SHAWN MANKAD

North Carolina State University | Poole College of Management | Raleigh, North Carolina
Email: smankad@ncsu.edu | Phone: +1 607 255 9594

PERSONAL INFORMATION

Educational Background

- Ph.D., Statistics, University of Michigan, 2013
- M.A., Statistics, University of Michigan, 2012
- B.S., Mathematics, Carnegie Mellon University, 2008

Academic and Professional Appointments

- Assistant Professor of Analytics, Poole College of Management, North Carolina State University, 2022 – Present
- Assistant Professor of Operations, Technology and Information Management, Samuel Curtis Johnson Graduate School of Management, Cornell University, 2015 – Present (on leave)
    - Graduate Field Member in Statistics, Applied Economics and Management
    - Clifford H. Whitcomb Faculty Fellow, 2020-2021
- Visiting Scholar, Federal Reserve Bank of Philadelphia, September 2021 – December 2021
- Assistant Professor of Business Analytics, Robert H. Smith School of Business, University of Maryland, 2013 – 2015
    - Affiliate Faculty of Applied Mathematics and Scientific Computation, University of Maryland, 2014 – 2015
- Dissertation Intern, Federal Reserve Board of Governors, Summer 2012
- Federal Contractor, the U.S. Commodity Futures Trading Commission, 2009 – 2013

RESEARCH ACTIVITIES

Publications

Operations Management and Information Systems

1. "Evidence of the Unintended Scheduling Implications of Minimum Wage", with Qiuping Yu and Masha Shunko, *Manufacturing & Service Operations Management,* forthcoming.

    - "When a Higher Minimum Wage Leads to Lower Compensation", with Qiuping Yu and Masha Shunko, *Harvard Business Review* (digital article), 2021.

    - "Evidence of the Unintended Labor Scheduling Implications of the Minimum Wage", with Qiuping Yu and Masha Shunko, *Cato Research Briefs in Economic Policy*, 2022.

2. "Service Quality Using Text Mining: Measurement and Consequences", with Jorge Mejia and Anandasivam Gopal, *Manufacturing & Service Operations Management* 23, (6): 1354-1372, 2021.

3. “A for Effort? Using the Crowd to Identify Moral Hazard in NYC Restaurant Hygiene Inspections”, with Jorge Mejia and Anandasivam Gopal, *Information Systems Research,* 30:4, 1363-1386, 2019

4. “Understanding Online Hotel Reviews through Automated Text Analysis”, with Hyun Jeong Han, Joel Goh, and Srinagesh Gavirneni, *Service Science* 8.2, 124-138, 2016.

5. “What Guests Really Think of Your Hotel: Text Analytics of Online Customer Reviews”, with Hyun Jeong Han, Srinagesh Gavirneni, and Rohit Verma. *Cornell Hospitality Report*, 16(2), 3-17, 2016.

Finance

6. “The Urgency to Borrow in the Interbank Market”, with Celso Brunetti and Jeffrey H. Harris, *Economic Letters*, forthcoming.

7. “Sidedness in the Interbank Market”, with Celso Brunetti and Jeffrey H. Harris, *Journal of Financial Markets*, 100663, 2021.

8. “Interconnectedness in the Interbank Market”, with Celso Brunetti, Jeffrey H. Harris, and George Michailidis, *Journal of Financial Economics,* 133(2), 520-538, 2019.

9. “On the Formation of Dodd-Frank Act Derivatives Regulations”, with George Michailidis and Andrei Kirilenko. *PLoS One*, 14(3), p.e0213730, 2019.

10. “Discovering the Ecosystem of an Electronic Financial Market with a Dynamic Machine-Learning Method”, with George Michailidis and Andrei Kirilenko*, Algorithmic Finance*, 2:2, 151-165, 2013.

Statistics and Data Science

11. “Protecting the Anonymity of Online Users Using Prior Distributions on their Textual Content”, with Cameron Bale, Matthew Schneider, and Monika Hu, *Expert Systems with Applications*, forthcoming.

12. “CP-Squared: A Method for Change-Point Detection in Core-Periphery Networks”, with Desheng Ma, *Expert Systems with Applications*, forthcoming.

13. “Monitoring Sparse and Attributed Networks with Online Hurdle Models”, with Samaneh Ebrahimi, Mostafa Reisi, and Kamran Paynabar, *IISE Transactions* (formerly *IIE Transactions*), Vol. 54(1), 91-104, 2021.

14. “A Two-Stage Authorship Attribution Method using Text and Structured Data for De-Anonymizing User Generated Content”, with Matthew Schneider, *Customer Needs and Solutions*, 1-18, 2021.

15. “An Online Semi-NMF Algorithm for Soft-Clustering of Financial Institutions”, with Yuan Cheng, *Proceedings of the SIGMOD Data Science for Macro Modeling Workshop*, 2019.

16. “Single Stage Prediction with Online Reviews for Mobile App Development and Management”, with Shengli Hu and Anandasivam Gopal, *The Annals of Applied Statistics*, Vol. 12(4), 2279-2311, 2018.

17. “Balance Sheet Driven Probability Factorization for Inferring Bank Holdings: Extended Abstract”, with Celso Brunetti and Jeffrey H. Harris, *Proceedings of the SIGMOD Data Science for Macro Modeling Workshop*, 2017.

18. “Measuring Influence in Twitter Ecosystems using a Counting Process Modeling Framework”, with Donggeng Xia and George Michailidis*, Technometrics*, Vol. 58(3), 360-370, 2016.

19. “Analysis of Multiview Legislative Networks with Structured Matrix Factorization: Does Twitter Influence Translate to the Real World?”, with George Michailidis, *The Annals of Applied Statistics* Vol. 9(4), 1950-1972, 2015.

20. “Two-Stage Plans for Estimating the Inverse of a Monotone Function”, with Runlong Tang, Moulinath Banerjee, and George Michailidis, *Technometrics*, Vol. 57, Iss. 3, 2015.

21. “Threshold Value Estimation Using Adaptive Two-Stage Plans in R”, with George Michailidis, and Moulinath Banerjee, *Journal of Statistical Software*, 67(3), 1 – 19, 2015.

22. "Biclustering Three-Dimensional Data Arrays with Plaid Models", with George Michailidis, *Journal of Computational and Graphical Statistics*, Vol. 23, Iss. 4, 2014.

23. “Visual Analytics for Network- Based Market Surveillance”, with George Michailidis and Celso Brunetti, *Proceedings of the SIGMOD Data Science for Macro Modeling Workshop*, 2014.

24. “Discovery of Path-Important Nodes using Structured Semi-Nonnegative Matrix Factorization”, with George Michailidis, *IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing*, 288-291, 2013.

25. “Structural and functional discovery in dynamic networks with non-negative matrix factorization”, with George Michailidis*, Physical Review E*, 88(4), 042812, 2013.

Computational Biology and Medicine

26. “A Feedback and Evaluation System that Provokes Minimal Retaliation by Trainees”, with Keith Baker and Bishr Haydar, *Anesthesiology*, 126:327-337, 2017.

27. “Computational and Empirical Studies Predict Mycobacterium tuberculosis-Specific T Cells as a Biomarker for Infection Outcome”, with Marino, S., Gideon, H. P., Gong, C., McCrone, J. T., Lin, P. L., Linderman, J. J., Flynn, J. L,, Kirschner, D. E., *PLoS Comput Biol* 12(4): e1004804, 2016.

Working Papers

1. "Bayesian Semi-Non-Negative Matrix Factorization: A Technique for Estimating Bank Holdings and Systemic Risk", with Celso Brunetti and Jeffrey H. Harris, In revision at *Operations Research*.

2. "Non-Standard Errors", with Albert J. Menkveld, Anna Dreber, Felix Holzmeister, Juergen Huber, Magnus Johannesson, Michael Kirchler, Sabastian Neususs, Michael Razen, Utz Weitzel, and others. In revision at *Journal of Finance*.

3. "A Structural Topic Sentiment Model for Text Analysis", with Li Chen, In revision at *Management Science*.

4. "Too Close for Comfort? Understanding Peer Effects in Large Franchised Networks", with Qiuping Yu and Masha Shunko, In revision at *Production and Operations Management*.

5. "The Best of Both Worlds: Machine Learning and Behavioral Science in Operations Management", with Charles Corbett, Andrew M. Davis, and Elena Katok, Under review at *Manufacturing & Service Operations Management*.

6. "Liquidity Networks, Interconnectedness, and Interbank Information Asymmetry", with Celso Brunetti and Jeffrey H. Harris, In revision at *Journal of Financial Stability*.

7. "SMRT: A Structural Model of Latent Ratings and Topics in Text", with Desheng Ma.
   Finalist for the Best Paper Award at the 17th INFORMS Workshop on Data Mining and Decision Analytics

Patents

1. "Identification and personalized protection of text data using Shapley values", Provisional patent (submitted), Cornell University and Drexel University

External Funding and Research Grants

- NSF BIGDATA: Too Interconnected to Fail? Network Analytics on Complex Economic Data Streams for Monitoring Financial Stability, PI, $525,247, 2016 – 2021
- Wharton Customer Analytics Initiative Data Grant, 2015
- Wharton Customer Analytics Initiative Data Grant, 2014

Research Recognition

- CDO Magazine's 2021 List of Leading Academic Data Leaders
- "CHR 2017 Industry Relevance Award", 2017, Cornell University, Given to a single paper each year
- Cornell University Half-Century Faculty Research Fellowship, 2016 - 2018

- 1st Place Award in Student Research Competition, Midwest Statistics Research Colloquium, 2012, Midwest Statistics Research Colloquium

Advising

Graduated -- Doctoral

- Piyush Anand (Management: Marketing), Cornell University, Graduated Spring 2021, Committee Member, Assistant Professor at Rice University
- Saram Han (Hotel Administration), Cornell University, Graduated Fall 2019, Committee Member
- Shengli (Meredith) Hu (Management: Operations, Technology, and Information Management), Cornell University, Graduated Summer 2019, Committee member, Research Scientist at Dataminr
- Samaneh Ebrahimi (Industrial Engineering), Georgia Institute of Technology, Graduated Summer 2018, Thesis Committee Member, Data Scientist at Pandora
- Zhiming Shen (Computer Science), Cornell University, Graduated Fall 2017, Thesis Committee Member, Post-doc at Cornell University
- Hechao Sun (Applied Statistics), University of Maryland, Graduated Summer 2017, Thesis Committee member, Amazon Data Science
- Jorge Mejia (Information Systems), University of Maryland, Graduated Spring 2016, Thesis Committee member, Assistant Professor at Indiana University
- Bin Han, (Applied Mathematics), University of Maryland, Graduated Spring 2015, Thesis Committee member, Blackrock
- Stuart Price, (Decisions, Operations & Information Technologies), University of Maryland, Graduated Winter 2015, Thesis Committee member
- Hisham Talukder, (Applied Mathematics), University of Maryland, Graduated summer 2014, Thesis Committee member, Dow Jones & Company

Graduated -- Masters

- Shivank Goel (Management: Operations, Technology, and Information Management), Cornell University, Graduated Fall 2020, Amazon Software Engineer

Undergraduate

- Theodore Michalik, Graduated Spring 2015 from University of Maryland, Thesis Advisor

TEACHING ACTIVITIES

Courses Taught

North Carolina State University:

- BUS-351, Predictive Analytics in Business
    - Evaluation Fall 2022: Instructor = 4.8/5; Course = 4.6/5
- MBA-590-627, Machine Learning Methods in Business

    - Evaluation Fall 2022: Instructor = 4.9/5; Course = 4.9/5
- MBA-590-639, Business Analysis with SQL
    - Evaluation Spring 2022: TBA

Cornell University:

- NBA-6920, Machine Learning Applications in Business
    - Evaluation Spring 2022: Instructor = 4.48/5; Course = 4.23/5
    - Evaluation Spring 2021: Instructor = 4.64/5; Course = 4.51/5
    - Evaluation Spring 2020: Instructor = 4.69/5; Course = 4.63/5
- NBA-6550, Business Data Analysis with SQL
    - Evaluation Spring 2022: Instructor = 4.69/5; Course = 4.48/5
    - Evaluation Spring 2021: Instructor = 4.65/5; Course = 4.40/5
    - Evaluation Spring 2020: Instructor = 4.61/5; Course = 4.43/5
- NBA-6550Y, Business Data Analysis with SQL (Summer Session)
    - Evaluation Summer 2022:
      Instructor = 4.94/5, 4.86/5, 4.5/5, 5.0/5; Course = 4.88/5, 4.71/5, 4.5/5, 5.0/5
    - Evaluation Summer 2021: Instructor = 4.85/5; Course = 4.80/5
    - Evaluation Summer 2019: Instructor = 4.82/5; Course = 4.72/5
- NBA-6480, Digital Technology Practicum
    - Evaluation Spring 2022: Instructor = 4.55/5; Course = 3.92/5
    - Evaluation Spring 2021: Instructor = 4.72/5, 4.75/5; Course = 4.04/5, 4.38/5
    - Evaluation Spring 2020: Instructor = 4.46/5; Course = 3.89/5

University of Maryland:

- "Distinguished Teaching Award", 2015, University of Maryland awarded to faculty in the top 15% of teaching evaluation scores
- BMGT 431, Data Analytics
- BUDT 758B, Google Online Challenge and Analytics
- BMGT 430, Linear Statistical Models in Business

University of Michigan:

- "Graduate Student Instructor Excellence in Teaching Award" for an undergraduate-level course in Data Mining, 2011, University of Michigan Statistics Department

SERVICE AND OUTREACH

Editorial Boards and Reviewing Activities

Editorial Boards for Journals and Presses

- Associate Editor for *Data Science in Science* (2022-Present)
- Editorial Advisory Board (2018-2021) for *Expert Systems with Applications*

Ad-hoc Reviewing Activities for Journals and Presses

Operations Research/Management Journals:

- Management Science
- Manufacturing and Service Operations Management
- Operations Research
- Production and Operations Management
- IISE Transactions

Information Management/Systems Journals:

- Information Systems Research
- Management Information System Quarterly
- European Journal of Information Systems

Finance Journals:

- Management Science
- Mathematics and Financial Economics
- Journal of Multinational Financial Management

Applied Statistics and Data Science Journals:

- Journal of the American Statistical Association
- Journal of Computational and Graphical Statistics
- Applied Stochastic Models in Business and Industry
- Journal of Statistical Software
- Journal of Applied Statistics
- The Electronic Journal of Statistics
- INFORMS Journal on Computing
- Expert Systems with Applications
- Social Network Analysis and Mining
- Artificial Intelligence Review

Reviewing Activities for Conferences

- 2020 INFORMS Workshop on Data Science
- 2019 INFORMS Workshop on Data Science
- 2018 INFORMS Workshop on Data Science
- SIGMOD 2018 Workshop – Data Science for Macro-Modeling
- IIE ISERC 2015
- Winter Simulation Conference 2015
- SIGMOD Data Science for Macro-Modeling Workshop 2014
- IEEE Workshop on Computational Advances in Multi-Sensor Adaptive Processing 2014

Committees, Professional & Campus Service

Leadership Roles in Meetings and Conferences

- Conference Co-Chair; 2021 INFORMS Workshop on Data Science
- Associate Editor for the AI and Intelligent Augmentation track, International Conference on Information Systems 2020
- Member of Program Committee, 2020 INFORMS Workshop on Data Science
- Member of Program Committee, 2019 INFORMS Workshop on Data Science
- Member of Program Committee, Federal Reserve Board Conference on The Interconnectedness of Financial Systems, 2019
- Member of Program Committee, 2018 INFORMS Workshop on Data Science
- Associate Editor for the Data Science track, International Conference on Information Systems 2018
- Member of the Organizing Committee, 2018 Symposium on Data Science and Statistics
- Panelist for Academic Job Search Panel at INFORMS 2018
- Invited Member of the 3rd Workshop on an Open Knowledge Network (organized by the NITRD Big Data Interagency Working Group, National Science Foundation, and the National Institute of Health) 2017
- Publicity Co-Chair for the 2017 INFORMS Workshop on Data Science
- Associate Editor for the Foundations of IS Research track, International Conference on Information Systems 2017
- Associate Editor for the Data Science track, International Conference on Information Systems 2016
- Organizer and Session Chair, Invited Data-Mining Session Organizer, the 2016 INFORMS annual meeting
- Member of the Program Committee, SIGMOD 2016 Workshop – Data Science for Macro-Modeling
- Member of the Program Committee, Interface 2015 (Statistics Symposium)
- Member of the Program Committee, SIGMOD 2014 Workshop – Data Science for Macro-Modeling
- Session Organizer and Chair, Data-Mining section, 2014 INFORMS annual meeting
- Session Chair, 2014 Joint Statistical Meetings Session

Other Non-University Committees, Memberships, Panels, etc.

- Secretary, Treasurer of the Data Mining Section of INFORMS, 2013 – 2015

Campus Service - College

- Cornell University Reappointment Review Committee for Lecturer (Hotel School), 2017- 2018
- University of Maryland Member of Research Computing Committee, 2014 – 2015

Campus Service - Department

- Faculty advisor for the Cornell Quant Club, 2020 - Present
- Faculty advisor for the Cornell Fin Tech Club, 2021 - Present

- University of Maryland Research Computing Infrastructure Survey Team, 2014

SELECTED MEDIA COVERAGE

Research

1. June 23, 2021, "A Higher Minimum Wage Can Lead Employers to Lower Compensation", *Bloomberg*
2. June 22, 2021, "More Hidden Costs in the Fight for $15", *The Wall Street Journal*
3. Feb 22, 2019, "A Breakthrough Is Claimed in Systemic Risk Monitoring", *GARP Risk Intelligence*
4. Dec 6, 2018, "Restaurant Hygiene, Risky Business Systems", https://research.cornell.edu/news-features/restaurant-hygiene-risky-business-systems
5. Nov 11, 2018, "Thanks, statistics! A faster way to improve mobile apps", *Cornell Chronicle*, http://news.cornell.edu/stories/2018/11/thanks-statistics-faster-way-improve-mobile-apps
6. Sept 12, 2018, "Fed study proposes method for tracking banks' systemic risks more often", MLex Insight
7. July 11, 2018, "Bank network shifts signaled financial crisis -- and may prevent another", EurekAlert!, https://eurekalert.org/pub_releases/2018-07/cu-bns071018.php
8. Mar 11, 2016, "Cornell study analyzes TripAdvisor reviews to help hotel managers", *Tnooz* http://www.tnooz.com/article/cornell-study-analyzes-tripadvisor-reviews-to-help-hotel-managers/
9. Mar 8, 2016, "Online hotel reviews only partially tell what customers really think", *Cornell Chronicle* http://www.news.cornell.edu/stories/2016/03/online-reviews-only-partially-reveal-what-hotel-customers-think
10. Feb 12, 2016, "Text Analytics Reveal the Impact of Guest Sentiment on Hotel Review Scores", *HospitalityNet*
11. Feb 11 2016, "What Guests Really Think of Your Hotel: Text Analytics of Online Customer Reviews", *Hotel News Resource*
12. Nov 8, 2015, "Yelp Gets A 4.5 Star Rating", *Seeking Alpha*
13. Mar 2015, "MSN Money Show" profiles brand-enthusiasm index, referenced here: http://www.czarmetrics.com/blog/2015/1/26/second-annual-emerging-brands-study-the-best-of-the-best-1
14. Feb 26 2015, "Yelp as Prophet", *Biz Ed*
15. Dec 23 2014, "Online reviews help predict restaurant success", *Baltimore Daily Record*
16. Dec 16, 2014 *Washington Business Journal* http://www.bizjournals.com/washington/blog/top-shelf/2014/12/umd-researchers-use-yelp-reviews-to-predict.html?page=all
17. Dec 16, 2014 *InTheCapital* http://inthecapital.streetwise.co/2014/12/16/dc-restaurant-closings-predicted-by-yelp-reviews/
18. Dec 16, 2014, *Eater.com* - http://www.eater.com/2014/12/16/7405117/can-yelp-reviews-predict-restaurant-shutters
19. Mar 2014, "Do Regulators Listen to Public? Study Says Yes", *The Wall Street Journal, Compliance Building*

20. Dec 15, 2014, *Hospitality Industry News* http://www.hospitality-industry.com/index.php/news/comments/researchers_use_text-mining_software_to_predict_success_failure_of/
21. Jan 2014, "Academic devise formula to gauge how well U.S. regulators listen", *Reuters, Chicago Tribune*

Teaching

1. Aug 6, 2018, “Data Science in MBA Programs: Rosy Job Prospects”, find-mba.com, https://find-mba.com/articles/data-science-in-mba-programs-rosy-job-prospects
2. Feb 17, 2016, “Business Analytics Master's Growth Gathers Pace As Big Data Demand Outstrips Supply”, *Business Because*
3. Jan 19 2016, “Cornell To Launch Big Data-Focused MBA Program Featuring Twitter, Yahoo, Amazon”, *Business Because*