

Beibei Li

Stern School of Business, New York University
44 West 4th St., KMC 8-186
New York, NY 10012

Email: bli@stern.nyu.edu
Tel: +1 (212) 998 0559
Web: <http://pages.stern.nyu.edu/~bli>

Education

- | | |
|--|--------------------------------|
| Stern School of Business, New York University | New York, NY, USA |
| Ph.D. in Information, Operations, and Management Sciences | 2008 – 2012(<i>Expected</i>) |
| University of Kentucky | Lexington, KY, USA |
| M.S. in Computer Science (GPA: 3.917/4.0) | 2007 |
| Donghua University | Shanghai, China |
| B.S./M.E. (Major: Computer Science, rank 1 st with honors out of approximately 500 students)
(Minor: Fashion Design) | 2005 |

Research Interests

- Topics: Social Media, Search Engine Marketing, Crowd-sourcing
- Methodologies: Econometrics, Structural Modeling, Bayesian Modeling, Machine Learning, Text Mining

Research Experience

- **Stern School of Business, New York University** 2008 - Present
Doctoral student, focusing on studying the effects of social media and search engine on consumer behavior and firm strategies in electronic markets, using econometrics, structural modeling, hierarchical Bayesian modeling, combined with machine learning techniques and randomized field experiments.
- **Microsoft Research, Redmond, WA** 2008 Summer
Intern at Microsoft Bing Search Group, worked on US housing market forecast using econometric and spatio-temporal modeling, and geo-mapping techniques.
- **Stern School of Business, New York University** 2007 - 2008
Research fellow in the Center for Digital Economy Research (CeDER).
- **University of Kentucky** 2006 - 2007
*Research assistant in the High Performance Scientific Computing and Computer Simulation Lab, worked on clustering blog textual content;
Research assistant in the Computational Medical Imaging & Data Analysis Lab, worked on brain image classification and analysis for early Alzheimer's Disease detection.*
- **Shanghai Super Computing Center, Shanghai, China** 2004 - 2005
Intern, worked on grid computation mid-ware design.
- **Donghua University, Shanghai, China** 2002 - 2004
Research assistant, worked on database privacy and E-learning system design.

Teaching Experience

- **Teaching Fellow in Stern School of Business, New York University**
(Undergraduate Core)
Information Technology in Business and Society *Fall 2008, Spring 2011*
- **Teaching Assistant in Department of Computer Science, University of Kentucky**
(Undergraduate Core)
Introduction to Computers *Fall 2005, Spring 2006*
(Awarded best TA and gave a presentation at the TA orientation, 2006)

- **Teaching Assistant in School of Computer Science, Donghua University, Shanghai**
Database Principle and Technology *Fall 2004, Spring 2005*
Computer Graphics *Spring 2004*

Working Papers

- Designing Ranking Systems for Hotels on Travel Search Engines by Mining User-Generated and Crowd-Sourced Content. *Marketing Science. Conditionally Accepted.* (with Anindya Ghose and Panagiotis G. Ipeirotis)
- Examining the Impact of Search Engine Ranking and Personalization on Consumer Behavior: Combining Bayesian Modeling with Randomized Experiments. *To be submitted to Management Science.* (with Anindya Ghose and Panagiotis G. Ipeirotis)

Working-in-progress

- Using Randomized Experiments to Design Social Network-based Ranking.

Conference Publications

- Towards a Theory Model for Product Search. In *Proceedings of the 20th International World Wide Web Conference (WWW 2011)*, Hyderabad, India, March 2011. (with Anindya Ghose and Panagiotis G. Ipeirotis) **Best Paper Award**
- Designing Ranking Systems for Hotels on Travel Search Engines to Enhance User Experience. In *Proceedings of the International Conference on Information Systems (ICIS 2010)*, St. Louis, December. (with Anindya Ghose and Panagiotis G. Ipeirotis)

Papers in Workshops and Conference Programs

- Examining the Impact of Search Engine Ranking and Personalization on Consumer Behavior: Combining Bayesian Modeling with Randomized Field Experiments. *Workshop on Information Systems and Economics (WISE 2011)*, Shanghai, December, 2011. (with Anindya Ghose and Panagiotis G. Ipeirotis)
- Designing Ranking Systems for Hotels on Travel Search Engines by Mining User-Generated and Crowd-Sourced Content, *6th bi-annual Conference on The Economics of Intellectual Property, Software and the Internet*, Toulouse, France, January 2011. (With Anindya Ghose and Panagiotis G. Ipeirotis)
- Extracting Economic Value from Online User-Generated Content: Combining Text Mining with Demand Estimation in the Hotel Industry. In *Proceedings of the 32nd INFORMS Marketing Science Conference*, Cologne, Germany, June 2010. (with Anindya Ghose and Panagiotis G. Ipeirotis)
- Mining User-Generated and Crowd-Sourced Content on the Internet to Estimate Demand for Hotels. *The Sixth Symposium on Statistical Challenges in Electronic Commerce Research (SCECR 2010)*. Austin, TX, June 2010. (With Anindya Ghose and Panagiotis G. Ipeirotis)
- Improving Product Search with Economic Theory. *International Conference on Data Engineering (ICDE 2010) PhD Workshop*, Long Beach, CA, March 2010.
- The Economic Impact of User-Generated Content on the Internet: Combining Text Mining with Demand Estimation in the Hotel Industry. *Workshop on Information Systems and Economics (WISE 2009)*, Phoenix, 2009. (with Anindya Ghose and Panagiotis G. Ipeirotis)
- Towards Designing Ranking Systems for Hotels on Travel Search Engines: Combining Text mining with Demand Estimation in the Hotel Industry. *Workshop on Information Technology and Systems (WITS 2009)*, Phoenix, 2009. (with Anindya Ghose and Panagiotis G. Ipeirotis)
- Stay Elsewhere? Improving Local Search for Hotels Using Econometric Modeling and Image

Classification. *WebDB 2008*, in conjunction with *ACM SIGMOD/PODS 2008*, Vancouver, Canada. (with Anindya Ghose and Panagiotis G. Ipeirotis)

- Stay Elsewhere? The Economic Impact of Location-based Hotel Features: A View from Remote Sensing Image Analysis. *Winter Conference on Business Intelligence*, March, 2008, Salt Lake City, Utah. (with Anindya Ghose and Panagiotis G. Ipeirotis)

Other Talks, Posters & Demonstrations

- Towards a Theory Model for Product Search. *Baidu, Inc.* June 2011, Beijing, China.
- A Demo Search Engine for Products. The *20th International World Wide Web Conference (WWW 2011)*, Hyderabad, India, March 2011.
- A Demo for Product Search. *Day 1: Technology Expo*, NYU. November 2010.
- Designing Ranking Systems for Hotels on Travel Search Engines by Mining User-Generated and Crowd-Sourced Content. *The 10th Anniversary for Department of Information, Operations & Management Science (IOMS), Stern School of Business, NYU*. October, 2010.
- Designing Ranking Systems for Hotels on Travel Search Engines. *New York Computer Science and Economics Day*. The New York Academy of Sciences, World Trade Center, New York, NY. 2010.
- Extracting Economic Value from Online User-Generated Content: Combining Text Mining with Demand Estimation in the Hotel Industry. *New York Computer Science and Economics Day*. The New York Academy of Sciences, World Trade Center, New York, NY. 2009.
- Improving Local Search for Hotels Using Econometric Modeling and Image Classification. *Microsoft Virtual Earth Award Summit*, May, 2008, Redmond, WA.

Academic Honors & Awards

- Selected to the ICIS Doctoral Consortium. Dec. 2011, Shanghai.
- Best Paper Award, International World Wide Web Conference (WWW 2011).
- Selected to the Columbia-Duke-UCLA Workshop on Quantitative Marketing and Structural Econometrics (*QuantCamp*). Duke University, Aug. 2010.
- ICDE PhD Workshop Fellowship Award (\$1000 by NSF grant IIS-0956600), 2010.
- PhD Fellowship, Stern School of Business, New York University, 2008-2012.
- Best Paper Award, 20th Annual ECU Symposium in the Mathematical, Statistical and Computer Sciences, Mar, 2006, Richmond, KY.
- 3rd Place for the Microsoft Cup Software Design Competition, 2004, Shanghai.
- 3rd Place for the ACM International Collegiate Programming Contest, 2002, Shanghai.
- Talented Undergraduate Award (1st out of approximately 4000 students), 2003, Shanghai.

Skills, Extracurricular Interests and Other Information

- STATA, MATLAB, C/C++, SQL, Microsoft Office, Windows, Linux
- HTML, JavaScript, Photoshop, Flash, Dreamwaver
- Violin
- President of Department of Social Activity, Donghua University, 2003~2005.
- Language: English (Fluent) & Mandarin (Native)
- Immigration Status: Permanent Resident

References

ANINDYA GHOSE

Dissertation Committee Chair
Associate Professor of Information, Operations, and Management Sciences
Robert L. & Dale Atkins Rosen Faculty Fellow
Co-Director of the Center for Digital Economy Research
Leonard N. Stern School of Business, New York University
Visiting Associate Professor of Operation and Information Management
Wharton School of Business, University of Pennsylvania
KMC 8-94, 44 W 4th Street, New York, NY 10012
+1 212.998.0807
aghose@stern.nyu.edu
<http://pages.stern.nyu.edu/~aghose>

PANAGIOTIS G. IPEIROTIS

Dissertation Committee Co-Chair
Associate Professor of Information, Operations, and Management Sciences
George A. Kellner Faculty Fellow
Leonard N. Stern School of Business, New York University
KMC 8-84, 44 W 4th Street, New York, NY 10012
+1 212.998.0803
panos@stern.nyu.edu
<http://pages.stern.nyu.edu/~panos>

VASANT DHAR

Professor of Information, Operations, and Management Sciences
Paduano Fellow, Head of the Information Systems Group
Director for the Center for Digital Economy Research
Leonard N. Stern School of Business, New York University
KMC 8-97, 44 W 4th Street, New York, NY 10012
+1 212.998.0816
vdhar@stern.nyu.edu
<http://people.stern.nyu.edu/vdhar>

RUSSELL S. WINER

William Joyce Professor of Marketing
Chairman, Department of Marketing
Leonard N. Stern School of Business, New York University
806 Tisch Hall, 40 W 4th Street, New York, NY 10012
+1 212.998.0540
rwiner@stern.nyu.edu
<http://people.stern.nyu.edu/rwiner>

SAM K. HUI

Assistant Professor of Marketing
Department of Marketing
Leonard N. Stern School of Business, New York University
910 Tisch Hall, 40 W 4th Street, New York, NY 10012
+1 212.998.0551
khui@stern.nyu.edu
<https://files.nyu.edu/kch2/public>

Selected Graduate-Level Coursework

Microeconomics: Theory and Applications
Basic Probability
Econometrics
Industrial Organization I
Industrial Organization II
Game Theory
Strategy (Economics)
Quant Applied Marketing
Bayesian Modeling & Computation
IS Economics Research Seminar
IS Technical Research Seminar
IT & Organization Research Seminar
Behavioral Research Methods
Technical Foundations of Information Systems
Algorithm Design
Machine Learning
Networks, Crowds & Markets

Abstracts for Job Market Papers

Paper 1: Designing Ranking Systems for Hotels on Travel Search Engines by Mining User-Generated and Crowd-Sourced Content.

User-Generated Content (UGC) on social media platforms and product search engines is changing the way consumers shop for goods online. However, current product search engines fail to effectively leverage information created across diverse social media platforms. Moreover, current ranking algorithms in these product search engines tend to induce consumers to focus on one single product characteristic dimension (e.g., price, star rating). This approach largely ignores consumers' multi-dimensional preferences for products. In this paper, we propose to generate a ranking system that recommends products that provide on average the best value for the consumer's money. The key idea is that products that provide a higher surplus should be ranked higher on the screen in response to consumer queries. We use a unique dataset of U.S. hotel reservations made over a three-month period through Travelocity, which we supplement with data from various social media sources using techniques from text mining, image classification, social geo-tagging, human annotations, and geo-mapping. We propose a random coefficient hybrid structural model, taking into consideration the two sources of consumer heterogeneity the different travel occasions and different hotel characteristics introduce. Based on the estimates from the model, we infer the economic impact of various location and service characteristics of hotels. We then propose a new hotel ranking system based on the average utility gain a consumer receives from staying in a particular hotel. By doing so, we can provide customers with the "best-value" hotels early on, and thereby improve the quality of local searches for such hotels. Our user study in six major cities, using ranking comparisons from several thousand users, validates the superiority of our ranking system relative to existing systems on several travel search engines. On a broader note, we aim to illustrate how UGC can be mined and incorporated into a demand-estimation model, and how UGC can be leveraged to generate a new ranking system in product search engines to improve the quality of choices available to online consumers. Our inter-disciplinary approach can provide insights for using text mining and image-classification techniques in economics and marketing research.

Paper 2: Examining the Impact of Search Engine Ranking and Personalization on Consumer Behavior: Combining Bayesian Modeling with Randomized Experiments.

In this paper, we examine how different ranking and personalization mechanisms on product search engines influence consumers' online search and purchase behavior. To investigate these effects, we combine archival data analysis with randomized experiments. Our archival data analysis is based on a unique dataset containing approximately one million online sessions from Travelocity over a three-month period. Using a hierarchical Bayesian model, we first jointly estimate the relationship among consumers' click behavior, purchase behavior, and search engine ranking decisions. To evaluate the causal effect of search engine design on user behavior, we conduct randomized experiments. The experiments are based on a real-world hotel search engine application that we designed and built. By manipulating the default ranking method of search results, and by enabling or disabling a variety of personalization features on the hotel search engine website, we are able to empirically identify the causal impact of search engines on consumers' online click and purchase behavior. The archival data analysis and the randomized experiments are consistent in demonstrating that ranking has a significant effect on consumers' click and purchase behaviors. Our main findings are the following. (1) We find that hotels with a stronger reputation for providing superior services are more adversely affected by an inferior screen position. In addition, a consumer utility-based ranking mechanism yields the highest purchase propensity, as compared to existing benchmark systems such as ranking based on price or customer ratings. (2) Our randomized experiments on the impact of active vs. passive personalization mechanisms on user behavior indicate that, although active personalization (wherein users can interact with the ranking recommendation algorithm) can lead to more clicks compared to passive personalization, it leads to lower purchase propensities. This experimental result supports our finding from the Bayesian model-based archival data analysis, suggesting that providing more information during the decision-making process may lead to fewer purchases. Therefore, product search engines should not adopt active personalization strategies ubiquitously. Various other implications that unravel the causal mechanisms between search engine design and consumer behavior are discussed.