Jenny Y. Huang

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EDUCATION

MIT EECS, PhD in Artificial Intelligence and Decision-Making, Boston, MA. Incoming, August 2023

Duke University, Durham, NC. Anticipated Graduation, May 2023

Bachelor of Science in Statistical Science and Computer Science

Mathematics Minor

GPA: 4.00

Coursework: Real Analysis, Statistical Learning and Inference, Bayesian and Modern Statistics, Theory and Algorithms for Machine Learning, Linear Algebra, Probability, Multivariable Calculus, Regression, Data Structures and Algorithms, Computational Genomics. *Courses in progress:* Probability and Measure Theory, Topological Data Analysis, Hierarchical Models

HONORS

The Quad Fellowship 2022

- Funds 25 exceptional STEM students from each of the Quad nations (U.S., Australia, India, Japan) for graduate studies in the United States. (*25 awarded nation-wide.*)

Faculty Scholars Award, Duke University 2022

- The highest honor awarded by the faculty of Duke University to undergraduates who show exceptional accomplishments in research. (*3 awarded university-wide*.)

Phi Beta Kappa Honor Society 2022

- The oldest academic honor society in the nation (*~1% of the junior class.*)

United States Presidential Scholarship, White House Commission 2019

- Presented on behalf of the President of the United States to recognize the nation's most distinguished high school seniors. (*~160 awarded.*)

National Merit Scholarship 2019

- Presented by the National Merit Scholarship Corporation (*~2000 awarded*.)

PUBLICATIONS

1. Jenny Huang, Raphael Morsomme, David Dunson, and Jason Xu.
   Detecting Changes in the Transmission Rate of a Stochastic Epidemic Model.
   Submitted to *Statistics in Medicine,* November 2022. [stat.ME] [arXiv] [code]
2. Laura Boyle, Sofia Hletko, Jenny Huang, June Lee, Gaurav Pallod, Hwai-Ray Tung, and Richard Durrett (alphabetic authorship).
   Selective sweeps in SARS-CoV-2 variant competition.
   Published in the *Proceedings of the National Academy of Sciences (PNAS)*, November 2022. [link] [code]
3. Albert Sun*, Gaurav Parikh*, Jenny Huang*, Lesia Semenova, and Cynthia Rudin (joint first authorship).
   Making the World More Equal, One Ride at a Time: Studying Public Transportation Initiatives Using Interpretable Causal Inference.
   Conference on Neural Information Processing Systems: Causality for Real-world Impact (NeurIPS-22), Accepted October 2022. [link] [code]
4. Achal Aswathi, Vladimir Minin, Jenny Huang, Daniel Chow, and Jason Xu.
   Fitting a Stochastic Model of Intensive Care Occupancy to Noisy COVID-19 Hospitalization Time Series.
   Minor revisions, *Statistics in Medicine,* March 2022. [stat.ME] [arXiv].
5. Courtney S. Werner, Jenny Huang, Marie Claire Chelini, Andrew Patterson, Jingjing Shi, Mohamad Elmasri, Max Farrell, Melanie Wang, Charles L. Nunn.
   Ecological Drivers of Parasite Species Richness in Primates: a Novel Approach to Addressing Sampling Bias.
   Submitted to *Ecography*, June 2022. [code]

RESEARCH

Advisors: Dr. Jason Xu and Dr. David Dunson, *Duke University Statistical Science, Durham, NC* May 2021 – Present

Detecting Changes in the Transmission Rate of a Stochastic Epidemic Model.

- Developed a novel likelihood-based method for inferring time-varying parameters in a stochastic epidemic model, flexibly capturing change points while remaining parsimonious enough to retain tractable inference and avoid overfitting.
- Designed a data-augmented MCMC algorithm for fitting stochastic epidemic models to partially-observed incidence data. Developing corresponding R package (*sirchangepoint*).

Advisor: Dr. Rick Durrett, *Duke University Mathematics, Durham, NC* May – September 2022

Mathematical Questions Arising from the COVID-19 Pandemic.

- Showed that the transition from one SARS-CoV-2 variant to the next is mathematically equivalent to the logistic differential equation and verified results empirically using SARS-CoV-2 variant data from GISAID.

Advisor: Dr. Cynthia Rudin, Duke University Statistical Science, Durham, NC January – August 2022

Interpretable Causal Inference to Promote Equitable Urban Mobility.

- Utilized matching and response surface modeling-based methods to investigate the effects of an equitable fare incentive program on urban mobility (joint work with Stanford Causal Inference for Social Impact Lab).

Advisors: Dr. Jason Xu and Dr. Vladimir Minin, Duke University Statistical Science, Durham, NC August 2020 - 2021

Fitting a Stochastic Model of Intensive Care Occupancy to Noisy Hospitalization Time Series.

- Developed a likelihood-based framework to model hospital ICU stay dynamics during COVID-19. Our flexible framework, based on an immigration-death process, allows immigration rates to depend on covariates such as positivity and hospital bed occupancy.
- Applied the model to noisy hospitalization data from Orange County, California.

Advisor: Dr. Charles Nunn, Duke Rhodes Information Initiative, Durham, NC

Parasite Richness in Primates: A Novel Approach to Addressing Sampling Bias. May 2020 – Present

- Developing a latent factor model for predicting missing primate-parasite interactions in a sparse network.

SERVICES

Duke Statistical Science Majors Union, President 2020 – 2022

Duke University, Durham, NC

- Leading an organization of 251 undergraduates with a mission to foster the statistical science community at Duke University through panels, faculty engagement, and peer mentor-mentee programs. Past panels: Statistics in Health, Big Tech Data Science, the Gender Gap in Higher Education, Big Data in Public Policy.

Teaching Assistant

Duke University, Durham, NC

- Statistical Learning and Inference (STA432) Fall 2022, Spring 2023
- Introductions to Data Science (STA199): Lab Leader; co-led weekly lab section. Spring, 2020

CONFERENCES

International Society for Bayesian Analysis World Meeting (ISBA) Montreal, Canada, 2022.

- ***Project: Detecting Changes in the Transmission Rate of a Stochastic Epidemic Model.***
  (New researchers travel award)

Joint Statistical Meetings (JSM) Washington D.C., 2022.

- ***Project: Public Transport Policies to Promote Equitable Urban Mobility.***
  (First place award in the 2022 *ASA Data Expo Challenge*)

Advances in Interdisciplinary Statistics and Combinatorics (AISC) Greensboro, NC, 2022.

- ***Project: Online Controlled Experiments - Top Challenges and Solutions.***

Preparing for the Next Pandemic: Banff International Research Station. B.C., Canada, 2022.

- ***Project: The Calculus of COVID-19 Variant Competition.***

NSF Student Conference on COVID-19 Modeling Durham, NC, 2021.

- ***Project: Fitting a Stochastic Model of Intensive Care Occupancy to Noisy Hospitalization Time Series***

Summer Institute in Statistics and Modeling of Infectious Diseases (SISMID) Seattle, WA, 2022.

- ***Workshop: MCMC for infectious diseases***

SKILLS

Programming: Python, R, Java, LaTeX, SQL, Pytorch

EXPERIENCE

Emergo Therapeutics, Summer 2021

- Applied statistical tools in survival analysis (Kaplan-Meier estimates, Log-Rank test) to analyze clinical trial data, helping Emergo reach informed decisions about whether to continue a clinical trial.
- Performed hypothesis testing and logistic regression to identify covariates (body weight, clinic temperature) that most impacted the efficacy of study drug.

Duke Applied Machine Learning, Winter 2020 – Present *Duke University, Durham, NC*

- Building an image classifier to identify skin lesions as Melanoma through training a convolutional neural network in Pytorch.

Data Science Teaching Assistant, Winter 2020 – Present, *Duke University Statistical Sciences Department, Durham, NC*

- Data Science (Sta199) and Statistical Learning and Inference (STA432) at Duke University; leading lab section of Duke undergraduates.

- Have a projects section. Take out authors. Say what you produced. Write underneath the experience where you submitted the report.