Yoonkyung Lee

Department of Statistics
The Ohio State University
1958 Neil Avenue
Columbus, OH 43210

yklee@stat.osu.edu
http://www.stat.osu.edu/∼yklee
614-292-9495 (office)
614-292-2096 (fax)

Education

2002 Ph.D., Department of Statistics, University of Wisconsin-Madison
Dissertation: Multicategory Support Vector Machines, Theory, and Application to the Classification of Microarray Data and Satellite Radiance Data
Advisor: Grace Wahba, Ph.D. (Co-advisor: Yi Lin, Ph.D.)

1996 M.Sc., Department of Statistics, Seoul National University, Korea
Thesis: Image Data Analysis by Markov Random Field Models
Advisor: Jong Woo Jeon, Ph.D.

1994 B.Sc., Department of Computer Science and Statistics, Seoul National University, Korea

Professional Experience

Positions

2008 - present	Associate Professor, Department of Statistics, The Ohio State University
2002 - 2008	Assistant Professor, Department of Statistics, The Ohio State University
Jan - Mar 2007	Visiting Fellow, Statistical and Applied Mathematical Sciences Institute, Research Triangle Park, NC
1999 - Summer 2002	Research Assistant, Department of Statistics, UW-Madison Supervisor: Grace Wahba, Ph.D.
Spring 1999	Teaching Assistant, Department of Statistics, UW-Madison
Fall 1998	Research Assistant, Department of Statistics, UW-Madison Supervisor: Michael Newton, Ph.D.
1997-1998	Teaching Assistant, Department of Statistics, UW-Madison

Teaching

STAT 428	Introduction to Probability and Statistics for Engineering and the Sciences
STAT 528	Data Analysis I
STAT 529	Data Analysis II
STAT 760	Elements of Statistical Learning
STAT 763	Nonparametric Function Estimation
STAT 881	Advanced Statistical Learning
STAT 882	Topics in Variable Selection and Model Selection

Research Supervision

- Doctoral Students
  - Zhenhuan Cui (2007),
    The Solution Paths of Multicategory Support Vector Machines: Algorithm and Applications.
  - Yonggang Yao (2008),
    Statistical Applications of Linear Programming for Feature Selection via Regularization Methods.
  - Youlan Rao (2009), co-advised with Jason Hsu
    Statistical Analysis of Microarray Experiments in Pharmacogenomics.
  - Yoonsuh Jung (current, co-advised with Steve MacEachern)
  - Cong Liu (current, co-advised with Tao Shi)
  - Kazuki Uematsu (current)
  - Rui Wang (current)

Honors and Awards

2008	NSF travel award, The 7th World Congress in Probability and Statistics, Singapore, July 2008
2007	Statistical and Applied Mathematical Sciences Institute Fellowship
2003	NSF travel award, SRCOS/ASA Summer Research Conference, Jekyll Island, Georgia, June 2003
2003	Best student poster award, 12th Conference on Satellite Meteorology and Oceanography, American Meteorological Society Meeting 2003
2002	Student travel grant, IMS Mini-Meeting, University of Florida, January 2002
1996	Master's degree with honors, The Graduate School, Seoul National University
1995	Qualifying Examination passed with distinction, Department of Statistics, Seoul National University.
1994	Dean's list upon graduation, School of Natural Sciences, Seoul National University.
1991-1994	Seoul National University Alumni Fellowship.

Invited Talks

- Functional Component Pursuit,
  - ICSA Applied Statistics Symposium, San Francisco, June 21 - 24, 2009.
  - The first Institute of Mathematical Statistics - Asia Pacific Rim Meeting, Seoul, Korea, June 28 - July 1, 2009.
  - Department of Statistics, University of Seoul, Korea, July 2009.
- A Bahadur Type Representation of the Linear Support Vector Machine and its Relative Efficiency,
  Machine Learning Summer School (Theory and Practice of Computational Learning), University of Chicago, June 2009.

- A Tutorial on Kernel Methods in a Regularization Framework,
  Fall Conference of Korean Statistical Society, Chung-Ang University, Seoul, Korea, October 2008.

- Linear Programming for Feature Selection via Methods of Regularization,
  - Department of Mathematical Information Science, Tokyo University of Science, Tokyo, Japan, July 2008.
  - Statistical Research Center for Complex Systems, Seoul National University, Seoul, Korea, July 2008.
  - International Conference on Machine Learning and Data Mining, Beijing, China, June 2008.

- A Regularization Approach to Screening and Selection of Biomarkers,
  - Department of Biostatistics and Bioinformatics, Emory University, Atlanta, GA, December 2008.
  - ENAR, Arlington, VA, March 2008.
  - Division of Biostatistics, Washington University in St. Louis, MO, November 2007.

- Another Look at Linear Programming for Feature Selection via Methods of Regularization,
  - Statistics-Econometrics Seminar, Columbia University, New York City, NY, November 2007.
  - Department of Statistics, Carnegie Mellon University, Pittsburgh, PA, September 2007.
  - Department of Statistics, Korea University, Seoul, Korea, August 2007.

- Kernel Methods in a Regularization Framework for Nonparametric Model Building,
  The Fall Workshop of ASA Cleveland Chapter, Cleveland, OH, October 2007.

- A Bahadur Representation of the Linear Support Vector Machine,
  - Department of Mathematics, Washington University in St. Louis, MO, November 2007.
  - Department of Statistics, University of Georgia, Athens, GA, March 2007.

- A Short Course on Kernel Methods in a Regularization Framework,
  Winter School, CIMAT, Guanajuato, Mexico, January 2007.

- A Tutorial on Support Vector Machines,
  - Quantitative Psychology Area Brownbag Series, Department of Psychology,
  The Ohio State University, October 2006.
  - North America Korean Statistical Association, The Joint Statistical Meetings, Seattle, WA, August 2006.

- The Solution Path of Multicategory Support Vector Machines, Joint Summer Research Conferences: Machine Learning, Statistics, and Discovery, Snowbird, UT, June 2006.

- Structured Statistical Learning with Support Vector Machine for Feature Selection and Prediction,
  - The Joint Statistical Meetings, Minneapolis, MN, August, 2005.
  - WNAR, Fairbanks, AK, June, 2005.
  - Graybill Conference, Fort Collins, CO, June, 2005.

- A Sparse Solution Approach to Gene Selection for Cancer Diagnosis Using Microarray Data, CCF/OSU/CWRU Joint Biostatistics Symposium, Cleveland Clinic Foundation, May 2005.

- Multicategory Support Vector Machines: a Population View of Different Approaches, The Joint Statistical Meetings, San Francisco, CA, August 2003.

- Discussion of the Wald lecture III (Grace Wahba): Nonstandard Multicategory Support Vector Machine, The Joint Statistical Meetings, San Francisco, CA, August 2003.

- Multicategory Support Vector Machines: Theory and its Applications.
  - Statistical Research Center for Complex Systems, Seoul National University, Korea, August 2003.
  - Department of Statistics, University of Tennessee, Knoxville TN, April 2003.

- Classification of Multiple Cancer Types by Multicategory Support Vector Machines Using Gene Expression Profiles.
  - Summer Research Conference in Statistics, *Statistics in Genetics, Molecular Biology and Bioinformatics*, Jekyll Island, GA, June 2003.
  - Division of Pediatric Informatics, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, December 2002.

- Multicategory Support Vector Machines.
  - Department of Biostatistics, University of Michigan, January 2002.
  - Department of Statistics, The Ohio State University, January 2002.
  - Department of Statistics, University of Illinois, Urbana-Champaign, February 2002.
  - Department of Statistics, Texas A & M, February 2002.
  - Department of Statistics, University of California, Davis, February 2002.
  - Department of Statistics, University of Florida, Gainesville, February 2002.

Presentations

- A Bahadur Representation of the Linear Support Vector Machine, *The 7th World Congress in Probability and Statistics*, Singapore, July 14 - 19, 2008.

- Regularization Approach to Screening and Selection of Biomarkers, *The First International Symposium on Biopharmaceutical Statistics*, Shanghai, China, July 2008.

- Quarterly presentations at Data Mining and Statistical Learning study group, Department of Statistics, The Ohio State University, 2007.

- Structured Multicategory Support Vector Machine with ANOVA decomposition,
  - *New Researchers Conference*, York University, Toronto, Canada, August 2004.
  - *The Joint Statistical Meetings*, Toronto Canada, August 2004.

- Quarterly presentations at Statistical Genetics Journal Club, Department of Statistics, The Ohio State University, 2003 - 2004.

- Classification of Satellite Radiance Data by Multicategory Support Vector Machines (poster), *Third Conference on Artificial Intelligence Applications to the Environmental Science*, Long Beach, CA, February 2003. Won the best student poster award.

- Statistics Department Colloquium, UW-Madison, April 2002.
- Classification of Multiple Cancer Types by Multicategory Support Vector Machines Using Gene Expression Data, *ENAR 2002*, Crystal City VA, March 2002.
- Multicategory Support Vector Machines with Application to Cancer Classification Using Gene Expression Data (poster), *IMS Mini-Meeting on Imaging, Classification and Clustering*, University of Florida, Gainesville FL, January 2002.
- Multicategory Support Vector Machines, *the 33rd Symposium on the Interface*, Costa Mesa CA, June 2001.

Publications

The following papers are available via my website http://www.stat.osu.edu/∼yklee.

- Lee, Y., Support Vector Machines for Classification: a Statistical Portrait. To appear in *Statistical Methods in Molecular Biology*, Heejung Bang, Xi Kathy Zhou, Heather L. Van Epps, and Madhu Mazumdar, eds, in the series of Methods in Molecular Biology, The Humana Press Inc. 2009.
- Hsu, J., Rao, Y., Lee, Y., Chang, J., Bergsteinsdottir, K., Magnusson, M.K., Wang, T., Steingrimsson, E., Design and Analysis of Microarray Experiments for Pharmacogenomics. In *Multiple Testing Problems in Pharmaceutical Statistics*, Dmitrienko, A., Tamhane, A.C., Bretz, F., eds., Chapman & Hall/CRC Biostatistics Series, 2009.
- Koo, J.-Y., Lee, Y., Kim, Y., and Park, C., A Bahadur Representation of the Linear Support Vector Machine. *Journal of Machine Learning Research*, **9**, 1343-1368, 2008.
- Rao, Y., Lee, Y., Jarjoura, D., Ruppert, A. S., Liu, C., Hsu, J. C., and Hagan, J. P., A Comparison of Normalization Techniques for MicroRNA Microarray Data. *Statistical Applications in Genetics and Molecular Biology*, **7**, Issue 1, Article 22, 2008.
- Lee, Y., Kim, Y., Lee, S., and Koo, J.-Y., Structured Multicategory Support Vector Machine with ANOVA decomposition. *Biometrika*, **93**, 555-571, 2006.
- Lee, Y., (Book Review) Semiparametric Regression by David Ruppert, M. P. Wand, and R. J. Carroll. *Journal of the American Statistical Association*, **101**, 1722-1723, 2006.
- Lee, Y. and Cui, Z., Characterizing the Solution Path of Multicategory Support Vector Machines. *Statistica Sinica*, **16**, 391-409, 2006.
- Lee, Y., Lin, Y., and Wahba, G., Multicategory Support Vector Machines, Theory, and Application to the Classification of Microarray Data and Satellite Radiance Data. *Journal of the American Statistical Association*, **99**, 67-81, 2004.
- Lee, Y., Wahba, G., and Ackerman, S., Classification of Satellite Radiance Data by Multicategory Support Vector Machines. *Journal of Atmospheric and Oceanic Technology*, **21**(2), 159-169, 2004.

- Lee, Y. and Lee, C.-K., Classification of Multiple Cancer Types by Multicategory Support Vector Machines Using Gene Expression Data. *Bioinformatics*, **19**, 1132-1139, 2003.
- Lee, Y., Multicategory Support Vector Machines, Theory, and Application to the Classification of Microarray Data and Satellite Radiance Data. Ph.D. thesis, Department of Statistics, University of Wisconsin-Madison, 2002.
- Wahba, G., Lin, Y., Lee, Y., and Zhang, H., Optimal Properties and Adaptive Tuning of Standard and Nonstandard Support Vector Machines. In *Nonlinear Estimation and Classification*, Denison, D. D., Hansen, M. H., Holmes, C. C., Mallick, B., and Yu, B., eds, Springer, New York, 125-143, 2002.
- Lin, Y., Wahba, G., Zhang, H., and Lee, Y., Statistical Properties and Adaptive Tuning of Support Vector Machines. *Machine Learning*, **48**, 115-136, 2002.
- Lin, Y., Lee, Y., and Wahba, G., Support Vector Machines for classification in nonstandard situations. *Machine Learning*, **46**, 191-202, 2002.
- Lee, Y., Lin, Y. and Wahba, G., Multicategory Support Vector Machines. *Computing Science and Statistics 33*, 498-512, 2001.

Manuscripts

- Uematsu, K., and Lee, Y., On Theoretically Optimal Ranking Functions, November 2009.
- Lee, Y., Support Vector Machines for Classification: a Statistical Portrait, October 2008.
- Yao, Y., and Lee, Y., Another Look at Linear Programming for Feature Selection via Methods of Regularization. Technical Report No. 800, Department of Statistics, The Ohio State University, July 2007. Under revision.
- Lee, Y., MacEachern, S. N., and Jung, Y., Regularization of Case-Specific Parameters for Robustness and Efficiency. Technical Report No. 799, Department of Statistics, The Ohio State University, July 2007. Under revision.

Professional Memberships and Activities

- Member of American Statistical Association and Institute of Mathematical Statistics.
- Member of Local Program Committee for Conference on Nonparametric Statistics and Statistical Learning to be held at OSU in 2010.
- Member of Program Committee for Artificial Intelligence and Statistics 2010.
- Served as a reviewer of a paper submitted to Conference on Learning Theory (COLT) 2009.
- Chaired a session on Data Mining and Machine Learning in ENAR Meeting 2008.

- Served on Program Committee for the 12th International Conference on Applied Stochastic Models and Data Analysis 2007.
- Served on Program Committee for Artificial Intelligence and Statistics 2007.
- Organized an IMS invited session on semi-supervised learning for Joint Statistical Meetings 2006.
- Served as a reviewer of a proposal to The Ohio Supercomputer Center, November 2005.
- Served as a reviewer of papers submitted to Neural Information Processing Systems (NIPS) conference 2003.
- Served as a reviewer of a proposal to Binational Science Foundation (2003).
- Reviewed papers for journals:
  The American Statistician (1)
  The Annals of Applied Statistics (1)
  The Annals of Statistics (1)
  Annals of the Institute of Statistical Mathematics (1)
  Bernoulli (1)
  BMC Bioinformatics (2)
  Bioinformatics (7)
  Biometrics (5)
  Biometrika (1)
  Computational Statistics and Data Analysis (3)
  Contemporary Mathematics (AMS)(1)
  European Journal of Operational Research (1)
  IEEE Transactions on Information Theory (1)
  IEEE Transactions on Neural Networks (2)
  Journal of the American Statistical Association (4)
  Journal of Artificial Intelligence Research (1)
  Journal of Computational and Graphical Statistics (3)
  Journal of Machine Learning Research (7)
  Journal of Statistical Planning and Inference (1)
  Soft Computing (1)
  Statistica Sinica (3)
  Technometrics (1)

Committees

- Ph.D. General Exam Committee

August 2009	Yoonsuh Jung (Statistics)
March 2009	Jared Schuetter (Statistics)
August 2008	Yi Liu (Statistics)
February 2008	Onur C. Hamsici (Electrical and Computer Engineering)
June 2007	Youlan Rao (Statistics)
August 2006	Kaushik Sinha (Computer Science and Engineering)
August 2006	Dianne Bautista (Statistics)
May 2006	Lili Yu (Statistics)
March 2006	Zhenhuan Cui (Statistics)
March 2006	Yanxing Zhao (Statistics)
December 2005	Brandon Moore (Electrical and Computer Engineering)*
September 2005	Qingzhao Yu (Statistics)
May 2005	Bin Li (Statistics)
August 2004	Haiyan Xu (Statistics)
December 2003	Charalampos Papachristou (Statistics)
June 2003	Changyi Park (Statistics)
May 2003	Yufeng Liu (Statistics)
March 2003	Sijin Liu (Statistics)

  * as a Graduate School Representative

- Ph.D. Dissertation Committee

June 2009	Youlan Rao (Statistics)
August 2008	Yonggang Yao (Statistics)
August 2008	Sivaramakrishnan Narayanan (Biomedical Informatics)*
August 2008	Onur C. Hamsici (Electrical and Computer Engineering)
August 2007	Zhenhuan Cui (Statistics)
May 2007	Bae-Geun Kim (Economics)*
August 2006	Bin Li (Statistics)
May 2006	Sijin Liu (Statistics)
September 2005	Haiyan Xu (Statistics)
August 2005	Changyi Park (Statistics)
May 2005	Tao Wang (Statistics)
April 2004	Yufeng Liu (Statistics)

- Exam Committee

Ph.D. Qualifying Exam II Committee	September 2006, March 2007, September 2007 March 2008, September 2008 (Chair), March 2009 September 2009
Ph.D. Qualifying Exam I Committee	October 2005, and January 2006
Master of Applied Statistics Exam Committee	May 2003, May 2004, and November 2004

- Departmental Committee

Spring 2009	Seminar Committee
2008-2009	Admission Committee
2006-2007	Curriculum Committee
2002-2006	Computer Advisory Committee
Fall 2003	Search Committee (Statistical Genetics)

Last updated November 13, 2009