

Dokyun Lee

Tepper School of Business
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ACADEMIC WORK EXPERIENCE

Sept 2015- Current **Assistant Professor of Business Analytics**
Tenure-track
The Tepper School of Business at Carnegie Mellon University, PA

EDUCATION

2010 – 2015 **Ph.D., Operation and Information Management**
The Wharton School, University of Pennsylvania, Philadelphia, PA
Advisor: Professor Kartik Hosanagar
Dissertation: Three Essays on Big Data Consumer Analytics in E-commerce
Committee: Kartik Hosanagar, Lorin M. Hitt, Harikesh S. Nair

2009 – 2010 **Master's in Statistics**
Yale University, New Haven, CT
Thesis: Johnson-Lindenstrauss Lemma and its effect on Supervised Learning

2005 – 2009 **Bachelor's in Computer Science**
Columbia University, New York, NY
Track: Machine Learning and Artificial Intelligence & Systems

2001 – 2005 **High School**
Stuyvesant High school, New York, NY

RESEARCH INTERESTS

Topic Information Systems and Economics, E-Commerce, Data Science, Recommendation Systems (Strategy, Impact, and Algorithms), Advertising Content (Social and Mobile), Social Media

Methods Use of machine learning and natural language processing to tame big/unstructured data for theory-driven (IS, Marketing, Economics) causal inference analysis, Combination of econometrics and machine learning methods
My Thought on predictive analytics and causal inference for big unstructured data
'Causal inference without data mining is myopic and data mining without theory-driven causal inference is blind'

HONORS & AWARDS

- 2017: NVIDIA Academic GPU grants for Deep Learning Projects (GPU Received)
- 2017: XSEDES Pittsburgh Super Computing Allocation for Deep Learning Projects
- 2016: CIST INFORMS Best Student Paper Award (Phd Student Shunyuan Zhang)
- 2016: ISS Nunamaker-Chen Dissertation Award, Runner Up
- 2016: NET Institute Research Grant (\$3,000)

- 2016: Marketing Science Institute Research Grant (\$17,000)
- 2016: The Lave Weil Award (\$10,000)
- 2016: XSEDES Pittsburgh Super Computing Allocation for Deep Learning Projects
- 2015: The Berkman Award Fund (\$9,142)
- 2015: Wharton Behavioral Lab Research Grant (\$9,200)
- 2014: Fishman-Davidson Center for Service and Operations Management Grant (Phd Support \$15,000)
- 2014: William And Phyllis Mack Institute for Innovation Research Grant (Phd Support \$15,000)
- 2014: Russell Ackoff Doctoral Student Fellowship (\$3,200)
- 2014: Baker Retail Center Research Grant: Facebook Paper (\$10,000)
- 2014: Baker Retail Center Research Grant: Recommender Paper (\$5,000)
- 2013: Russell Ackoff Doctoral Student Fellowship (\$3,000)
- 2013: Baker Retail Center Research Grant (\$9,900)
- 2013: William And Phyllis Mack Institute for Innovation Research Grant (Phd Support)
- 2012: Graduate and Professional Student Assembly Research Grant (\$500)
- 2010-2014: Wharton Doctoral Fellowship
- 2009: The Andrew P. Kosoresow Memorial Award for Excellence in Teaching (Columbia University Computer Science Department) (\$1024)

JOURNAL PUBLICATION

1. Hosanagar, Kartik, Daniel Fleder, Dokyun Lee, and Andreas Buja. "Will the Global Village Fracture Into Tribes? Recommender Systems and Their Effects on Consumer Fragmentation." ***Management Science*** (2014), Vol 60, Issue 4.
 - a. Nominated for The Best Paper Award INFORMS Management Science ISR Division (Results out in 2017 Nov)

WORKING PAPERS

1. Dokyun Lee, Kartik Hosanagar, and Harikesh Nair. "Advertising Content and Consumer Engagement on Social Media: Evidence from Facebook." <http://ssrn.com/abstract=2290802> **4th round at *Management Science***
2. Dokyun Lee and Kartik Hosanagar. "People Who Liked This Study Also Liked: The Impact of Recommender Systems on Sales Volume and Diversity" **2nd round at ISR**
3. Dokyun Lee and Kartik Hosanagar. "When do Recommender Systems Work the Best? Moderating Effects of Product Attributes on Recommender System Performances." **Under Review**
4. Xiao Liu, Dokyun Lee, Kannan Srinivasan. "Large Scale Cross Category Analysis of Consumer Review Content on Sales Conversion Leveraging Deep Learning". **Under Review**
5. Shunyuan Zhang, Dokyun Lee, Param Vir Singh, Kannan Srinivasan. "Professional versus Amateur Images: Property Demand Estimation Leveraging Large-scale Image Extraction". **Drafting**
6. Shunyuan Zhang, Dokyun Lee, Param Vir Singh, Kannan Srinivasan. "What Makes a Good Airbnb Property Image? Identification and Optimization of Image Features". **Drafting**

WORK IN PROGRESS

1. Dongwon Lee, Anandasivam Gopal, Dokyun Lee, Jay Chung. "Mobile Advertising & Donation Project"
2. Nikhil Malik, Dokyun Lee, Param Vir Singh "LinkedIn and Bias Project"
3. Tapa Dipti Sitaula, Dokyun Lee, Param Vir Singh "Fake Review Project"

CONFERENCE

1. Xiao Liu, Dokyun Lee, Kannan Srinivasan. (2016) "Large Scale Cross Category Analysis of Consumer Review Content on Sales Conversion Leveraging Deep Learning", **Customer Insights Conference at Yale School of Management, Connecticut, USA**
2. Xiao Liu, Dokyun Lee, Kannan Srinivasan. (2016) "Large Scale Cross Category Analysis of Consumer Review Content on Sales Conversion Leveraging Deep Learning", **Wharton Customer Analytics Initiative, Philadelphia, USA.**
3. Xiao Liu, Dokyun Lee, Kannan Srinivasan. (2016) " The Effect of Consumer Review Content on Sales Conversion: Analysis of Consumer Information Journey Across Categories with Deep Learning", **NET Institute Conference at NYU, New York, USA**
4. Xiao Liu, Dokyun Lee, Kannan Srinivasan. (2016) "The Effect of Word of Mouth on Sales: New Answers from the Consumer Journey Data with Deep Learning", **Stanford Digital Marketing Conference, San Francisco, USA.**
5. Dongwon Lee, Anandasivam Gopal, Dokyun Lee, Jay Chung (2016) "Mobile Generosity: On the Use of Mobile Devices and Monetary Subsidies in Charitable Giving", **Workshop on Information Systems and Economics (WISE), Dublin, Ireland**
6. Shunyuang Zhang, Dokyun Lee, Param Vir Singh, Kannan Srinivasan (2016) "Feature Extraction and Demand Estimation on Airbnb: A Deep Learning Approach", **Workshop on Information Systems and Economics (WISE), Dublin, Ireland**
7. Dongwon Lee, Anandasivam Gopal, Dokyun Lee, Jay Chung (2016) "Mobile Generosity: On the Use of Mobile Devices and Monetary Subsidies in Charitable Giving", **Conference on Digital Experimentation at MIT (CODE Conf), Boston, USA.**
8. Shunyuang Zhang, Dokyun Lee, Param Vir Singh, Kannan Srinivasan (2016) "Professional versus Amateur Images: Investigating Differential Impact on Airbnb Property Demand", **INFORMS CIST, Nashville, USA. [WINNER BEST STUDENT PAPER AWARD AT CIST 2016]**
9. Shunyuang Zhang, Dokyun Lee, Param Vir Singh, Kannan Srinivasan (2016) "How Much Is An Image Worth? An Empirical Analysis of Property's Image Aesthetic Quality on Demand at AirBNB", **International Conference in Information Systems (ICIS), Dublin, Ireland.**
10. Dokyun Lee, Kartik Hosanagar (2016) "When do Recommender Systems Work the Best? The Moderating effects of Product Attributes and Consumer Reviews.", **12th Symposium on Statistical Challenges in eCommerce Research (SCECR), Naxos Island, Greece.**
11. Xiao Liu, Dokyun Lee, Kannan Srinivasan. (2016) "Confusion or Conversion? The Role of Product Reviews on Consumer Online and Mobile Purchase Journeys", **INFORMS Society for Marketing Science, Shanghai, China**
12. Dokyun Lee, Kartik Hosanagar. (2016) "When do Recommender Systems Work the Best? The Moderating Effects of Product Attributes and Consumer Reviews on Recommender Performance", **International World Wide Web Conference (WWW Conference), Montreal, Canada**
13. Dokyun Lee, Kartik Hosanagar. (2015) "When do Recommender Systems Work the Best? The Moderating Effects of Product Attributes and Consumer Reviews on Recommender Performance", **Conference of Information Systems and Technology (CIST), Philadelphia, United States.**
14. Dokyun Lee, Kartik Hosanagar. (2015) "When do Recommender Systems Work the Best? The Moderating Effects of Product Attributes and Consumer Reviews on Recommender Performance", **INFORMS, Philadelphia, United States.**
15. Dokyun Lee, Kartik Hosanagar. (2015) "People Who Liked This Study Also Liked: The Impact of Recommender Systems on Sales Volume and Diversity", **INFORMS, Philadelphia, United States.**
16. Dokyun Lee, Kartik Hosanagar, and Harikesh Nair. (2014) "The Effect of Social Media Marketing Content on Consumer Engagement: Evidence from Facebook.", **Workshop on Information Systems and Economics (WISE), Auckland, New Zealand [RUNNER UP, BEST STUDENT PAPER AWARD]**

17. Dokyun Lee and Kartik Hosanagar (2014) "People Who Liked This Study Also Liked: The Impact of Recommender Systems on Sales Volume and Diversity", ***International Conference on Information Systems (ICIS)***, eBusiness, Auckland, New Zealand
18. Dokyun Lee, Kartik Hosanagar, and Harikesh Nair. (2014) "The Effect of Social Media Marketing Content on Consumer Engagement: Evidence from Facebook.", ***INFORMS***, eBusiness, The Social Crowd: New Research in Social Media and Crowdsourcing. Invited Talk, San Francisco, US.
19. Dokyun Lee, Kartik Hosanagar. (2014) "People Who Liked This Study Also Liked: The Impact of Recommender Systems on Sales Volume and Diversity", ***Conference on Digital Experimentation at MIT (CODE Conf)***, Boston, US.
20. Dokyun Lee, Kartik Hosanagar, and Harikesh Nair. (2013) "Impact of Social Media Content on Consumer Engagement on Facebook: Application of Large- Scale Content Coding.", ***Workshop on Information Technology and Systems (WITS, ICIS)***, Milan, Italy.
21. Dokyun Lee, Kartik Hosanagar, and Harikesh Nair. (2013) "The Effect of Social Media Marketing Content on Consumer Engagement: Evidence from Facebook.", ***8th Symposium on Statistical Challenges in eCommerce Research (SCECR)***, Lisbon, Portugal.
22. Dokyun Lee, Shawndra Hill, Justin Vastola. (2011) "Propensity Score Method in Network Data: A Simulation Study of Bias", Accepted at ***Workshop on Information Technology and Systems (WITS, ICIS)***, Shanghai, China.

INVITED TALKS & POSTERS

The Effect of Social Media Marketing Content on Consumer Engagement: Evidence from Facebook

- INFORMS
- Russell Ackoff Research Grant Meeting
- Baker Retail Center
- Mack Institute "Mobile and Social" Conference
- University of Texas at Dallas 2015
- Emory University 2015
- University of Rochester 2015
- University of Minnesota 2015
- New York University 2015
- University of Washington 2015
- Cornell University 2015
- University of Maryland 2015
- Carnegie Mellon University 2015
- Columbia University 2014 (Co-author)
- University of Michigan 2014 (Co-author)
- Temple University 2014 (Co-author)
- University of Texas, Austin 2013 (Co-author)

"People Who Liked This Study Also Liked": Field Experiment on the Impact of Recommender Systems on Sales Volume and Diversity

- INFORMS
- CODE Conference
- Boston College (Co-author presented)
- UCLA (Co-author presented)
- Purdue (Co-author presented)
- University of Delaware (Co-author presented)

MEDIA MENTION

- <http://www.msi.org/articles/research-grants-target-cx-getting-marketing-right-in-real-time/>
- Informative Or Persuasive? What's the Best Advertising Message for Facebook?, B2C - 11/26/2013
- 'Like' This Blog to Maximize Brand Messaging, Wharton Magazine - 11/22/2013
- 7 Ways Your Content Can Increase Facebook Engagement, Search Engine Watch - 11/18/2013

TEACHING

- 2016: Unstructured Data & Big Data: Acquisition to Analysis, CMU Tepper, **PhD**
- 2016, 2017: Data Mining, CMU Tepper, **MBA** Sections
- 2016, 2017: Data Mining and Business Analytics, **Undergraduate**
- 2014: Wharton Doctoral Summer Tech Camp- "Big Data, Right Tools. Computational Resources for Empirical Business Research", Wharton
 - **Doctoral Class** (29 Students registered, Instructor Evaluation: **6.77/7**)
 - **Course Creator and Lecturer**
 - <http://opim.wharton.upenn.edu/techcamp/2014>
- 2013: Wharton Doctoral Summer Tech Camp- "Big Data, Right Tools. Computational Resources for Empirical Business Research", Wharton
 - **Doctoral Class** (28 students registered, Instructor Evaluation: **6.27/7**)
 - **Course Creator and Lecturer**
 - <http://opim.wharton.upenn.edu/techcamp/2013>
- 2014: Design and Development of Web-Based Products and Services, Wharton, **EMBA**
 - Teaching Assistant
- 2012: Enabling Technologies, Wharton, **MBA**
 - Teaching Assistant
- 2011: Management Information Systems, **Undergraduate**
 - Teaching Assistant
- 2011: Development of Web-Based Products and Services, Wharton, **EMBA**
 - Teaching Assistant
- 2008: Intro to Computer Science in Java, Columbia University, **Undergraduate**
 - Teaching Assistant

PROFESSIONAL SERVICE

- **CMU 2016:** MEAC Committee, MS in BA Curriculum Committee, PhD Hiring Committee, BA Faculty Hiring Committee, Seminar Organizer
- **CMU 2015:** Seminar Organizer, PhD Hiring Committee
- **Program Committee** – *Conference of Information Systems and Technology (CIST), 2015*
- **Session Chair** – *INFORMS, "Social Media in Business", 2015*
- **Session Chair** – *INFORMS, "E-Commerce and Digital Marketing", 2015*
- **Program Committee** – *International Conference on e-Commerce (ICEC), "Econ in E-Commerce", 2014*
- **Session Chair** – *Workshop on Information Technology and Systems, "Data, Text and Web Mining", 2013*
- **Reviewer-** *Management Science, Management Information Systems Quarterly (MISQ), Journal of Computing, Information Systems Research, ICIS, ICEC, CIST*

INDUSTRY WORK EXPERIENCE

- 2010 Summer **Machine Learning and Natural Language Processing Engineer Contractor**
Thomson Reuters, New York, NY
- Built Automated Information Extractor (Natural Language Processing Engine) for any unstructured market data news feeds such as BusinessWire by using support vector machine/Proprietary Algorithms/ Heterogeneous Ensemble Learning from scratch
 - Java, ANTLR, Stanford NLP Tool
- 2007-2008 **J2ME Mobile Widget Software Engineer**
Snac Inc., New York, NY
- Use of proprietary language to develop widgets that run on java enabled cellphone
 - Created database schema, backend PHP, info scraping PHP scripts
- 2007 Summer **Quantitative Trading Software Developer**
Blackrock, New York, NY
- Wrote part of ALADDIN (Blackrock's Proprietary software for trading/portfolio/market analysis)
- 2006-2007 **Ruby on Rails Developer**
Ourtaste.com, New York, NY
- Built parts of restaurant review-based social media site
- 2006 Summer **Research Assistant for Machine Learning Algorithm Team**
Con Edison and Center for Computational Learning System at Columbia University

SKILLS

Language Java, PERL, Python, Matlab, R, Stata, LISP, PHP, C/C++, Korean
Experience Liblinear, SCRAPY, MongoDB, Ensemble Method, ANTLR, WEKA, Information Retrieval, Large Scale Data Mining, Text Clustering/Classification, Personalization, J2ME, OLAP, ORDBMS, Oracle 10g, Data Warehousing, Web Scraping, Recommendation System, Expert System (built with lisp and forward chaining inference engine called SAVE: Systematic Allopathic Vitamin Expert. This expert system takes symptoms and gives food recommendation to cure vitamin-deficiency caused diseases)

PERSONAL

Country of Citizenship: USA

Membership: AIS, INFORMS, ACM

Hobbies: Tennis, Reading tech news, Acquiring data, Attending music concerts