrorism System Behaviors*: Current work on global terrorism networks have argued that interventions and predictions can be based on the finding that the severity of attacks follow a power law. Using a dramatically more comprehensive dataset on global terrorism than previously available, we find that the distribution of the severity of attacks does not conform to power laws distributions when looked at over time, 1970 to today. This suggests that governmental efforts and targeting practices should change given the nature of the group involved.
- ✓ *Predicting Groups Future Lethality*: We also find that the randomness of group behaviors is highly correlated with their lethality (average kills per year). Our proposed metric of group behavioral randomness is demonstrated to be an effective predictor of group lethality. Causality inference analysis and time series analysis are applied, and the connection between randomness and lethality is confirmed significant. Notably, our analysis reveals that groups in the early stage of evolution display a distinctive and robust signature in lethality trend, adequately predicted by their randomness.

- **Social Network and Career Success**

- ✓ *The Formation and Imprinting of Network Effects Success*: The “business elite” constitutes a small but strikingly influential subset of the population, oftentimes affecting important societal outcomes. We analyze a unique dataset of all MBA students at a top 5 MBA program. We find that the distinguishing characteristics between students who do well in job placement and those who do not is their network. Further, we find that the network differences between the successful and unsuccessful students develops within the first month of class and persists thereafter, suggesting a network imprinting that is persistent.
- ✓ *Recipe for Career Success Differ for Men and Women*: This study examines the mechanisms by which such gender imbalances persist. We use a quasi-experiment approach to analyze 4.5 million emails from MBA students and find that the network configurations associated with early career success are distinctly different for men and women. These “gender-specific” networks also predict whether men or women will exceed expectations with respect to the jobs they secure after graduation.

HONORS AND AWARDS

Outstanding Research Assistant, University of Notre Dame	2015
Best Poster Award, Sixth Annual Student Research Symposium, University of Notre Dame	2011
Knight in Town from Infosys	2008
The Excellent Student Award, Nanjing University	2007
The Excellent Graduate Award, Nanjing University	2007
The National Scholarship, Nanjing University	2006
The Peoples Scholarship, Nanjing University	2004-2005

RESEARCH GRANTS

Mobile Money and Coming of Age in Western Kenya, Bill and Melinda Gates Foundation, 2014,
No. OPP1031657 **subcontract** collaborated with Professor Sibel Kusimba

PUBLICATIONS

Book Chapters

1. Nitesh V. Chawla and **Yang Yang**. *Link Prediction: A Primer*, in Reda Alhajj and Jon Rokne (eds.), *Encyclopedia of Social Network Analysis and Mining* by Springer, 2012.
2. **Yang Yang**, Yizhou Sun, Saurav Pandit, Nitesh V. Chawla and Jiawei Han, *Perspective on Measurement Metrics for Community Detection Algorithms*, in Zeki Erdem, Tansel Ozyer, Suheil Khoury, Jon Rokne (eds.), *Studies in Mining Social Networks and Security Informatics* by Springer, 2012.
3. Yuxiao Dong, Nitesh V. Chawla, Jie Tang, **Yang Yang**. *The Evolution of Social Relationships and Strategies Across the Lifespan*, *Machine Learning and Knowledge Discovery in Databases*, pp245-249.

Journals

4. Brian Uzzi, **Yang Yang**, Kevin Gaughan, and Nitesh Chawla, *Networks Associated with Early Career Success Differ for Men and Women*, under submission to *PNAS*.
5. **Yang Yang**, Adam Pah, and Brian Uzzi, *The Global Terrorisms: Groups Behavioral Patterns Predict Their Lethality*, in preparation.
6. **Yang Yang**, Ryan N. Lichtenwalter, and Nitesh Chawla, *Evaluating Link Prediction Methods*. *Journal of Knowledge and Information Systems (KAIS)*, Springer, doi: 10.1007/s10115-014-0789-0, 2014.
7. **Yang Yang**, Nitesh V. Chawla, and Yuxiao Dong, *Predicting Node Degree Centrality with the Node Prominence Profile*, *Nature Scientific Reports*, doi:10.1038/srep07236, 2014.
8. Rahul C. Oka, **Yang Yang**, and Nitesh Chawla, *Impacts of Political Stability and Regulation on Cooperation and Competition within Trader Networks in Unstable Economies*. Under Submission to *PlosOne*.

9. Yuxiao Dong, Jie Tang, Nitesh V. Chawla, Tiancheng Lou, **Yang Yang**, and Bai Wang. *Inferring social status and rich club effects in enterprise communication networks*. PLOS One 10 (3), e0119446.
10. Sibel Kusimba, **Yang Yang**, and Nitesh Chawla, *Family networks of mobile money in Kenya*, Information Technologies & International Development 11 (3), 2015.
11. Sibel Kusimba, **Yang Yang**, and Nitesh Chawla, *Hearthholds of Mobile Money in Kenya*, Economic Anthropology 3 (2), 266-279, 2016.

Conferences / Workshops / Talks

12. **Yang Yang**, Adam Pah, and Brian Uzzi, *The Global Terrorism Network: Power Law Foundations of System Behavior*, Second International Conference on Computational Social Science, 2016.
13. Brian Uzzi, **Yang Yang**, and Kevin Gaughan, *The Formation and Imprinting of Network Effects Among the Business Elites*, Second International Conference on Computational Social Science, 2016.
14. **Yang Yang**, Nitesh V. Chawla, Prithwish Basu, Bhaskar Prabhala, Thomas La Porta. *Link Prediction in Human Mobility Networks*. ASONAM'13, Niagara Falls, Canada, Aug. 2013.
15. Yuxiao Dong, Reid Johnson, **Yang Yang**. *Collaboration Signatures Reveal Scientific Impact*. The International Conference on Advances in Social Networks Analysis and Mining (ASONAM'15)
16. Yuxiao Dong, Yang Yang, Jie Tang, **Yang Yang**, Nitesh V. Chawla. *Inferring User Demographics and Social Strategies in Mobile Social Networks*, Proc. of the 20th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 2014.
17. **Yang Yang**, Nitesh V. Chawla, Xiaohui Lu, and Sibel Adali. *Prominence in Networks: A Co-evolving process*. IEEE 2nd International Network Science Workshop (NSW'13), West Point, NY, 2013.
18. Saurav Pandit, Jonathan Koch, **Yang Yang**, Nitesh V. Chawla, Brian Uzzi. *Red Black Network: Temporal and Topological Analysis of Two Intertwined Social Networks* . 32nd Military Communications Conference, San Diego, USA, 2013.
19. **Yang Yang**, Nitesh V. Chawla, Yizhou Sun, and Jiawei Han. *Link Prediction in Heterogeneous Networks: Influence and Time Matters*, Proc. of the 12th IEEE International Conference on Data Mining (ICDM'12), Brussels, Belgium, Dec. 2012.
20. Saurav Pandit, **Yang Yang**, and Nitesh V. Chawla. *Maximizing Information Spread Through Influence Structures in Social Networks, DaMNet Workshop*, in Proc. of the 12th IEEE International Conference on Data Mining (ICDM'12), Brussels, Belgium, Dec. 2012.
21. Reid Johnson, **Yang Yang**, Everaldo Aguiar, Andrew Rider, and Nitesh V. Chawla, *ALIVE: A Multi-Relational Link Prediction Environment for the Healthcare Domain, Third Workshop on Data Mining for Healthcare Management*, (PAKDD'12), Kuala Lumpur, Malaysia, 2012.
22. Saurav Pandit, **Yang Yang**, Vikas Kawadia, Sameet Sreenivasan, and Nitesh V. Chawla, *Detecting Communities in Time-evolving Proximity Networks*, IEEE Network Science Workshop (NSW), West Point, NY, 2012.

23. **Yang Yang**, Yizhou Sun, Saurav Pandit, Nitesh Chawla, and Jiawei Han, *Is Objective Function the Silver Bullet? A Case Study of Community Detection Algorithms on Social Networks*. The International Conference on Advances in Social Networks Analysis and Mining (ASONAM'11).

PROFESSIONAL SERVICES AND OUTREACH

Editorial Review Board, International Journal of Business and Management	2016
Editorial Review Board, Artificial Intelligence Research	2016
Program Committee Member of AAI 2016	2016
Program Committee Member of BigDataSE	2015
Program Committee Member of HINA-IJCAI	2013
Reviewer of IJSNM (International Journal of Social Network Mining)	2016
Reviewer of TNNLS (Transactions on Neural Networks and Learning Systems)	2016
Reviewer of IDA (Intelligent Data Analysis)	2016
Reviewer of TKDE (IEEE Transactions on Knowledge and Data Engineering)	2015-2016
Reviewer of TKDD (ACM Transactions on Knowledge Discovery from Data)	2015
Reviewer of SNAM (Social Network Analysis and Mining)	2015-2016
Reviewer of DMKD (Data Mining and Knowledge Discovery)	2014-2015