

# Woojae Kim

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## EDUCATION

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**Ph.D., Ohio State University**, Columbus, OH 2007  
Major: Quantitative Psychology (Department of Psychology)  
Minor: Statistics (Department of Statistics)  
Co-advisors: Jay I. Myung, Ph.D. & Mark A. Pitt, Ph.D.  
Dissertation: *Understanding the Connectionist Modeling of Quasiregular Mappings in Reading Aloud*

**M.A., Ohio State University**, Columbus, OH 2002  
Major: Quantitative Psychology (Department of Psychology)  
Advisor: Jay I. Myung, Ph.D.  
Thesis: *Applications of Markov Chain Monte Carlo in MDL-Based Model Selection*

**B.A., Seoul National University**, Seoul, Korea 1998  
Major: Education

## EMPLOYMENT

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**Assistant Professor, Howard University**, Department of Psychology 2015–Present

**Research Scientist, Ohio State University**, Department of Psychology 2011–2015

**Manager, Research & Education Team, EduCherry Donga Inc.**,  
Seoul, Korea 2010–2011

**Post-doctoral Research Fellow, Indiana University** 2007–2009  
Co-advisors: Dr. Jerome Busemeyer & Dr. Richard Shiffrin

**Statistical Consultant, Ohio State University**, Department of Psychology 2005–2006

## RESEARCH INTERESTS

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Quantitative / Mathematical Psychology

Bayesian Methods, Optimal Experimental Design, Statistical Model Selection, Computational Cognition, Neural Networks

## GOOGLE SCHOLAR CITATION DATA

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Citation count: 746  
h-index: 9  
i10-index: 8  
URL: <https://scholar.google.com/citations?user=NTYc27IAAAAJ&hl=en>

## PEER REVIEWED JOURNAL PUBLICATIONS

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- Kim, W., Pitt, M.A., Lu, Z.-L., & Myung, J. I. (2017). Planning beyond the next trial in adaptive experiments: A dynamic programming approach. *Cognitive Science*, 41(8), 2234–2252.
- Steege, S., Kim, W., Pestman, W., Tuerlinckx, F., & Vanpaemel, W. (2017). A theoretical note on the prior information criterion. *Journal of Mathematical Psychology*, 80, 33–39.
- Armstrong, B. C., Dumay, N., Kim, W., & Pitt, M. A. (2017). Generalization from newly learned words reveals structural properties of the human reading system. *Journal of Experimental Psychology: General*, 146(2), 227–249.
- Hou, F., Lesmes, L. A., Kim, W., Gu, H., Pitt, M. A., Myung, J. I., & Lu, Z.-L. (2016). Evaluating the performance of the quick CSF method in detecting contrast sensitivity function changes. *Journal of Vision*, 16(6):18, 1–19.
- Gu, H., Kim, W., Hou, F., Lesmes, L. A., Pitt, M. A., Lu, Z.-L., & Myung, J. I. (2016). A hierarchical Bayesian approach to adaptive vision testing: A case study with the contrast sensitivity function. *Journal of Vision*, 16(6):15, 1–17.
- Kim, W., Pitt, M. A., Lu, Z.-L., Steyvers, M., & Myung, J. I. (2014). A hierarchical adaptive approach to optimal experimental design. *Neural Computation*, 26(11), 2465–2492.
- Kim, W., Pitt, M. A., & Myung, I. J. (2013). How do PDP models learn quasiregularity? *Psychological Review*, 120(4), 903–916.
- Lodewyckx, T., Kim, W., Lee, M. D., & Wagenmakers, E.-J. (2011). A tutorial on Bayes factor estimation with the product space method. *Journal of Mathematical Psychology*, 55, 331–347.
- Ahn, W. Y., Krawitz A., Kim, W., Busemeyer, J. R., & Brown, J. W. (2011). A model-based fMRI analysis with hierarchical Bayesian parameter estimation. *Journal of Neuroscience, Psychology, and Economics*, 4(2), 95–110.
- Fridberg, D.J., Queller, S., Ahn, W.Y., Kim, W., Bishara, A.J., Busemeyer, J.R., Porrino, L., & Stout J.C. (2010). Cognitive mechanisms underlying risky decision-making in chronic cannabis users. *Journal of Mathematical Psychology*, 54(1), 28–38.
- Shiffrin, R. M., Lee, M. D., Kim, W., & Wagenmakers, E.-J. (2008). A survey of model evaluation approaches with a tutorial on hierarchical Bayesian methods. *Cognitive Science*, 32(8), 1248–1284.
- Pitt, M. A., Kim, W., Navarro, D. J., & Myung, J. I. (2006). Global model analysis by parameter space partitioning. *Psychological Review*, 113(1), 57–83.
- Pitt, M. A., Kim, W., & Myung, I. J. (2003). Flexibility vs generalizability in model selection. *Psychonomic Bulletin & Review*, 10, 29–44.

## PEER REVIEWED CONFERENCE PAPERS

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- Kim, W., Pitt, M. A., Lu, Z.-L., M., Steyvers, M., Gu, H., & Myung, J. I. (2014). A hierarchical adaptive approach to the optimal design of experiments. In P. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.), *Proceedings of the 36th Annual Conference of the Cognitive Science Society* (pp. 749–754). Austin, TX: Cognitive Science Society.
- Kim, W., Navarro, D. J., Pitt, M. A. & Myung, I. J. (2004). An MCMC-based method of comparing connectionist models in cognitive science. *Advances in Neural Information Processing*

*Systems*, vol. 16. Cambridge, MA: MIT Press.

Navarro, D. J., Myung, I. J., Pitt, M. A., & Kim, W. (2003). Global model analysis by landscaping. In R. Alterman & D. Kirsh (Eds.), *Proceedings of the 25th Annual Meeting of the Cognitive Science Society*, CD-ROM format, (Boston, MA: August, 2003).

## BOOK CHAPTERS

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Myung, I. J., Pitt, M. A., & Kim, W. (2005). Model evaluation, testing and selection. In K. Lambert and R. Goldstone (eds.), *The Handbook of Cognition*. Thousand Oaks, CA: Sage.

## MANUSCRIPTS IN PROGRESS

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Kim, W., Pitt, M. A. & Myung, I. J. Fully adaptive estimation of stop-signal reaction time distributions.

Kim, W. Bayesian comparison of cognitive models via sequential Monte Carlo sampling.

## INVITED PRESENTATIONS

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Kim, W. (May, 2016). Multivariate Research Methods and Statistics. Invited as a co-leader of the workshop funded by Educational Testing Service at the *NAEP-Howard Statistics and Evaluation Institute, Howard University*, Washington D.C.

Kim, W. (July, 2015). Dynamic programming: Planning beyond the next trial in adaptive experiments. Invited presentation at *CogSci 2015 Workshop on Optimizing Experimental Designs: Theory, Practice, and Applications*, 37th Annual Meeting of the Cognitive Science Society, Pasadena, CA.

Kim, W. (April, 2015). Towards Understanding and Optimizing Modeling Research in Psychology. Invited presentation at *Department of Psychology, Howard University*, Washington D.C.

Kim, W. (October, 2014). How Do PDP Models Learn Quasiregularity? Invited presentation at *Department of Psychology, Seoul National University*, Seoul, Korea.

Kim, W. (January, 2011). Bayesian Data Analysis Using WinBUGS. Invited tutorial presentation at *Department of Psychology, Seoul National University*, Seoul, Korea.

Kim, W. (October, 2010). Towards Better Methods of Evaluating Theoretical Explanations of Data in Cognitive Science. Invited presentation at *Interdisciplinary Cognitive Science Program, Seoul National University*, Seoul, Korea.

Kim, W. (November, 2009). Model Selection Problems in Behavioral Sciences. Invited presentation at *Educational Testing Service*, Princeton, New Jersey.

Kim, W. (July, 2009). Introduction to Mathematical Psychology. Invited presentation at *Department of Psychology, Yonsei University*, Seoul, Korea.

Kim, W. (July, 2009). Model Selection Problems in Statistical Techniques. Invited presentation at *Department of Psychology, Yonsei University*, Seoul, Korea.

Kim, W. (April, 2009). Towards Better Methods of Evaluating Theoretical Explanations of Data in Psychology. Invited presentation at *Department of Psychology, University of Houston*, Houston, Texas.

- Kim, W. (December, 2008). Hierarchical Analysis of Decision Making Models of the Iowa Gambling Task. Invited presentation at *Department of Psychology, McGill University*, Montreal, Quebec, Canada.
- Kim, W. (June, 2008). Using WinBUGS for Bayes Factor Calculation. Invited tutorial presentation at *Department of Psychology, Ohio State University*, Columbus, Ohio.
- Kim, W., Pitt, M. A., Navarro, D., & Myung, I. J. (May, 2006). Parameter Space Partitioning: A Method of Global Model Analysis. Invited presentation at *Department of Psychological & Brain Sciences, Indiana University*, Bloomington, Indiana.
- Kim, W., Pitt, M. A., Navarro, D., & Myung, I. J. (April, 2006). Global Model Analysis by Parameter Space Partitioning. Invited presentation at *Educational Testing Service*, Princeton, New Jersey.

## CONFERENCE PRESENTATIONS

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- Kim, W., Pitt, M. A., Lu, Z.-L., & Myung, I. J. (2017). Planning beyond the Next Trial in Adaptive Experiments: A Dynamic Programming Approach. Paper presented at the Annual Mathematical Psychology Meeting, Coventry, UK.
- Hou, F., Lesmes, L., Kim, W., Gu, H., Pitt, M. A., Myung, I. J., & Lu, Z.-L. (2017). Predicting the Contrast Sensitivity Function in Different Luminance Conditions. Poster presented at the Annual Meeting of the Association for Research in Vision and Ophthalmology, Baltimore, MD.
- Myung, I. J., Kim, W., Gu, H., Lu, Z.-L., & Pitt, M. A. (2016) A Hierarchical Bayesian Approach to Adaptive Design Optimization. Paper presented at the 57th Annual Meeting of the Psychonomic Society, Boston, MA.
- Armstrong, B. C., Dumay, N., Kim, W., & Pitt, M. A. (2016). Generalization from newly learned words reveals structural properties of the human reading system. Paper presented at the 57th Annual Meeting of the Psychonomic Society, Boston, MA.
- Kim, W., Pitt, M. A., & Myung, I. J. (2015). Optimizing the efficiency of estimating stop-signal reaction time distributions via Bayesian adaptive experimentation. Poster presented at the Annual Meeting of the Psychonomic Society, Chicago, IL.
- Kim, W., Pitt, M. A., & Myung, I. J. (2015). Estimating stop-signal reaction time distributions via Bayesian adaptive experimentation. Paper presented at the Annual Mathematical Psychology Meeting, Newport Beach, CA.
- Gu, H., Kim, W., Hou, F., Lu, Z.-L., Pitt, M. A., & Myung, I. J. (2015). Hierarchical Adaptive Estimation of the Contrast Sensitivity Function (CSF): Part I Effect of Sample Size. Poster presented at the Annual Meeting of the Association for Research in Vision and Ophthalmology, Denver, Colorado.
- Pitt, M. A., Gu, H., Hou, F., Kim, W., Lu, Z.-L., & Myung, I. J. (2015). Hierarchical Adaptive Estimation of the Contrast Sensitivity Function (CSF): Part II Effect of Type of Prior. Poster presented at the Annual Meeting of the Association for Research in Vision and Ophthalmology, Denver, Colorado.
- Hou, F., Lesmes, L., Kim, W., Gu, H., Pitt, M. A., Myung, I. J., & Lu, Z.-L. (2015). Evaluating the sensitivity of the quick CSF method for detecting changes in contrast sensitivity. Poster presented at the Annual Meeting of the Association for Research in Vision and Ophthalmology, Denver, Colorado.

- Lu, Z.-L., Hou, F., Lesmes, L., Kim, W., Gu, H., Pitt, M. A., & Myung, I. J. (2015). A large-sample study for evaluating the precision of the quick CSF method. Poster presented at the Annual Meeting of the Association for Research in Vision and Ophthalmology, Denver, Colorado.
- Kim, W., Pitt, M. A., Lu, Z.-L., Steyvers, M., & Myung, I. J. (2014). A hierarchical adaptive approach to the optimal design of experiments. Paper presented at the Annual Meeting of the Cognitive Science Society, Quebec City, Canada.
- Kim, W., Pitt, M. A., Lu, Z.-L., Steyvers, M., & Myung, I. J. (2014). A hierarchical adaptive approach to the optimal design of experiments. Paper presented at the Annual Mathematical Psychology Meeting, Quebec City, Canada.
- Kim, W., Pitt, M. A., Lu, Z.-L., Steyvers, M., & Myung, I. J. (2014). A hierarchical adaptive approach to optimal experimental design. Paper presented at the Midwest Cognitive Science Conference, Dayton, OH.
- Kim, W., Pitt, M. A., Lu, Z.-L., & Myung, I. J. (2014). How far can we look ahead in designing our experiment? Paper presented at the 52nd Edwards Bayesian Research Conference, Fullerton, CA.
- Kim, W., Pitt, M. A., & Myung, I. J. (2013). How Do PDP Models Learn Quasiregularity? Poster presented at the Annual Meeting of the Psychonomic Society, Toronto, Ontario, Canada.
- Kim, W., Pitt, M. A., & Myung, I. J. (2013). How Do PDP Models Learn Quasiregularity? Paper presented at the Annual Mathematical Psychology Meeting, Potsdam, Germany.
- Kim, W., Pitt, M. A., & Myung, I. J. (2012). Optimal experimental design for model discrimination: A nonparametric extension. Paper presented at the Annual Mathematical Psychology Meeting, Columbus, OH.
- Kim, W., Pitt, M. A., Myung, I. J., & Steyvers, M. (2012). Optimal experimental design for model discrimination in cognitive science: A nonparametric extension. Paper presented at the World Meeting of International Society for Bayesian Analysis, Kyoto, Japan.
- Kim, W., & Shiffrin, R. M. (2009). Incorporating prior beliefs of data into statistical model selection. Paper presented at the Annual Mathematical Psychology Meeting, Amsterdam, Netherlands.
- Ahn, W. Y., Krawitz, A., Kim, W., Busmeyer, J. R., & Brown, J. W. (2008). Neural correlates of subjective values: a model-based fMRI study. Paper presented at the Annual Meeting of the Society for Neuroscience, Washington D.C.
- Kim, W., Ahn, W. Y., & Busmeyer, J. R. (2008). Hierarchical Bayesian analysis of cocaine abuser data using the Expectancy-Valence model of Iowa Gambling Task. Paper presented at the Annual Mathematical Psychology Meeting, Washington D.C.
- Kim, W. (2007). Understanding the connectionist modeling of quasi-regular mappings in reading aloud. Paper presented at the Annual Mathematical Psychology Meeting, Irvine, CA.
- Kim, W. & Shiffrin, R. M. (2007). Model Selection under Individual Differences. Poster presented at the Annual Mathematical Psychology Meeting, Irvine, CA.
- Kim, W. & Shiffrin, R. M. (2007). Model Selection with Data under Individual Differences. Paper presented at the Sixth Annual Summer Interdisciplinary Conference, Kalymnos, Greece.
- Kim, W. (2006). How does a distributed connectionist model work?: An analysis of reading

network. Paper presented at the Annual Mathematical Psychology Meeting, Vancouver, B.C., Canada.

Kim, W. (2005). Understanding hidden unit representations in distributed connectionist models. Paper presented at the Annual Mathematical Psychology Meeting, Memphis, TN.

Kim, W., Pitt, M. A., Navarro, D., & Myung, I. J. (2004). Parameter space partitioning: A method of global model analysis. Paper presented at the Annual Mathematical Psychology Meeting, Ann Arbor, MI.

Kim, W., Navarro, D., Pitt, M. A., & Myung, I. J. (2003). An MCMC-based method of comparing connectionist models in cognitive science. Paper presented at the 17th Annual Conference of Neural Information Processing Systems, Vancouver & Whistler, Canada.

Myung, I. J., Kim, W., Navarro, D., & Pitt, M. A. (2003). Model complexity and mimicry: A case study of connectionist models of speech perception. Paper presented at the 2003 Annual Mathematical Psychology Meeting, Ogden, UT.

Pitt, M. A., Myung, I. J., Navarro, D., & Kim, W. (2003). Landscaping: A method for distinguishing quantitative models. Paper presented at Four Corners Workshop Series in Psycholinguistics, Nijmegen, Netherlands.

Navarro, D., Myung, I. J., Pitt, M. A., & Kim, W. (2003). Global model analysis by landscaping. Paper presented at the Annual Meeting of the Cognitive Science Society, Boston, MA.

Kim, W., Pitt, M. A., & Myung, I. J. (2002). Flexibility versus generalizability in model selection. Paper presented at the Annual Mathematical Psychology Meeting, Oxford, OH.

Kim, W., Myung, I. J., & Pitt, M. A. (2001). MDL Based Model Selection Using Markov Chain Monte Carlo. Paper presentation at the Annual Mathematical Psychology Meeting, Providence, RI.

## AWARDS

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**Fred Brown Research Award**, Department of Psychology, *2006–2007*  
Ohio State University

The best research paper of the year (for the Psychological Review paper “Global model analysis by parameter space partitioning”)

**Fred Brown Research Award**, Department of Psychology, *2013–2014*  
Ohio State University

The best research paper of the year (for the Psychological Review paper “How do PDP models learn quasiregularity?”)

## PROFESSIONAL SERVICE

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Ad Hoc Journal Reviewer for *Decision*, *Psychological Review*, *Cognitive Science*, *Behavior Research Methods*, *Journal of Mathematical Psychology*, *Multivariate Behavioral Research*, and *Psychonomic Bulletin & Review*

Grant Proposal Reviewer for *Air Force Office of Scientific Research Grant*

Local Organizing Committee: 2014 Asia-Pacific Conference on Computational Behavioral Sciences (APCCBS\*2014)

## **PROFESSIONAL MEMBERSHIPS**

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Member of the Society for Mathematical Psychology

Member of the International Society for Bayesian Analysis

Member of the Cognitive Science Society

Member of the Psychonomic Society

## **TEACHING EXPERIENCE & INTERESTS**

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Research Methods and Statistics (undergraduate)

Research Methods (graduate)

Multivariate Statistical Analysis (graduate)

Bayesian Data Analysis (graduate)

Structural Equation Modeling (graduate)