

# Taeyoung Park

DEPARTMENT OF STATISTICS  
UNIVERSITY OF PITTSBURGH  
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## ACADEMIC POSITIONS

- University of Pittsburgh**, Pittsburgh, PA  
Tenure-Track Assistant Professor, Department of Statistics 2006 – Present
- Harvard University**, Cambridge, MA  
Teaching Fellow, Department of Statistics 2002 – 2006

## EDUCATION

- Harvard University**, Cambridge, MA  
Ph.D. in Statistics 2006  
Dissertation title: “Inference and Efficient Computation for Highly Structured Models with Applications,” under the supervision of Professor David van Dyk.
- A.M. in Statistics 2003
- Yonsei University**, Seoul, Korea  
B.A. in Applied Statistics and Economics 2001
- University of Minnesota**, Morris, MN  
Exchange Student in Mathematics 1999 – 2000

## PUBLICATIONS

1. **Park, T.**, Krafty, R. T., and Sanchez, A. (2009). Bayesian Multiple Change-Point Regression Analysis of Homicide Rates. Submitted.
2. **Park, T.**, Jeong, J.-H., and Lee, J. W. (2009). Bayesian Inference on Quantile Residual Life Function. Submitted.
3. **Park, T.** (2009). Inferring Individual Choice Behavior from Aggregate Data. Submitted.
4. **Park, T.** and van Dyk, D. A. (2009). Partially Collapsed Gibbs Samplers: Applications and Illustrations. *Journal of Computational and Graphical Statistics*, to appear.
5. van Dyk, D. A. and **Park, T.** (2009). Partially Collapsed Gibbs Sampling and Path-Adaptive Metropolis-Hastings in High-Energy Astrophysics. In *Handbook of Markov Chain Monte Carlo: Methods and Applications* (Editors: S. Brooks, A. Gelman, G. Jones, and X.-L. Meng), Chapman & Hall/CRC Press, to appear.

6. **Park, T.**, van Dyk, D. A., and Siemiginowska, A. (2008). Searching for Narrow Emission Lines in X-ray Spectra: Computation and Methods. *The Astrophysical Journal* **688**, 807–825.
7. van Dyk, D. A. and **Park, T.** (2008). Partially Collapsed Gibbs Samplers: Theory and Methods. *Journal of the American Statistical Association* **103**, 790–796.
8. **Park, T.**, van Dyk, D. A., and Siemiginowska, A. (2007). Fitting Narrow Spectral Lines in High-Energy Astrophysics Using Incompatible Gibbs Samplers. In *Statistical Challenges in Modern Astronomy IV* (Editors: G. J. Babu and E. D. Feigelson), San Francisco, Astronomical Society of the Pacific Conference Series **371**, 437–438.
9. **Park, T.** and van Dyk, D. A. (2006). Efficient Gibbs Sampling Techniques via Functional Incompatibility. *2006 Proceedings of the American Statistical Association, Bayesian Statistical Science Section [CD-ROM]*, Seattle, WA. (**Winner of the 2006 Student Paper Competition** in the ASA Section on Bayesian Statistical Science.)
10. **Park, T.**, Kashyap, V., Siemiginowska, A., van Dyk, D., Zezas, A., Heinke, C., and Wargelin, B (2006). Bayesian Estimation of Hardness Ratios: Modeling and Computations. *The Astrophysical Journal* **652**, 610–628.
11. van Dyk, D. A. and **Park, T.** (2004). Efficient EM-Type Algorithms for Fitting Spectral Lines in High Energy Astrophysics. In *Applied Bayesian Modeling and Causal Inference from Incomplete-Data Perspectives: Contributions by Donald Rubin's Statistical Family* (Editors: A. Gelman and X.-L. Meng), Wiley & Sons, New York, 285–296.

## RESEARCH AND WORK EXPERIENCE

- The California-Harvard AstroStatistics Collaboration (CHASC)**, Research Assistant 2002 – 2006  
 This group conducts research on developing new statistical methods for use in high-energy astrophysics. Work includes developing new Bayesian techniques for fitting statistical models that account for emission line fluxes in high-energy X-ray spectra and computing hardness ratios that characterize the spectra of faint X-ray sources.  
<http://www.ics.uci.edu/~dvd/astrostat.html>
- Berkman Center, Harvard Law School**, Research Assistant 2003 – 2004  
 Set up a database and analyzed the data in a series of surveys that were deployed in 12 developing countries to evaluate the impact of computers in schools. Collaborated on the project with the World Bank Institute and the Educational Development Center, Inc.
- Samsung SDS**, Assistant Engineer 2001
- Republic of Korea Army**, Military Service 1996 – 1998

## ACTIVE RESEARCH PROJECTS

### Bayesian Change-Point Analysis

Research joint with Robert T. Krafty in the Department of Statistics at University of Pittsburgh and Alavero Sanchez in the Center for Injury Research and Control at University of Pittsburgh that focuses on investigating an association between restrictions on alcohol sales and homicide rates in Cali, Columbia while accounting for a nonconstant baseline homicide rate.

### **Bayesian Survival Analysis**

Research joint with Jong-Hyeon Jeong in the Department of Biostatistics at University of Pittsburgh and Jae Won Lee in the Department of Statistics at Korea University that focuses on developing efficient Monte Carlo strategies for estimating quantile residual life functions as a summary measure of survival data.

### **Micro-Level Analysis of Aggregate Data**

Research that focuses on developing new Monte Carlo strategies to infer individual choice behavior when a choice response variable is available only as aggregate information.

### **Bayesian Hierarchical Modeling for Long-Term Care Organizations**

Research joint with Michael Lin and Wesley Rohrer in the Department of Health Policy and Management at University of Pittsburgh that focuses on delineating the network of long-term care organizations and projecting the organizational landscape in 2020 using a Bayesian hierarchical Poisson regression model.

### **Adaptive Treatment Strategies**

Research joint with Yu Cheng in the Department of Statistics at University of Pittsburgh, and Sati Mazumdar and Abdus Wahed in the Department of Biostatistics at University of Pittsburgh that focuses on developing dynamic treatment regimes and adaptive treatment strategies.

<http://www.pitt.edu/~wahed/ATSRG/main.htm>

### **Joint Imputation Model for Non-Nested Data**

Research joint with David van Dyk in the Department of Statistics at University of California, Irvine and Donald Rubin in the Department of Statistics at Harvard University that focuses on developing a joint imputation model to combine employment data measured on different non-nested geographic partitions of Germany.

### **Bayesian Approaches to Computing Hardness Ratios**

Research joint with David van Dyk in the Department of Statistics at University of California, Irvine and Xiao-Li Meng in the Department of Statistics at Harvard University, and in collaboration with Vinay Kashyap and Andreas Zezas at Harvard-Smithsonian Center for Astrophysics that focuses on classifying astronomical sources based on hardness ratios and investigating the relationship among the hardness ratios of the different sources.

## **GRANTS**

### **Computational Modeling Pilot Grant**

02/2008 – 01/2009

Complexity Science and Long-Term Care in Pennsylvania: An Ecological Analysis to Project the Organizational Landscape in 2020 (Co-investigator).

## **PRESENTATIONS**

1. “Bayesian Multiple Change-Point Regression Analysis of Homicide Rates.” Presentation given at a seminar in the Department of Statistical Science, Duke University, Durham, NC, April 10, 2009 (forthcoming).
2. “A Melodious Harmony of Dissonance: Efficiency of Incompatibility in Partially Collapsed Gibbs Samplers.” Presentation given at a seminar in the Department of Biostatistics, University of Pittsburgh, Pittsburgh, PA, January 31, 2008.

3. “Fitting Narrow Emission Lines in X-Ray Spectra.” Presentation given at the AstroStatistics Seminar in the Department of Statistics, Carnegie Mellon University, Pittsburgh, PA, October 11, 2007.
4. “Using Incompatible Gibbs Samplers To Efficiently Fit Hierarchical Models.” Presentation given at the Joint Statistical Meetings, Salt Lake City, UT, July 29–August 2, 2007.
5. “Using Incompatibility to Build Fast Gibbs Samplers.” Presentation given at the Tenth Meeting of New Researchers in Statistics and Probability, Salt Lake City, UT, July 24–28, 2007.
6. “Applications of Bayesian Methods in Marketing.” Presentation given at the Marketing Models Seminar in the Department of Marketing, Katz Graduate School of Business, University of Pittsburgh, Pittsburgh, PA, November 17, 2006.
7. “Detecting Emission Features in X-Ray Spectra: Application to a High Redshift Quasar.” Presentation given at the Astro Talk in the Department of Physics and Astronomy, University of Pittsburgh, Pittsburgh, PA, October 13, 2006.
8. “Efficient Gibbs Sampling Techniques via Functional Incompatibility.” (Received the “**Student Paper Competition Award.**”) Presentation given at the Joint Statistical Meetings, Seattle, WA, August 6–10, 2006.
9. “Flexible and Efficient Data Augmentation Schemes: Partially Marginalized Gibbs Samplers.” Presentation given at the Joint Statistical Meetings, Minneapolis, MN, August 7–11, 2005.

#### POSTERS

1. “The Efficiency of Incompatibility in Partially Marginalized Gibbs Samplers.” Poster given at the third IMS/ISBA Joint Meeting, Bormio, Italy, January 9–11, 2008.
2. “Fitting Narrow Spectral Lines in High Energy Astrophysics Using Incompatible Gibbs Samplers.” Poster given at the Statistical Challenges in Modern Astronomy IV conference, State College, PA, June 12–15, 2006.
3. “Fitting Narrow Spectral Lines in High Energy Astrophysics Using Incompatible Gibbs Samplers.” Poster given at the eighth Valencia International Meeting on Bayesian Statistics, Alicante, Spain, June 1–6, 2006.
4. “Efficient X-ray Spectral Fitting with Narrow Emission Lines.” Poster given at the Opening Workshop for AstroStatistics Program at SAMSI, Research Triangle Park, NC, January 23–25, 2006.
5. “BEHR: Bayesian Estimation of Hardness Ratios.” Poster given at the 6 Years of Chandra Symposium, Cambridge, MA, November 2–4, 2005.
6. “Generalizing the Method of Marginal Augmentation.” (Received the “**Best Poster Award.**”) Poster given at the second IMS/ISBA Joint Meeting, Bormio, Italy, January 12–14, 2005.
7. “BEHR (Bayesian Estimation of Hardness Ratios): Computing Hardness Ratios with Poissonian Errors.” Poster given at the eighth High Energy Astrophysics Division Meeting, New Orleans, LA, September 8–11, 2004.
8. “Finding Narrow Emission Lines in X-ray Spectra.” Poster given at the eighth High Energy Astrophysics Division Meeting, New Orleans, LA, September 8–11, 2004.

9. "Spectral Analysis with Delta Functions Emission Lines." Poster given at the seventh Case Studies in Bayesian Statistics Workshop, Pittsburgh, PA, September 12–13, 2003.

### TEACHING EXPERIENCE

#### Department of Statistics, University of Pittsburgh, Assistant Professor

Statistics 1000: Applied Statistical Methods	Spring 2007, Fall 2007, Fall 2008, Spring 2009
Statistics 1152: Introduction to Mathematical Statistics	Spring 2009
Statistics 2611: Theory of Multivariate Analysis I	Spring 2008
Statistics 3341: Advanced Modern Statistical Computing I	Fall 2006
Statistics 3342: Advanced Modern Statistical Computing II	Fall 2008

#### Department of Statistics, Harvard University, Teaching Fellow (TF)

Responsibilities include teaching weekly sections, holding weekly office hours, and marking assignments, term projects, and examinations.

Statistics 100 (Head TF): Introduction to Quantitative Methods (Dr. Nathan Taback)	Fall 2003
In addition to having my own section, I coordinated the activities of five other teaching fellows and was responsible for course administration.	
Statistics 100: Introduction to Quantitative Methods (Dr. Willis Davis)	Summer 2005
Statistics 104: Introduction to Quantitative Methods (Dr. Mark Irwin)	Fall 2004
Statistics 110: Introduction to Probability (Dr. Jose Blanchet)	Fall 2005
Statistics 139: Statistical Sleuthing Through Linear Models (Dr. Xiao-Li Meng)	Spring 2005
Statistics 211: Statistical Inference (Dr. Samuel Kou)	Spring 2003
Statistics 220: Bayesian Data Analysis (Dr. David van Dyk)	Fall 2002
Statistics 221: Statistical Computing Methods (Dr. Mark Irwin)	Spring 2004

#### Briggs Library, University of Minnesota, Math Tutor

Tutored college students in the following courses:

Statistics 160: Introduction to Statistics (Dr. Engin Sungur)	Spring 2000
Statistics 260: Statistical Methods (Dr. Engin Sungur)	Spring 2000

### GRADUATE STUDENTS

Mr. Seo Hyon Baik (Statistics)	Ph.D. Dissertation Committee
Ms. Ya-Hsiu Chuang (Biostatistics)	Ph.D. Dissertation Committee
Ms. Chen Gu (Statistics)	Co-Adviser/Ph.D. Dissertation Committee

Ms. Hyewook Jeong (Statistics)	Ph.D. Dissertation Committee
Mr. Myungsoon Song (Statistics)	Ph.D. Dissertation Committee
Mr. Zhigang Yao (Statistics)	Ph.D. Dissertation Committee

#### ACADEMIC HONORS AND AWARDS

<b>Young Investigator Travel Award</b> , Third IMS/ISBA Joint Meeting, Bormio, Italy	01/2008
<b>Travel Award</b> , Tenth Meeting of New Researchers in Statistics and Probability, Utah	07/2007
<b>CxC Fellowship</b> , School of Arts and Sciences, University of Pittsburgh	12/2006
<b>Winner</b> , 2006 Student Paper Competition, Section on Bayesian Statistical Science, ASA	08/2006
<b>Certificate of Distinction in Teaching</b> , Harvard University	Fall 2005, Spring 2005, Fall 2004 Spring 2003, Fall 2002
<b>Travel Award</b> , SAMSI Workshop on Astrostatistics, North Carolina	01/2006
<b>Chernoff Travel Award</b> , Department of Statistics, Harvard University	08/2005
<b>Best Poster Award</b> , Second IMS/ISBA Joint Meeting, Bormio, Italy	01/2005
<b>Young Investigator Travel Award</b> , Second IMS/ISBA Joint Meeting, Bormio, Italy	01/2005
<b>Kerper Grant</b> , Graduate School of Arts and Sciences, Harvard University	2003 – 2004
<b>Russell Fellowship</b> , Graduate School of Arts and Sciences, Harvard University	2003 – 2004
<b>Doctoral Fellowship</b> , Department of Statistics, Harvard University	2002 – 2003
<b>Dean's List</b> , University of Minnesota	Fall 1999, Spring 2000
<b>Highest GPA Award</b> , Yonsei University	Fall 1998, Spring 1999
<b>Prize</b> , Planning Paper, 20 <sup>th</sup> AD Award Communications, Cheil Communication Inc. Won a prize for a planning paper on an advertising strategy.	05/1999

#### PROFESSIONAL SERVICE

Referee, <i>Journal of the American Statistical Association</i>	2006, 2007, 2009
Referee, <i>Computational Statistics and Data Analysis</i>	2008
Referee, <i>Statistica Sinica</i>	2008
Referee, <i>Journal of Computational and Graphical Statistics</i>	2008
Referee, <i>Econometrics Journal</i>	2005
Referee, <i>Astin Bulletin</i>	2003
Proposal Evaluation Panel, <i>Springer US</i>	2007

## PROFESSIONAL MEMBERSHIPS

Section on Bayesian Statistical Science (SBSS), American Statistical Association  
American Statistical Association

## SKILLS

**Statistical Packages:** S-Plus/R, MATLAB, SAS, Minitab, STATA, DataDesk.

**Computer Skills:** C Programming, L<sup>A</sup>T<sub>E</sub>X, UNIX, HTML, MS Office.

## LEADERSHIP EXPERIENCE

<b>President</b> , Harvard Korea Society, Harvard University	Fall 2004 – Spring 2005
<b>Graduate Student Representative</b> , Harvard Korea Society, Harvard University	Fall 2003 – Spring 2004
<b>Member</b> , Asian Student Association, University of Minnesota	Fall 1999 – Spring 2000
<b>Treasurer</b> , Research of Applied Distribution (RoAD), Yonsei University	Fall 1998 – Spring 1999
<b>President</b> , Daewon Foreign Language High School Alumni, Yonsei University	Spring 1995 – Fall 1995

## REFERENCES

Available upon request.