Akira Horiguchi (he/him)

Employment

Visiting Assistant Professor Department of Statistics, University of California, Davis — 2024-**Present**
Visitor hosted by Dr. Antonio Lijoi, Department of Statistics, Bocconi University — June 2024
Postdoctoral Associate Department of Statistical Science, Duke University — 2021-2024
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
Statistical Consultant Department of Statistics, The Ohio State University — 2018
Data Visualization Intern NORC at the University of Chicago — 2016

Education

Ph.D. Statistics, The Ohio State University Advised by Dr. Matthew T. Pratola and Dr. Thomas J. Santner. — Dec 2020
M.S. Statistics, The Ohio State University — May 2017
B.S. Mathematics, University of Maryland, Departmental Honors & Gemstone Honors College Citation — May 2015

Awards & Honors

Travel Award for 14th International Conference on Bayesian Nonparametrics (BNP14). Scientific Committee. — 2025
Travel Award for 3rd BNP Networking Workshop in Singapore. Scientific Committee of Workshop. — 2024
Postdoctoral Professional Development Award. Awarded annually to five postdocs by the Duke Office of Postdoctoral Services. — 2023
Travel Award for ISBA 2022 World Meeting. Scientific Committee of World Meeting. — 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. Covers 1st, 2nd, and final year. The most prestigious fellowship (at the time) awarded by the Graduate School at The Ohio State University. — 2015
Undergraduate Researcher of the Year. Awarded annually to a handful of undergraduates by the Maryland Center for Undergraduate Research, University of Maryland. — 2014

Publications

Peer-reviewed journal articles

- **H., A.**, Chan, C., and Ma, L. *A tree perspective on stick-breaking models in covariate-dependent mixtures.* 2025 Bayesian Analysis. **(editor-selected discussion paper)**
- Luo, H., **H., A.**, and Ma, L. *Efficient Decision Trees for Tensor Regressions.* 2025 Journal of Computational and Graphical Statistics, tentatively accepted.
- **H., A.** and Pratola, M.T. *Estimating Shapley Effects in Big-Data Emulation and Regression Settings using Bayesian Additive Regression Trees.* 2025 Statistica Sinica, accepted.
- **H., A.**, Santner, T.J., Sun, Y., and Pratola, M.T. *Using BART to Perform Pareto Optimization and Quantify its Uncertainties.* 2022 Technometrics, Special Issue on Industry 4.0.
- **H., A.**, Pratola, M.T., and Santner, T.J. *Assessing variable activity for Bayesian regression trees.* 2021 Reliability Engineering & Safety System, Special Issue on Sensitivity Analysis of Model Outputs.

Preprints and technical reports

- Wang, T., Pang, L., **H., A.**, and Preibe, C.E. *LLM Web Dynamics: Tracing Model Collapse in a Network of LLMs.* Submitted.
- **H., A.**, Ma, L., and Szabó, B.T. *Sampling depth trade-off in function estimation under a two-level design.*
- **H., A.** *Bayesian Additive Regression Trees: Sensitivity Analysis and Multiobjective Optimization* OhioLink. 2020.
- Arokiasamy, D., Damiano, L., Dao, M., Gailliot, S., **H., A.**, Kesawan, R., Xu, Y., Kaufeld, K., Dorn, M.F., Reich, B., Guan, Y. *Hurricane Strikes Again! Forecasting Power Outages for Tropical Cyclones.* 2019 SAMSI Industrial Mathematical & Statistical Modeling Workshop
- J. Chen, D. Gagner, K. Griffiths, E. Hitz, **H., A.**, R. Joyce, B. Y. Kim, M. Lee, S. Lee, A. Raul, D. Shyu, Z. Siegel, S. Silberholz, and D. Tran. *Improving Photovoltaics with High Luminescence Efficiency Quantum Dot Layers.* Digital Repository at the University of Maryland. 2015.

Open source projects

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

Presentations

- Contributed talk – *Multidimensional scalable wavelet tree ensembles.*
  2025 14th International Conference on Bayesian Nonparametrics (BNP14). Los Angeles, CA.
- Invited talk – *Sampling depth trade-off in function estimation under a two-level design.*
  2025 ICSA Applied Statistics Symposium, University of Connecticut. Storrs, CT.
- Invited talk – *Multidimensional scalable wavelet tree ensembles.*
  2025 Statistical Methods in Imaging Conference at Rice University. Houston, TX.
- Seminar talk – *Sampling depth trade-off in function estimation under a two-level design.*
  2025 Department of Statistics, University of California, Davis. Davis, CA.
- Invited talk – *Sampling depth trade-off in function estimation under a two-level design.*
  2024 Bayesian Nonparametrics (BNP) Networking Workshop at IMS-NUS. Singapore.
- Invited talk – *Tree stick-breaking priors for covariate-dependent mixture models.*
  2024 IMS-NUS Workshop on Interpretable Inference via Principled BNP Approaches in Biomedical Research and Beyond. Singapore.
- Contributed poster – *Sampling depth trade-off in function estimation under a two-level design.*
  2024 World Meeting of the International Society for Bayesian Analysis. Venice, Italy.
- Seminar talk – *Sampling depth trade-off in function estimation under a two-level design.*
  2024 Department of Decision Sciences, Bocconi University. Milano, Italy.
- Contributed talk – *Sampling depth trade-off in function estimation under a two-level design.*
  2023 j-ISBA Bayesian Young Statisticians Meeting. Online.
- Contributed talk – *Assessing variable activity for Bayesian regression trees.*
  2023 Fall Technical Conference. Raleigh, NC.
- Invited talk – *Posterior contraction rates for a BART-based estimator of Shapley effects.*
  2023 Joint Statistical Meetings. Toronto, Canada.
- Contributed talk – *Tree stick-breaking priors for covariate-dependent mixture models.*
  2022 13th Conference on Bayesian Nonparametrics (BNP13). Puerto Varas, Chile.
- Invited talk – *Using BART to Perform Pareto Optimization and Quantify its Uncertainties.*
  2022 Fall Technical Conference. Park City, UT.
- Invited talk – *Using BART to Perform Pareto Optimization and Quantify its Uncertainties.*
  2022 World Meeting of the International Society for Bayesian Analysis. Montréal, Canada.
- Contributed poster – *Tree stick-breaking priors for covariate-dependent mixture models.*
  2022 World Meeting of the International Society for Bayesian Analysis. Montréal, Canada.
- Contributed talk – *Using BART for Multiobjective Optimization of Multiple Noisy Objectives.*
  2021 Quality and Productivity Research Conference. Tallahassee, FL.

- ▷ Contributed talk – *Assessing variable activity for Bayesian regression trees.* Moved online due to COVID-19.
  2021 World Meeting of the International Society for Bayesian Analysis.
- ▷ Talk – *A flexible regression model for flow cytometry data.*
  2021 Duke Center for Human Systems Immunology (CHSI) Virtual Symposium. Durham, NC.
- ▷ Contributed talk – *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.
- ▷ Contributed talk – *Assessing variable activity for Bayesian regression trees.* Moved online due to COVID-19.
  2020 Joint Statistical Meetings. Philadelphia, PA.
- ▷ Contributed talk – *Assessing variable activity for Bayesian regression trees.* Cancelled due to COVID-19.
  2020 Spring Research Conference, Oakland University. Rochester, MI.
- ▷ Contributed poster – *Comparing Variance-Based and Count Methods for Assessing Variable Activity in BART*
  2019 Joint Statistical Meetings. Denver, CO.
- ▷ Talk – *Increasing Solar Cell Efficiency with a Spin-Coated Layer of Quantum Dots in PLMA.*
  2015 Team Thesis Conference, University of Maryland. College Park, MD.
- ▷ Talk – *Transcription Factors and Cascade Network.*
  2014 Summer Undergraduate Research Symposium, Virginia Tech. Blacksburg, VA.
- ▷ Contributed talk – *No-Analog Communities in Space and Time.*
  2013 NIMBioS Undergraduate Conference, University of Tennessee. Knoxville, TN.

Applied Research Experience

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

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

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

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

Teaching

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

University of California, Davis

STA 141A: Fundamentals of Statistical Data Science Instructor (AU24, SP25)
Introduction to computing for data analysis & visualization, and simulation, using a high-level language (e.g., R). Computational reasoning, computationally intensive statistical methods, reading tabular & non-standard data.

STA 35B: Statistical Data Science II Instructor (SP25)
Advanced programming and data manipulation in R. Principles of data visualization. Concepts of correlation, regression, analysis of variance, nonparametrics.

STA 35C: Statistical Data Science III Instructor (AU24)
Introduction to statistical learning; Bayesian paradigm; model selection; simultaneous inference; bootstrap and cross validation; classification and clustering methods; PCA; nonparametric smoothing techniques.

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 to Profession

Referee for

Bayesian Analysis	2025
SIAM/ASA Journal of Uncertainty Quantification	2025
Journal of Machine Learning Research	2024
Complex & Intelligent Systems	2024×3
Journal of Computational and Graphical Statistics	2022, 2024, 2025
Journal of the American Statistical Association, Theory and Methods	2022, 2023×2, 2025

Service to Scientific Societies

Organized invited session for 2025 ICSA Applied Statistics Symposium	2025
Reviewer for ASA-SPES/Q&P 2025 student paper competition	2025
Reviewer for ASA-SBSS 2024 student paper competition	2024
Scientific committee for j-ISBA 2023 Bayesian Young Statisticians Meeting	2023
Mentor for 2nd Community College DataFest	2023
Ad hoc committee on junior awards and support offered by ISBA	2021

Service to Department / University

Judge for ASA DataFest at Duke	2023, 2024
Presented research to prospective graduate students at Grad Info Day at Ohio State	2020
Panelist of the funding and internship session for Grad Info Day at Ohio State	2018, 2019
Volunteered at math booth for Maryland Day	2014, 2015
President of Pi Mu Epsilon Math Honor Society, University of Maryland chapter	2013-2014