MANUSHI WELANDAWE

As a statistician and data scientist, I focus on building fast, robust methods that bridge the gap between theory and real-world data challenges. My work combines scalable Bayesian inference, stochastic optimization, and practical modeling tools to accelerate scientific discovery and decision-making across different fields. I'm passionate about creating solutions that are both statistically sound and computationally efficient.

EXPERIENCE

Present | 2020 — **Graduate Research Fellow** Boston University — Boston, MA

- Developing novel diagnostics for detecting stationarity in variational and Bayesian inference contexts
- Developed a robust framework for reliable variational inference with convergence diagnostics and variational approximation assessment

2023 — **Senior Teaching Fellow** Boston University — Boston, MA

- Instructor for MA 214: Applied Statistics, providing instruction and hands-on support to students; evaluated and graded final group projects to assess applied statistical analysis skills

2022 — **NSF-MSG Intern** Argonne National Laboratory — Lemont, IL

- Investigated theoretical and empirical properties of gradient estimators in zeroth-order/derivative-free stochastic optimization

2021 | 2019 — **Graduate Teaching Fellow** Boston University — Boston, MA

- Led 3 discussions each week for graduate level course MA 585 Time series and Forecasting
- Led 5 discussions each week for MA113 Elementary Statistics
- Led 4 discussions each week for MA116 Statistics II

2019 | 2018 — **Graduate Researcher** University of Rhode Island — Kingston, RI

- Designed a Bayesian mixed-effects zero-inflated beta regression model for longitudinal microbiome data with missing-at-random patterns, validated via simulations and applied to real-world datasets

2019 | 2018 — **Graduate Administrative Assistant** University of Rhode Island — Kingston, RI

- Organized and conducted workshops on R, SAS, and SPSS for the University of Rhode Island (URI) faculty, graduate students, and undergraduate community
- Provided statistical consultation to local researchers on projects utilizing R, SAS, and SPSS

2017 — **Graduate Teaching Assistant** University of Rhode Island — Kingston, RI

- Led 5 discussions per week for STA 220 Statistics in Modern Society
- Graded final semester exams for STA 308 Introductory Statistics

2017 — **Junior Analyst** Peppercube Consultants (Pvt.) Ltd. — Sri Lanka

- Conducted statistical analysis for market research to gain insights in existing or newly developed products and services

2016 — **Teaching Assistant** University of Sri Jayewardenepura — Sri Lanka

- Led discussions, graded homework, and proctored final semester exams for STA 122/221 Data Analysis I/II

CONTACT

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EDUCATION

PhD., Statistics
Boston University
Expected 2025

MS., Statistics
University of Rhode Island
2017 – 2019

BS., Statistics
University of Sri Jayewardenepura
2011 – 2015

LANGUAGE SKILLS

- Python
- R
- Julia
- Stan
- SQL

AWARDS AND SERVICES

Mathematical Science Graduate Internship
National Science Foundation (2022)

Reviewer
AISTATS (2025, 2024) and NeurIPS (2024)

Mentor
Undergraduate and Graduate Students

INTERESTS

- Hiking
- Swimming
- Yoga

PUBLICATIONS

2024 **A framework for improving the reliability of black-box variational inference** — Journal of Machine Learning Research

- Authored with Michael Riis Andersen, Aki Vehtari, and Jonathan H. Huggins.

2021 **Challenges and opportunities in high dimensional variational inference** — Advances in Neural Information Processing Systems 34 (NeurIPS 2021)

- Authored with Akash Kumar Dhaka, Alejandro Catalina, Michael R Andersen, Jonathan Huggins, and Aki Vehtari

2020 **A Survival Analysis of the Gulf Stream Warm Core Rings** — Journal of Geophysical Research: Oceans

- Authored with E. Nishchitha S. Silva, Avijit Gangopadhyay, Gavin Fay, Glen Gawarkiewicz, Adrienne M. Silver, Mahmud Monim, and Jenifer Clark

2019 **Effects of early life NICU stress on the developing gut microbiome** — Developmental Psychobiology

- Authored with Amy L. D'Agata, Jing Wu, Samia V. O. Dutra, Bradley Kane, and Maureen W. Groer

INVITED TALKS

2024 **A Framework to Enhance the Reliability and Detect Convergence of Black-box Variational Inference**

New England Statistics Symposium

2022 **Robust, Automated, and Accurate Black-box Variational Inference**

Bayes Reading Group, Flatiron Institute