Hao Duan

CONTACT INFORMATION	**Address:** UCLA Department of Statistics and Data Science 9434 Boelter Hall, Los Angeles, CA 90095, USA **Email:** hduan7@ucla.edu

EDUCATION

University of California Los Angeles
Ph.D. in Statistics, 2022-present, Advisor: Prof. Guido Montúfar

University of Chicago
M.S. in Statistics, 2020-2021, Advisor: Prof. Dacheng Xiu and Prof. Weibiao Wu

Emory University
B.S. in Applied Mathematics and Statistics, 2017-2020

RESEARCH INTEREST

My research is mainly in geometric machine learning. I am interested in optimization and generalization behaviors of models that preserve symmetry. I am also interested in both theory and applications of variational inference in graphical models.

PUBLICATIONS & PREPRINTS

Geometry of the Loss Landscape in Invariant Deep Linear Neural Network
Hao Duan, Guido Montúfar. (Preprint 2024, submitted to ICLR, under review).

Bayesian Transition Diagnostic Classification Models with Polya-gamma Augmentation
Joseph Resch, Samuel Baugh, **Hao Duan**, James Tang, Matthew Madison, Michael Cotterell, Minjeong Jeon. (submitted to *Psychometrika*, in revision).

A Nonparametric Copula Approach to Conditional VaR and Conditional Expected Shortfall
Master's thesis

PRESENTATIONS

Learning with Invariance, Deep Learning Theory Seminar, UCLA, January 2024

HONORS AND AWARDS

University of California Los Angeles Summer Mentored Research Fellowship, 2023

TEACHING

Teaching Assistant, Department of Statistics and Data Science, UCLA
STATS 102C "Monte Carlo Methods" Fall 2024
STATS 10 "Intro to Statistical Reasoning" Fall 2023, Winter 2024, Summer 2024
STATS 13 "Intro to Statistical Methods for Life and Health Sciences" Summer 2023

CONFERENCES AND WORKSHOPS ATTENDED

School of Embedded Composite Artificial Intelligence (SECAI) Annual Meeting
Poster presented, "Global Optima in Invariant Linear Neural Networks"
Technische Universität Dresden, Dresden, 08/29-08/30, 2024

Advanced Studies Institute in Mathematics of Data Science & Machine Learning
Urgench State University, Uzbekistan, 01/05-01/13, 2024

Invitation to Algebraic Statistics and Applications
Institute for Mathematical and Statistical Innovation, Chicago, USA, 09/18-09/23, 2023

PROFESSIONAL EXPERIENCE

Ruitian Capital, Shanghai, China
Quantitative Researcher Internship, January 2022 - April 2022

VISITING POSITIONS

Max Planck Institute for Mathematics in the Sciences
Summer Visitor, Leipzig, Germany, August 2024

SKILLS

Programming
Python, R, LATEX, MATLAB
Languages
English(fluent), Chinese(native)