Akira Horiguchi

Employment

Postdoctoral Associate Department of Statistical Science, Duke University 2021-**Present**
Advised by Dr. Li Ma and Dr. Cliburn Chan.

Co-Instructor, Data Science J.P. Morgan Chase & The Ohio State University 2019

Graduate Research Assistant Nationwide Insurance & The Ohio State University 2018-2019

Graduate Teaching Assistant Department of Statistics, The Ohio State University 2017-2018

Data Visualization Intern NORC at the University of Chicago 2016

Education

Ph.D. Statistics, The Ohio State University Dec 2020
Thesis: "Bayesian Additive Regression Trees: Sensitivity Analysis and Multiobjective Optimization."
Advised by Dr. Matthew T. Pratola and Dr. Thomas J. Santner.

M.S. Statistics, The Ohio State University May 2017

B.S. Mathematics, University of Maryland May 2015
Thesis: "Improving Photovoltaics with High Luminescence Efficiency Quantum Dot Layers."
Advised by Dr. Jeremy N. Munday. Departmental Honors & Gemstone Honors College Citation.

Awards & Honors

Postdoctoral Professional Development Award. Awarded to five Duke postdocs each year by the Duke Office of Postdoctoral Services, Duke University. 2023

Travel Award for ISBA 2022 World Meeting. Scientific Committee of ISBA 2022 WM 2022

Student Travel Award for Joint Statistical Meetings. Quality and Productivity Section, American Statistical Association 2019

Travel Award for Industrial Math/Stat Modeling Workshop. The Statistical and Applied Mathematical Sciences Institute (SAMSI) 2019

Dean's Distinguished University Fellowship. The most prestigious fellowship (at the time) awarded by the Graduate School, The Ohio State University. Covers 1st, 2nd, and final year. 2015

Undergraduate Researcher of the Year. Awarded to a handful of undergraduates each year by the Maryland Center for Undergraduate Research, University of Maryland. 2014

PUBLICATIONS

Preprints, technical reports, and peer-reviewed journal articles

A. Horiguchi, C. Chan, and L. Ma. "A tree perspective on stick-breaking models in covariate-dependent mixtures." Submitted.

A. Horiguchi and M. T. Pratola. "Estimating Shapley effects for moderate-to-large input dimensions." Submitted.

A. Horiguchi, T. J. Santner, Y. Sun, and M. T. Pratola. "Using BART to Perform Pareto Optimization and Quantify its Uncertainties." Technometrics, Special Issue on Industry 4.0, 2022.

A. Horiguchi, M. T. Pratola, and T. J. Santner. "Assessing variable activity for Bayesian regression trees." Reliability Engineering & Safety System, Special Issue on Sensitivity Analysis of Model Outputs, 2021.

D. Arokiasamy, L. Damiano, M. Dao, S. Gailliot, **A. Horiguchi**, R. Kesawan, Y. Xu, K. Kaufeld, M. F. Dorn, B. Reich, Y. Guan. "Hurricane Strikes Again! Forecasting Power Outages for Tropical Cyclones." 2019 SAMSI Industrial Mathematical & Statistical Modeling Workshop.

Open source projects

Covariate-dependent tree stick-breaking. 2022-

Contributed to the Open Bayesian Trees (OpenBT) project. 2020-

PRESENTATIONS

Invited talk

"Posterior contraction rates for a BART-based estimator of Shapley effects." 2023
Joint Statistical Meetings. Toronto, Canada.

"Using BART to Perform Pareto Optimization and Quantify its Uncertainties." 2022
Fall Technical Conference. Park City, UT.

"Using BART to Perform Pareto Optimization and Quantify its Uncertainties." 2022
2022 World Meeting of the International Society for Bayesian Analysis. Montréal, Canada.

Contributed talk

"Tree stick-breaking priors for covariate-dependent mixture models." 2022
BNP13 – 13th Conference on Bayesian Nonparametrics. Puerto Varas, Chile.

"A flexible regression model for flow cytometry data." 2021
Duke Center for Human Systems Immunology (CHSI) Virtual Symposium. Durham, NC.

"Using BART for Multiobjective Optimization of Multiple Noisy Objectives." 2021
Quality and Productivity Research Conference. Tallahassee, FL.

"Assessing variable activity for Bayesian regression trees." Moved online due to COVID-19. 2021
2021 World Meeting of the International Society for Bayesian Analysis.

"Assessing variable activity for Bayesian regression trees." Moved online due to COVID-19. 2020
13th International Conference of the ERCIM WG on Computational and Methodological Statistics.

"Assessing variable activity for Bayesian regression trees." Moved online due to COVID-19. 2020
Joint Statistical Meetings. Philadelphia, PA.

"Assessing variable activity for Bayesian regression trees." Cancelled due to COVID-19. 2020
Spring Research Conference, Oakland University. Rochester, MI.

"Increasing Solar Cell Efficiency with a Spin-Coated Layer of Quantum Dots in PLMA." 2015
Team Thesis Conference, University of Maryland. College Park, MD.

"Transcription Factors and Cascade Network." Summer Undergraduate Research 2014
Symposium, The Ohio State University. Columbus, OH.

"Transcription Factors and Cascade Network." Summer Undergraduate Research 2014
Symposium, Virginia Polytechnic Institute and State University. Blacksburg, VA.

"No-Analog Communities in Space and Time." NIMBioS Undergraduate 2013
Conference, University of Tennessee. Knoxville, TN.

Poster

"Tree stick-breaking priors for covariate-dependent mixture models." 2022
2022 World Meeting of the International Society for Bayesian Analysis. Montréal, Canada.

"Comparing Variance-Based and Count Methods for Assessing Variable Activity in" 2019
"Bayesian Additive Regression Trees." Joint Statistical Meetings. Denver, CO.

"Increasing Solar Cell Efficiency with a Spin-Coated Layer of Quantum Dots in PLMA." 2014
Undergraduate Research Day, University of Maryland. College Park, MD.

Applied Research Experience

SAMSI Industrial Math/Stat Modeling Workshop for Graduate Students North Carolina 2019
State University. Raleigh, NC

NSF Research Experiences for Undergraduates Biocomplexity Institute of Virginia Tech. 2014
Blacksburg, VA.

Bill Fagan Lab, Undergraduate research assistant University of Maryland. 2013-2014
College Park, MD.

Munday Lab, Gemstone Honors Program University of Maryland. College Park, MD. 2012-2015

Teaching

Reference: (SP)=Spring (AU)=Autumn e.g. (SP19)=Spring 2019

The Ohio State University

BUSMGT 7256: Tools for Data Analysis Co-instructor (SP19)

This course is designed to introduce students to commonly used software programs in data science and improve students' problem solving skills and logical thought processes. Students will be exposed to R, SAS, and SPSS.

STAT 5760: Statistical Consulting Support from the SCS Teaching assistant (SP18)

Graduate or undergraduate students enrolled in this course will work with a graduate student consultant employed by the Statistical Consulting Service (SCS) for the purpose of making progress on their thesis or dissertation.

STAT 6301: Probability for Statistical Inference Grader (AU17)

Introduction to probability, random variables, and distribution theory; intended primarily for students in Master of Applied Statistics (MAS) degree program.

STAT 5302: Intermediate Data Analysis II Grader (AU17)

The second course in a two-semester sequence in data analysis covering simple linear regression (inference, model diagnostics), multiple regression models, variable selection, model selection, two-way ANOVA, mixed effects model.

SERVICE

2023: Reviewed for JASA. Judge for ASA DataFest at Duke. Mentor for 2nd Community College DataFest. Chaired the Savage Award finalist session at JSM.

2022: Reviewed for Journal of the American Statistical Association (JASA).

2021: Member of ad hoc committee on junior awards and support offered by International Society for Bayesian Analysis (ISBA).

2020: Presented research at the first student-led Student Research Seminar. Presented research to prospective graduate students at Graduate Information Day at OSU.

2019: Panelist of the funding and internship session for Graduate Information Day at OSU.

2018: Panelist of the funding and internship session for Graduate Information Day at OSU.

2015: Volunteered at math booth for Maryland Day.

2014: Volunteered at math booth for Maryland Day. President of Pi Mu Epsilon Math Honor Society, UMD chapter.