

Ann B. Lee

Department of Statistics & Data Science \diamond Carnegie Mellon University \diamond 5000 Forbes Avenue \diamond
Pittsburgh, PA 15213; annlee@stat.cmu.edu
Citizenships: U.S.; Swedish

Education

Ph.D. in Physics, 2002, Brown University

Advisors: Professors David Mumford (Applied Mathematics) and Leon N Cooper (Physics)

Thesis: “Statistics, Models and Learning in BCM Theory of a Natural Visual Environment”

M.Sc./B.Sc. in Engineering Physics, 1995, Chalmers University of Technology, Sweden

Employment

Professor, Department of Statistics, Carnegie Mellon University, 2020–present

Full voting member, Machine Learning Department, CMU, 2008–present

Associate Professor, Department of Statistics, Carnegie Mellon University, 2010–2020

Full voting member, Machine Learning Department, CMU, 2008–present

Estella Loomis McCandless Associate Professor (honorary chair), CMU, 2011–2014

Assistant Professor, Department of Statistics, Carnegie Mellon University, 2005–2010

J.W. Gibbs Assistant Professor of Applied Mathematics, Department of Mathematics, Yale University, 2004–2005

J.W. Gibbs Instructor of Applied Mathematics, Department of Mathematics, Yale University, 2002–2004

Visiting Research Associate, Division of Applied Mathematics, Brown University, 2001–2002

Research Interests

My interests are in developing statistical methodology for the type of complex data and problems often encountered in the physical sciences. I am particularly interested in computationally and statistically efficient methods that adapt to the intrinsic structure of the data, and nonparametric approaches that can handle different types of data, such as heterogeneous data arriving from multiple scientific probes. My recent work includes uncertainty quantification via conditional density estimation, faster alternatives to approximate Bayesian computing with statistical guarantees, validation of emulators, and applications in astronomy and hurricane intensity guidance involving satellite imagery and massive astronomical surveys.

Manuscripts Under Review

MCCNEELY, T., **LEE, A.B.**, WOOD, K., AND HAMMERLING, D., “Unlocking GOES: A Statistical Framework for Quantifying the Evolution of Convective Structure in Tropical Cyclones”, arXiv:1911.11089, submitted to *Journal of Applied Meteorology and Climatology (JAMC)*, 2019. (Minor revision required)

SCHMIDT, S.J. ET AL. (24 MEMBERS OF THE LSST DARK ENERGY SCIENCE COLLABORATION), “Evaluation of probabilistic photometric redshift estimation approaches for LSST”, arXiv:2001.03621, passed internal review by *LSST-DESC* and submitted to *Monthly Notices of the Royal Astronomical Society*, 2019.

LIN, C.-H., HARNOIS-D’ORAPS, J., EIFLER, T., POSPISIL, T., MANDELBAUM, R., **LEE, A.B.**, AND SINGH, S., “Non-Gaussianity in the Weak Lensing Correlation Function Likelihood – Implications for Cosmological Parameter Biases”, arXiv:1905.03779, passed internal review by *LSST-DESC* and submitted to *Monthly Notices of the Royal Astronomical Society*, 2019.

Journal Publications and Recent Conference Proceedings

DALMASSO, N., IZBICKI, R., AND **LEE, A.B.**, “Confidence Regions and Hypothesis Testing in a Likelihood-Free Inference Setting”, arXiv:2002.10399. To appear in *the Thirty-Seventh International Conference on Machine Learning (ICML)*, 2020.

DALMASSO, N., **LEE, A.B.**, IZBICKI, R., POSPISIL, T., KIM, I., AND LIN, C.-A., “Validation of Approximate Likelihood Models and Emulators”, arXiv:1905.11505v2, 2019. To appear in *Journal of Machine Learning Research (AISTATS track)*, 2020.

DALMASSO, N., POSPISIL, T., **LEE, A.B.**, IZBICKI, R., FREEMAN, P.E., AND MALZ, A.I., “Conditional Density Estimation Tools in Python and R with Applications to Photometric Redshifts and Likelihood-Free Cosmological Inference”, *Astronomy and Computing*, volume 30, 2020. DOI: 10.1016/j.ascom.2019.100362

KIM, I., **LEE, A.B.**, AND LEI, J., “Global and Local Two-Sample Tests via Regression”, *Electronic Journal of Statistics*, 13(2): 5253–5305, 2019.

IZBICKI, R., **LEE, A.B.**, AND POSPISIL, T., “ABC-CDE: Toward Approximate Bayesian Computation With Complex High-Dimensional Data and Limited Simulations”, *Journal of Computational and Graphical Statistics*, 28:3, 481–492, 2019. DOI: 10.1080/10618600.2018.1546594

FREEMAN, P.E., KIM, I., AND **LEE, A.B.**, “Local Two-Sample Testing: a New Tool for Analysing High-Dimensional Astronomical Data”, *Monthly Notices of the Royal Astronomical Society*, 471(3):3273–3282, 2017.

IZBICKI, R., AND **LEE, A.B.**, “Converting High-Dimensional Regression to High-Dimensional Conditional Density Estimation”, *Electronic Journal of Statistics* 11(2):2800–2831, 2017.

IZBICKI, R., **LEE, A.B.**, AND FREEMAN, P.E., “Photo- z Estimation: an Example of Nonparametric Conditional Density Estimation under Selection Bias”, *Annals of Applied Statistics*, 11(2):698–724, 2017.

FREEMAN, P.E., IZBICKI, R., AND **LEE, A.B.**, “A Unified Framework for Constructing, Tuning and Assessing Photometric Redshift Density Estimates in a Selection Bias Setting”, *Monthly Notices of the Royal Astronomical Society*, 468(4):4556–4565, 2017.

LEE, A.B., AND IZBICKI, R., “A Spectral Series Approach to High-Dimensional Nonparametric Regression”, *Electronic Journal of Statistics*, 10(1):423–463, 2016.

IZBICKI, R., AND **LEE, A.B.**, “Nonparametric Conditional Density Estimation in a High-Dimensional Regression Setting”, *Journal of Computational and Graphical Statistics*, 25(4):1297–1316, 2016.

GAUGLER, T., KLEI, L., SANDERS, J.S., BODEA, C.A., GOLDBERG, A.P., **LEE, A.B.**, MAHAJAN, M., MANAA, D., PAWITAN, Y., REICHERT, J., RIPKE, S., SANDIN, S., SKLAR, P., SVANTESSON, O., REICHENBERG, A., HULTMAN, C.M., DEVLIN, B., ROEDER, K., AND BUXBAUM, J.D., “Most genetic risk for autism resides with common variation”, *Nature Genetics Letter*, 46:881–885, 2014.

IZBICKI, R., **LEE, A.B.**, AND SCHAFFER, C.M., “High-Dimensional Density Ratio Estimation with Extensions to Approximate Likelihood Computation”, *Journal of Machine Learning Research*, W&CP Volume 33 (AISTATS track), 2014.

CROSSETT, A., **LEE, A.B.**, KLEI, L., DEVLIN, B., AND ROEDER, K., “Refining Genetically Inferred Relationships Using Treelet Covariance Smoothing”, *Annals of Applied Statistics*, 7(2):669–690, 2013.

FREEMAN, P.E., IZBICKI, R., **LEE, A.B.**, NEWMAN, J.A., CONSELICE, C.J., KOEKEMOER, A.M., LOTZ, J.M., AND MOZENA, M., “New Image Statistics for Detecting Disturbed Galaxy Morphologies at High Redshift”, *Monthly Notices of the Royal Astronomical Society*, 434: 282-295, 2013.

RICHARDS, J.W., **LEE, A.B.**, SCHAFFER, C.M., AND FREEMAN, P.E., “Prototype Selection for Parameter Estimation in Complex Models”, *Annals of Applied Statistics*, 6(1):383-408, 2012.

WANG, W., OZOLEK, J.A., SLEPCEV, D., **LEE, A.B.**, CHEN, C., AND ROHDE, G.K. “An optimal transportation approach for nuclear structure-based pathology”, *IEEE Trans. Med. Imag.*, 30(3):621-631, 2011.

BUCHMAN, S.M., **LEE, A.B.**, AND SCHAFFER, C.M., “High-Dimensional Density Estimation via SCA: An Example in the Modelling of Hurricane Tracks”, *Statistical Methodology*, 8(1):18-30, 2011.

LEE, A.B., AND WASSERMAN, L., “Spectral Connectivity Analysis”, *Journal of the American Statistical Association*, 105(491):1241-1255, 2010.

LEE, A.B., LUCA, D., AND ROEDER, K., “A Spectral Graph Approach to Discovering Genetic Ancestry”. *Annals of Applied Statistics*, 4(1):179-202, 2010.

LEE, A.B., LUCA, D., KLEI, L., DEVLIN, B., AND ROEDER, K., “Discovering Genetic Ancestry Using Spectral Graph Theory”. *Genetic Epidemiology*, 34(1):51-59, 2010.

RICHARDS, J.W., FREEMAN, P.E., **LEE, A.B.**, AND SCHAFFER, C.M., “Accurate parameter estimation for star formation history in galaxies using SDSS spectra”, *Monthly Notices of the Royal*

Astronomical Society, 399:1044-1057, 2009.

FREEMAN, P.E., NEWMAN, J.A., **LEE, A.B.**, RICHARDS, J.W., AND SCHAFFER, C.M., “Photometric Redshift Estimation Using SCA”, *Monthly Notices of the Royal Astronomical Society*, 398:2012-2021, 2009.

RICHARDS, J.W., FREEMAN, P.E., **LEE, A.B.**, AND SCHAFFER, C.M., “Exploiting Low-Dimensional Structure in Astronomical Spectra”, *Astrophysical Journal*, 691:32-42, 2009.

FREEMAN, P.E., RICHARDS, J.W., SCHAFFER, C.M., AND **LEE, A.B.**, “Astrostatistics: The Final Frontier”, *Chance*, 21(3):31-35, 2008.

LEE, A.B., NADLER, B., AND WASSERMAN, L., “Treelets – An Adaptive Multi-Scale Basis for Sparse Unordered Data”, *Annals of Applied Statistics*, 2(2):435-471, 2008. **Discussion paper.**

LEE, A.B., NADLER, B., AND WASSERMAN, L., “Rejoinder of: Treelets”, *Annals of Applied Statistics*, 2(2):494-500, 2008.

LUCA, D., RINGQUIST, S., KLEI, L., **LEE, A.B.**, GIEGER, C., WICHMANN, H.-E., SCHREIBER, S., KRAWCZAK, M., LIU, Y., STYCHE, A., DEVLIN, B., ROEDER, K., AND TRUCCO, M., “On the Use of General Control Samples for Genome-Wide Association Studies: Genetic Matching Highlights Causal Variants”, *American Journal of Human Genetics*, 82:1-11, 2008.

LAFON, S., AND **LEE, A.B.**, “Diffusion Maps and Coarse-Graining: A Unified Framework for Dimensionality Reduction, Graph Partitioning and Data Set Parameterization”, *IEEE Trans. Pattern Analysis and Machine Intelligence*, 28(9):1393-1403, 2006.

COIFMAN, R.R., LAFON, S., **LEE, A.B.**, MAGGIONI, M., NADLER, B., WARNER, F., AND ZUCKER, S., “Geometric Diffusions as a Tool for Harmonic Analysis and Structure Definition of Data: Diffusion Maps”, *Proc. Natl. Acad. Sci.*, 102(21):7426-7431, 2005.

COIFMAN, R.R., LAFON, S., **LEE, A.B.**, MAGGIONI, M., NADLER, B., WARNER, F., AND ZUCKER, S., “Geometric Diffusions as a Tool for Harmonic Analysis and Structure Definition of Data: Multiscale Methods”, *Proc. Natl. Acad. Sci.*, 102(21):7432-7437, 2005.

LEE, A.B., PEDERSEN, K.S., AND MUMFORD D., “The Nonlinear Statistics of High-Contrast Patches in Natural Images”, *International Journal of Computer Vision* 54 (1-2): 83-103, 2003.

SRIVASTAVA, A., **LEE, A.B.**, SIMONCELLI, E.P., AND ZHU, S.-C., “On Advances in Statistical Modeling of Natural Images”, *Journal of Mathematical Imaging and Vision* 18: 17-33, 2003.

LEE, A.B., MUMFORD, D., AND HUANG, J., “Occlusion Models for Natural Images”, *International Journal of Computer Vision*, 41(1/2):35-59, 2001.

LEE, A.B., BLAIS, B.S., SHOUVAL, H., AND COOPER, L.N., “Statistics of Lateral Geniculate Nucleus (LGN) Activity Determine the Segregation of ON/OFF Subfields for Simple Cells in Visual Cortex”, *Proc. Natl. Acad. Sci.* 97(23): 12875-12879, 2000.

WAHNSTRÖM, G., **LEE, A.B.**, AND STRÖMQUIST, J., “Motion of ‘hot’ oxygen adatoms on corrugated metal surfaces”, *J. Chem. Phys.*, 105: 326-336, 1996.

Conference Proceedings, Technical Reports and Book Chapters

MCNEELY, T., **LEE, A.B.**, HAMMERLING, D., AND WOOD, K., “Quantifying the Spatial Structure of Tropical Cyclone Imagery”, Tech Note NCAR/TN-557+STR , National Center for Atmospheric Research, 2019.

POSPISIL, T., AND **LEE, A.B.**, “RFCDE: Random Forests for Conditional Density Estimation”, arXiv:1804.05753, 2018.

LEE, A.B., AND FREEMAN, P.E., “Exploiting Non-Linear Structure in Astronomical Data for Improved Statistical Inference”. In *Statistical Challenges in Modern Astronomy V*; Feigelson, E. D., and Babu, J. (eds.); Lecture Notes in Statistics, 209:255-267, 2012 (invited talk).

LEE, A.B., “Commentary: Data Compression Methods in Astrophysics”. In *Statistical Challenges in Modern Astronomy V*; Feigelson, E. D., and Babu, J. (eds.); Lecture Notes in Statistics, 209:321-325, 2012 (invited commentary).

ROHDE, G.K., WANG, W., SLEPCEV, D., **LEE, A.B.**, CHEN, C., AND OZOLEK, J.A., “Detecting and classifying cancers from image data using optimal transportation”. In *26th Southern Biomedical Engineering Conference*, University of Maryland, 2010.

LEE, A.B., AND NADLER, B., “Treelets – A Tool for Dimensionality Reduction and Multi-Scale Analysis of Unstructured Data”. In *Proc. of the 11th International Conf. on Artificial Intelligence and Statistics (AISTATS*2007; peer-reviewed)*, San Juan, Puerto Rico, March 2007 (poster).

PEDERSEN, K.S., AND **LEE, A.B.**, “Towards a Full Probability Model of Edges in Natural Images”. In *Proc. of European Conference of Computer Vision (ECCV*2002; peer-reviewed)*, Copenhagen, May 2002 (poster).

LEE, A.B., PEDERSEN, K.S., AND MUMFORD D., “The Complex Statistics of High-Contrast Patches in Natural Images”. In *Proc. of IEEE Workshop on Statistical and Computational Theories of Vision* (with ICCV*2001; peer-reviewed), Vancouver, CA, July 2001 (talk).

HUANG, J., **LEE, A.B.**, AND MUMFORD, D., “Statistics of Range Images”. In *Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR*2000; peer-reviewed)*, Hilton Head Island, South Carolina, June 2000 (talk).

LEE, A.B., BLAIS, B.S., SHOUVAL, H., AND COOPER, L.N., “Statistics of LGN Activity Determine the Segregation of ON/OFF Subfields for Simple Cells in Cortex”. In *Proc. of the Eighth CNS Conference (CNS*99; peer-reviewed)*, Pittsburgh, PA, July 1999 (talk).

LEE, A.B., AND MUMFORD D., “An Occlusion Model Generating Scale-Invariant Images”. In *Proc. of IEEE Workshop on Statistical and Computational Theories of Vision* (with CVPR*99; peer-reviewed), Fort Collins, Co, June 1999 (talk).

Manuscripts In Preparation

DALMASSO, N., IZBICKI, R., **LEE, A.B.**, MAO, Y., AND NEWMAN, J. A., “Faint Galaxies Detection: An Example of Classification and Data Augmentation with Unbalanced Data”, in preparation

for *Annals of Applied Statistics*.

Principal Grants and Awards

Pending

NSF National AI Research Institutes, planning track (**co-PI** with Primary PI Scott Dodelson and 21 additional co-PIs), “AI for Discovery in Physics”, 2020.

Awarded

NSF DMS-1521786 (**PI**, with co-PIs S. Ho and C.M. Schafer), “Complexity to Clarity: Nonparametric Procedures that Exploit Structured Data and Models”, 9/1/2015–8/31/2019 (in a no-cost extension).

NIH 5-R01-MH057881-12 (**co-I**, with PIs B. Devlin and K. Roeder), “Genetic Associations in Schizophrenia and Other Disorders”, 9/15/2008–5/31/2018.

HST-AR-12856.06-A (**co-I**, with PI J. Lotz and co-Is S. Faber, P.E. Freeman, R. Izbicki, C. Moody, M. Mozena, J.A. Newman, J.R. Primack, C.M. Schafer): “An Astrostatistical Approach to Distant Galaxy Morphology”, Space Telescope Science Institute, 11/1/2012–10/31/2015.

NSF DMS-1106956 (**co-PI**, with PI C.M. Schafer and co-PIs C. Genovese, L. Wasserman, W. Wood-Vasey): “Nonparametric Inference for Complex Physical Models”, 8/15/2011–7/31/2013.

NASA NNX09AK59G (**co-PI**, with PI C.M. Schafer and co-PI P.E. Freeman): “Stochastic Models for High-Dimensional, Nonstandard Data”, 9/1/2009–8/31/2011.

ONR #00424143 (**PI**): “Treelets and Multi-Scale Tools for Statistical Data Analysis”, 3/1/2008–2/28/2011.

NSF DMS-0707059 (**PI**, with co-PI C.M. Schafer): “Sparse Representation and Efficient Inference for Astronomical Spectra”, 9/15/2007–9/14/2010.

NSF CCF-0625879 (**co-PI**, with PI J. Lafferty and co-PI L. Wasserman): “Nonparametric Learning in High Dimensions”, 9/1/2006–8/31/2009.

Estella Loomis McCandless Professorship (honorary chair), CMU, 2011-2014.

Galkin Foundation Fellowship, 2000.

Burroughs Wellcome Fellowship, 1999.

Professor R. Bruce Lindsay Fellowship, 1997.

Brown University Fellowship, 1995.

Selected Talks

Mini-symposium on “Advances in likelihood-free inference”, SIAM Conference on Uncertainty Quantification (UQ20), Munich, March 2020, postponed (due to COVID-20).

Workshop on “Statistical Methods in Astronomy”, Texas A&M University, February 2020.

Public Lecture on “Statistics and Machine Learning in the Physical Sciences”, Allegheny Observatory, Pittsburgh, November 2019.

Statistics Seminar, Department of Mathematics, Imperial College, March 2019.

Likelihood-Free Inference Workshop, Flatiron Institute, March 2019.

Seminar, Department of Applied Mathematics and Statistics, Johns Hopkins University, March 2019.

LSST Dark Energy Science Collaboration Meeting, CMU, July 2018.

Statistical Challenges for Large-Scale Structure in the Era of LSST, University of Oxford, April 2018.

Statistical Challenges in Modern Astronomy (SCMA) VI, Carnegie Mellon University, June 2016.

Topological Data Analysis, NSF-CBMS 2016 Regional Conference, The University of Texas at Austin, May-June 2016.

Invited session on Complex and High-Dimensional Inference in Astrostatistics, JSM, Seattle, August 2015.

Session on Statistical Inference and Learning in High Dimension, IISA, Riverside, CA, July 2014.

Low-Dimensional Structure in High-Dimensional Systems (LDHD) Summer School, SAMSI, August 2013. (Gave a series of lectures on “Population and familial structure in genetic association studies”.)

IMS Workshop on Meeting the Challenges of High Dimension: Statistical Methodology, Theory and Applications, Singapore, October 2012.

SAMSI Workshop on Astrostatistics, 2012-2013 Program on Statistical and Computational Methodology for Massive Data Sets, Research Triangle Park, NC, September 2012. **Plenary speaker.**

Biometrics section: Variable Selection and Dimension Reduction in High-Dimensional Data, JSM, San Diego, August 2012.

Section on Statistical Learning and Data Mining: Astrostatistics, JSM, San Diego, August 2012.

Pattern Theory and Vision Seminar, Division of Applied Mathematics, Brown University, February 2012.

Course Instruction

Advanced Methods for Data Analysis (STAT 36-402/608), CMU; Spring 2017, 2018, 2019, 2020.
Modern Regression (STAT 36-401/607), CMU; Fall 2018.
Advanced Data Analysis II (STAT 36-758), CMU; Fall 2015, 2016, 2017.
Mathematical Statistics Honors (STAT 36-326), CMU; Spring 2014, 2015, 2016.
Probability and Statistics I (STAT 36-625), CMU; Fall 2005, 2006, 2007, 2013, 2014.

Statistical Practice (STAT 36-726), CMU; Spring 2012, 2016.
Engineering Statistics and Quality Control (STAT 36-220), CMU; Fall 2010, 2011.
Machine Learning Journal Club (ML 10-915), CMU; Fall 2009, 2010.
Probability and Statistics II (STAT 36-626), CMU, Spring 2006, 2007, 2008, 2010.
Probability and Statistics for Business Applications (STAT 36-207), CMU, Fall 2009.
Applied Mathematics and Engineering I (AMTH 251), Yale University, Fall 2003, 2004.
Introduction to Calculus in Several Variables (MATH 118), Yale University, Spring 2004.
Pattern Theory and its Applications, 12th Jyväskylä Ph.D. Summer School, Aug 2002, Finland.

Graduate Advising (as PhD Thesis Advisor)

Trey McNeely

- estimated date of graduation: May 2022
- “Statistical Modeling of Tropical Cyclone Intensity Change Using Satellite Imagery”

Niccolò Dalmaso

- estimated date of graduation: May 2021
- “Efficient Statistical Inference in Settings with Complex Data and Limited Resources”

Taylor Pospisil

- Ph.D. May 2019, Department of Statistics, CMU
- Thesis title: “Conditional Density Estimation for Regression and Likelihood-Free Inference”

Rafael Izbicki

- Ph.D. April 2014, Department of Statistics, CMU
- Thesis title: “A Spectral Series Approach to High-Dimensional Nonparametric Inference”

Di Liu

- Ph.D. July 2012, Department of Statistics, CMU
- Thesis title: “Comparing Data Sources in High Dimensions”

Andrew Crossett

- Ph.D. May 2012, Department of Statistics, CMU (co-advised with K. Roeder)
- Thesis title: “Using Dimension Reduction Techniques to Model Genetic Relationships for Association Studies”

Susan Buchman

- Ph.D. March 2011, Department of Statistics, CMU (co-advised with C.M. Schafer)
- Thesis title: “High-Dimensional Adaptive Basis Density Estimation”

Joseph W. Richards

- Ph.D. July 2010, Department of Statistics, CMU (co-advised with C.M. Schafer)
- Thesis title: “Fast and Accurate Estimation for Astrophysical Problems in Large Databases”

Diana Luca

- Ph.D. Sept 2008, Department of Statistics, CMU (co-advised with K. Roeder)
- Thesis title: “Genetic Matching by Ancestry in Genome-Wide Association Studies”

Professional Activities

Co-Director of PhD Program (with Valerie Ventura), Department of Statistics & Data Science, CMU, 2020–present.

Associate Editor, *Annals of Applied Statistics*, 2020–present.

Convener (with Mikael Kuusela) of Statistical Methods for the Physical Sciences (STAMPS) focus group, CMU, 2018–present.

Associate Editor, *Journal of Computational and Graphical Statistics*, 2017–present.

Faculty Advisor of Statistics and Machine Learning Major, Department of Statistics, CMU, 2017–present.

Faculty Search, Department of Statistics & Data Science, CMU, 2012, 2015, 2018.

Director of the Joint PhD Program in Statistics & Machine Learning, CMU, 2014–2017.

Graduate Admissions Co-Chair, Department of Statistics, CMU, 2005–2008 (with Larry Wasserman), 2013–2017 (with Valerie Ventura).

Organizer, Invited session on Active Learning, ISBIS/SLDM Meeting, Durham, NC, June 2014.

Associate Editor, *Statistics and Computing*, Springer, 2010–2013.

ML Education Co-Director (with Geoff Gordon), Department of Machine Learning, School of Computer Science, CMU, 2009–2012.

Graduate Admissions Co-Chair (with Geoff Gordon), Department of Machine Learning, School of Computer Science, CMU, 2009–2012.

Faculty Senator, CMU, 2007–2009.

Program and Review Committees

NeurIPS 2020 (area chair); STAMPS CMU webinars 2020–present (program committee); AISTATS 2015 (area chair); ICML 2010; NIPS 2008; ECCV 2004; Intl. Workshop on Generative Model-Based Vision (2002, 2004)

Journal Reviewing

Annals of Applied Statistics; *Electronic Journal of Statistics*; *IEEE Pattern Analysis and Machine Intelligence*; *Journal of the American Statistical Association*; *Journal of Classification*; *Journal of Computational and Graphical Statistics*; *Journal of Mathematical Imaging and Vision*; *Pattern Recognition*; *Proceedings of the Royal Society A*; *SIAM Journal of Imaging Sciences*; *Signal Processing D*; *Statistica Sinica*; *Statistical Analysis and Data Mining*; *Transactions on Knowledge and Data Engineering*

Memberships

American Statistical Association (ASA), Institute of Mathematical Science (IMS), Large Synoptic Survey Telescope Dark Energy Science Collaboration (LSST DESC), LSST Informatics and Statistics Science Collaboration (LSST ISSC)