Bomin Kim

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Research Interests

Dynamic Networks, Text as Data, Computational Social Science, Bayesian Inference, Statistical Computing, Topic Modeling, Survival Analysis, Data Science, Machine Learning

Education

Pennsylvania State University, University Park, PA   August 2018 (Expected)

Ph.D., Statistics (G.P.A.: 3.98/4.0)

- Thesis Topic: *Latent Modeling of Dynamic Social Networks*
- Advisors: David Hunter, Ph.D. and Xiaoyue Niu, Ph.D.

Korea University, Seoul, South Korea   February 2013

B.A., Statistics (G.P.A.: 4.19/4.5)

North Carolina State University, Raleigh, NC   August 2011 – May 2012

Exchange Student, Statistics (G.P.A.: 4.0/4.0)

Research Experience

Graduate Research Assistant   Summer 2016 – present
Governance and Administration in Networks (GAiN) Lab
Department of Political Science, Pennsylvania State University
Supervisor: Bruce Desmarais, Ph.D.
Develop a network model for dynamic textual communications with application to government email corpora and its statistical software package

Graduate Research Assistant   Summer 2017
Department of Political Science, Pennsylvania State University
Supervisor: Bumba Mukherjee, Ph.D.
In charge of mathematical and computational aspect of new Bayesian survival models ("Misclassified Event-Failure Models" and "Cure Models with Spatial Random Effects")

Undergraduate Research Assistant   Spring 2012
Department of Statistics, North Carolina State University
Supervisor: Consuelo Arellano, Ph.D.
Serve as a statistics associate for hand-hygiene project led by NCSU Institute for Healthcare Improvement Chapter and manage sampling and data collection steps

Undergraduate Independent Researcher   Fall 2011 – Spring 2012
Department of Statistics, North Carolina State University
Supervisor: William Hunt Jr., Ph.D. and Barry Nussbaum, Ph.D.
Conduct group research on environmental statistics and investigate relationships between the declines of US economic indexes and toxic chemical release

Research Intern   Summer 2011
Partnerships in Prevention Science Institute (PPSI), Iowa State University
Supervisor: Chungyeol Shin, Ph.D.
Assist research team on a project "PROSPER" (PROmoting School-community-university Partnerships to Enhance Resiliency) and support daily data management and statistical modeling process

TEACHING EXPERIENCE	**Statistical Instructor**

Statistical Instructor
Department of Statistics, Pennsylvania State University
Full responsibility of curriculum, lectures, homework and exams
- STAT/MATH 318: Elementary Probability   Fall 2015
- STAT 200: Elementary Statistics (web)   Summer 2015
- STAT 200: Elementary Statistics   Summer 2014

Teaching Assistant
Department of Statistics, Pennsylvania State University
Holding regular office hours & tutorials and grading assignments
- STAT 500: Applied Statistics   Summer 2016
- STAT 100: Statistical Concepts and Reasoning   Spring 2016
- STAT 460: Intermediate Applied Statistics   Fall 2015
- STAT 461: Analysis of Variance   Spring 2015
- STAT 502: Analysis of Variance and Design   Fall 2014 & Spring 2015
- STAT/MATH 418: Introduction to Probability and Stochastic Processing for Engineering   Fall 2013 & Spring 2014

INDUSTRIAL EXPERIENCE

Search Marketing Assistant   March 2013 – May 2013
Search Ad Department,
N Search Marketing Corp.,
Seongnam, South Korea
Management of online advertising performance (in real-time) for multiple firms

CONSULTING EXPERIENCE

Graduate Statistical Consultant   Spring 2015 – Fall 2015
Statistical Consulting Center,
Department of Statistics,
Pennsylvania State University
Provide short-term and long-term statistical guidance and assessment of projects for Penn State researcher (as part of graduate training practicum STAT 580 & 581)

PUBLICATIONS

1. **Bomin Kim**, Xiaoyue Niu, David R. Hunter, and Xun Cao.
   "A Dynamic Additive and Multiplicative Effects Network Model with Application to the United Nations Voting Behaviors", 2018. (*Submitted to Annals of Applied Statistics*)

2. Ben Bagozzi, Minhyung Joo, **Bomin Kim**, and Bumba Mukherjee,
   "A Bayesian Split Population Survival Model for Duration Data With Misclassified Failure Events", 2018. (*Submitted to Political Analysis*)

3. **Bomin Kim**, Kevin Lee, Xiaoyue Niu, and Lingzhou Xue.
   "A Review of Dynamic Network Models with Latent Variables", 2017. (*Submitted to Statistical Surveys*)

4. Akshay Venkitasubramanian, Jamie Yannayon, **Bomin Kim**, Devin Donahue et al. (2012). "Empirical Evaluation of Hand Hygiene Compliance." *American Journal of Medical Quality*: 1062860612464733.

WORKING PAPERS

1. **Bomin Kim**, Aaron Schein, Bruce A. Desmarais, and Hanna Wallach.
   "A Network Model for Dynamic Textual Communications with Application to Government Email Corpora", 2017+.

2. **Bomin Kim**, Minhyung Joo, and Bumba Mukherjee.
   "Mixture Cure Model with Spatial Autocorrelations", 2017+.

3. **Bomin Kim**, David R. Hunter, and Xiaoyue Niu.
   "Point Process Dynamic Network Model with Latent Positions", 2016+.

SCHOLARSHIPS /AWARDS

Travel Awards
- Political Networks Conference National Science Foundation Travel Fellowship 2018
- Women in Statistics and Data Science Conference Travel Award 2017
- Political Methodology Conference National Science Foundation Travel Grant 2017
- Jack and Eleanor Pettit Scholarship in Science, Pennsylvania State University 2016

Student Award
- Undergraduate Research Award, North Carolina State University 2012

Scholarships
- National Language Exchange Scholarship, Korea University 2011
- The Dean's List Scholarship, Korea University 2010 – 2011
- First-Year Scholarship, Korea University 2009

PRESENTATIONS /TALKS

"A Dynamic Additive and Multiplicative Effects Model with Application to the United Nations Voting Behaviors"
- Political Networks Conference, George Mason University, VA June 2018
- Social Data Analytics Speaker Series (presented by Prof. Xiaoyue Niu), Pennsylvania State University, PA Decenber 2017
- Women in Statistics and Data Science Conference, La Jolla, CA October 2017
- Joint Statistical Meetings, Baltimore, MD July 2017
- Sunbelt Conference of the International Network for Social Network Analysis (INSNA) (presented by Prof. Xiaoyue Niu), Beijing, China June 2017
- Rao Prize Conference, Pennsylvania State University, PA May 2017

"A Network Model for Dynamic Textual Communications with Application to Government Email Corpora"
- New Directions in Analyzing Text as Data Conference (presented by Prof. Hanna Wallach), Princeton University, NJ October 2017
- Political Methodology Conference (presented by Prof. Bruce Desmarais), University of Wisconsin-Madison, WI July 2017
- Prof. Lingzhou Xue's Statistical Learning and Data Mining Group, Pennsylvania State University, PA June 2017
- Political Networks Conference, Ohio State University, Columbus, OH June 2017

"Point Process Dynamic Network Model with Latent Positions"
- Joint Statistical Meetings, Chicago, IL July 2016

"Analyzing the Release of Toxic Chemicals over Time: Is It the Economy or Environment?"
- Annual Undergraduate Research Spring Symposium, Raleigh, NC April 2012
- Scope Academy, Sponsored by NC State University Physical and Mathematical Science Foundation April 2012
- Air and Waste Management Association Luncheon at USEPA National Computer Center, Research Triangle Park, NC March 2012
- Sigma Xi Annual Meeting & International Research Conference, Raleigh, NC November 2011
- Annual State of North Carolina Undergraduate Research and Creativity Symposium, Greenville, NC November 2011

Technical
Skills

Statistical Programming
R including tidyverse (e.g. ggplot) and Rmarkdown (expert), C++ (proficient), SAS (proficient), Python (familiar), SPSS, Minitab, JMP, EXCEL

Computing Platforms
Unix, DOS/Windows, Mac OS

Typesetting Platforms
Latex, MS publisher

Software
Development

R packages
- IPTM: interaction-partitioned topic model for dynamic textual communications
  https://github.com/desmarais-lab/IPTM/pkg
- DAME: dynamic additive and multiplicative effects model for symmetric networks
  https://github.com/bomin8319/DAME_pkg
- BayesMFsurv: Bayesian parametric survival model for missclassified failures
  https://github.com/minniejoo/BayesMFSurv

Graduate
Coursework

Statistical Theory
- STAT 513: Theory of Statistics I
- STAT 514: Theory of Statistics II
- STAT 515: Stochastic Processes and Monte Carlo Methods
- STAT 517: Probability Theory
- STAT 551: Linear Models I
- STAT 553: Asymptotic Tools
- STAT 561: Statistical Inference I
- STAT 565: Multivariate Analysis

Applied Statistics
- STAT 509: Clinical Trials
- STAT 511: Regression Models
- STAT 512: Design and Analysis of Experiments
- STAT 540: Statistical Computing
- STAT 557: Data Mining I
- STAT 597A: Spatial Models
- PLSC 597E: Network Analysis

Leadership
/Organizations

- Member of Young Researchers of the Complex Systems Society   2017 – present
- Member of Association for Women in Mathematics   2017 – present
- Member of American Statistical Association   2016 – present
- President of Korea University Alumni Association at Penn State   2015 – 2016
- Member of Wellgates Scholar Program   2012
- Member of Korea University Statistics Student Council   2010 – 2011
- Volunteer in HanKkoom North Korean Defector School Mentoring Service   2010
- Volunteer in Chosun Ilbo Mentoring Camp Mentor   2010
- Volunteer in Korean Language and Culture Center Buddy Program   2009 – 2010

Language

Korean (native), English (fluent), Chinese (elementary)