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 & Data Science, Carnegie Mellon University, 2020–present Core faculty, Machine Learning Department, CMU, 2008–present

Associate Professor, Department of Statistics, Carnegie Mellon University, 2010–2020 Core faculty, 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 research interests are in developing statistical methodology for complex data and problems in the physical sciences. I am particularly interested in trust-worthy scientific inference and reliable uncertainty quantification, and in bridging classical statistics and machine learning for simulationbased inference and experimental design. My recent work includes likelihood-free inference, calibrated probabilistic forecasting, interpretable diagnostics of generative models, and applications in astronomy and hurricane intensity guidance involving satellite imagery and large surveys.

Recent Publications (5)

MASSERANO, L., SHEN, A., DORO, M., DORIGO, T., IZBICKI, R., AND LEE, A.B., "Classification under Nuisance Parameters and Generalized Label Shift in Likelihood-Free Inference",

arXiv:2402.05530, to appear in Proceedings of Machine Learning Research (ICML 2024)

MASSERANO, L., DORIGO, T., IZBICKI, R., KUUSELA, M., AND **LEE, A.B.**, "Simulator-Based Inference with Waldo: Confidence Regions by Leveraging Prediction Algorithms and Posterior Estimators for Inverse Problems", *Proceedings of Machine Learning Research*, 206:2960-2974, 2023. (AISTATS 2023)

MCNEELY, T., KHOKHLOV, P., DALMASSO, N., WOOD, K. M., AND LEE, A.B., "Structural Forecasting for Short-Term Tropical Cyclone Intensity Guidance", *Weather and Forecasting*, 38(6):985-998, 2023. DOI:10.1175/WAF-D-22-0111.1

MCNEELY, T., VINCENT, G., WOOD, K. M., IZBICKI, R., AND LEE, A.B., "Detecting Distributional Differences in Labeled Sequence Data with Application to Tropical Cyclone Satellite Imagery", *The Annals of Applied Statistics*, 17(2):1260-1284, 2023. DOI: 10.1214/22-AOAS1668

ZHAO, D., DALMASSO, N., IZBICKI, R., AND **LEE**, **A.B.**, "Diagnostics for Conditional Density Models and Bayesian Inference Algorithms", *Proceedings of Machine Learning Research*, 161:1830840, 2021. (UAI 2021)

Other Publications (5)

DALMASSO, N., IZBICKI, R., AND **LEE**, **A.B.**, "Confidence Regions and Hypothesis Testing in a Likelihood-Free Inference Setting", *Proceedings of Machine Learning Research*, 119:2323-2334, 2020. (ICML 2020)

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.

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

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

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.

Current/Recent Synergistic Activities (5)

Co-director PhD Program, Department of Statistics and Data Science, CMU, 2020-present.

Co-organizer and founder of the "Statistical Methods for Physical Sciences" (STAMPS) group, 2020present. To become the STAMPS@CMU Research Center in September 2024.

Associate Editor, The American Statistician, ASA, 2023–present.

Co-organizer of the PHYSTAT-SBI 2024 workshop "Simulation-Based Inference in Fundamental Physics", May 15-17, 2024, Max Planck Institute for Physics, Munich, Germany.

Co-organizer of the Hammers & Nails 2023 Swiss Edition workshop "Frontiers in Machine Learning in Cosmology, Astro & Particle Physics", October 29-November 3, 2023, Ascona, Switzerland.