

# Jenny Y. Huang

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## EDUCATION

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

August 2023 - Present

Duke University, Durham, NC.

August 2019 - May 2023

**Bachelor of Science in Statistical Science and Computer Science**

**Mathematics Minor**

GPA: 4.00

**Coursework:** Probability and Measure Theory, Machine Learning, Real Analysis, Statistical Learning and Inference, Algorithm Design, Bayesian and Modern Statistics, Probabilistic Machine Learning, Linear Algebra, Multivariable Calculus, Regression, Data Structures and Algorithms, Computational Genomics, Topological Data Analysis, Hierarchical Models. *Courses in Progress:* Natural Language Processing

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## HONORS

**The Quad Fellowship**

2023

- 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.*)

**MIT Presidential Fellowship, MIT**

- Funds newly admitted PhD students who demonstrate exemplary academic and research achievements. (*~120 awarded university-wide*)

**BEST Award, Duke University**

- The BEST Award recognizes student-research in Bayesian statistics and decision analysis. (2 undergraduates)

**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.*)
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## PUBLICATIONS

- 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] [\[arXiv\]](#) [\[code\]](#)

- 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. [\[link\]](#) [\[code\]](#)

- 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. [\[link\]](#) [\[code\]](#)

- 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.**

Published in *Statistics in Medicine*, August 2023. [\[link\]](#) [stat.ME].

- Courtney S. Werner, Jenny Huang, Marie Claire Chelini, Andrew Patterson, Jingjing Shi, Mohamad Elmasri, Max Farrell, Melanie Wang, Charles L. Nunn.

## RESEARCH

*Advisor: Dr. Tamara Broderick, EECS, MIT, Cambridge, MA*

July 2023 – Present

### **Influence Functions for Robust ML**

- Developing methods to assess the robustness of ML models to removing small subsets of training data. Mathematically characterizing settings under which influence function approximations break down.
- Adapting influence functions to modern machine learning settings.

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

May 2021 – July 2023

### **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 (*sirchangept*).

*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.
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## 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. Fall, 2021
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## 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*)