

PhD Candidate, Statistics  
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## EDUCATION

**Ph.D. in Statistics**, *North Carolina State University* 2022–Now  
**Master of Biostatistics**, *Duke University School of Medicine* 2020–2022

- Thesis: Overlap, inverse probability, and matching weights: what are we weighting for?
- Advisory Committee:
  - Chair: Roland A. Matsouaka
  - Members: Fan Li, and Hwanhee Hong

**B.S. in Mathematics and Applied Mathematics**, *Southeast University* (Nanjing, China) 2016–2020

## APPOINTMENTS

**NIAID R25 Trainee** (AIDS Quantitative Research), *Duke University School of Medicine* Summer 2024  
**Research Assistant**, *Biodiversity Lab, North Carolina Museum of Natural Sciences* Spring 2024  
**Teaching Assistant**, *Department of Statistics, North Carolina State University* 2022–2023

## RESEARCH INTERESTS

### Statistical Methodology & Theory

Causal inference; Causal survival; Conformal prediction; Data integration; Randomized controlled study; Observational study; Propensity score methods; Machine learning; Double/Multiply robust estimation; Semiparametric efficiency and influence function based theory; Asymptotic statistics.

### Statistical Applications

HIV/AIDS trials; COVID-19; Racial disparity in health care; Ecology and biodiversity.

## AWARDS & HONORS

2023

- **Student Poster Recognition Award**, ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop

2022

- **Student Poster Prize** (3rd place of 47), Georgia Statistics Day
- **Outstanding Master's Project Award** (first place of methodology thesis project), Department of Biostatistics & Bioinformatics, Duke University School of Medicine
- **Overall Academic Excellence Award** (based on GPA), Department of Biostatistics & Bioinformatics, Duke University School of Medicine

## RESEARCH PUBLICATIONS

\*: Approximately equal contribution; †: Corresponding author.

Method Paper

1. Matsouaka RA\*, **Liu Y\***, and Zhou Y (2024). Overlap, matching, or entropy weights: what are we weighting for? *Communications in Statistics - Simulation and Computation*. Forthcoming.  
\*Student Poster Recognition Award from ASA BIOP RISW 2023, Student Poster Prize from GSD 2022, and Outstanding Master's Project Award from Duke B&B
2. Matsouaka RA\*, **Liu Y\***, and Zhou Y (2023). Variance estimation for the average treatment effects on the treated and on the controls. *Statistical Methods in Medical Research*, **32**(2):389-403.

## Method Preprints & In-preparation

1. **Liu Y**, Li H, Zhou Y, and Matsouaka RA (2024+). Average treatment effect on the treated, under lack of positivity. Revision submitted to *Statistical Methods in Medical Research*.
2. **Liu Y**, Levis A, Normand S-L, and Han L (2024+). Multi-source conformal inference under distribution shift. Submitted.
3. Wang Y, **Liu Y**, and Yang S (2024+). Rate doubly robust estimation for weighted average treatment effects. *Invited revision*.

## CONFERENCES, SEMINARS & WORKSHOPS

**Abbreviations.** Causal Inference and Missing Data Analysis (CIMA) Lab; Duke Industry Statistics Symposium (DISS); International Biometric Society, Eastern North American Region (ENAR); International Chinese Statistical Association (ICSA); Joint Statistical Meeting (JSM); New England Statistics Symposium (NESS).

2024

- ENAR Spring Meeting, Baltimore, MD. “Average treatment effect on the treated, under lack of positivity”.

2023

- Poster Session of Statistics Seminar, North Carolina State University, Raleigh, NC. “Overlap, matching, or entropy weights: what are we weighting for?”.
- CIMA Lab Group Meeting, North Carolina State University, Raleigh, NC. “Average treatment effect on the treated, under lack of positivity”.
- ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop, Rockville, MD. “Overlap, matching, or entropy weights: what are we weighting for?”. \*Student Poster Recognition Award
- NESS, online. “Variance estimation for weighted average treatment effect estimators”.
- DISS, online. “Average treatment effect on the treated, under lack of positivity”.

2022

- Georgia Statistics Day, Athens, GA. “Overlap, matching, or entropy weights: what are we weighting for?”. \*Student Poster Prize
- NESS, online. “Overlap, matching, or entropy weights: what are we weighting for?”.

## TEACHING, MENTORING & SERVICES

**Teaching Assistant** ( $n+$ : the class size  $\in [n, n + 10)$ )

At North Carolina State University

- ST 370 Probability and Statistics for Engineers (Fall 2023: 90+)
- ST 512 Statistical Methods for Researchers II (Summer 2023: 20+)
- ST 311 Introduction to Statistics (Spring 2023: 150+; Summer 2023: 90+; Fall 2022: 110+)

**Mentoring**

- Jiajun Liu (MS, Duke B&B) Independent study, 2022–2023  
Co-supervise with Roland A. Matsouaka First position: PhD student, Duke B&B
- Dezhao Fu (MS, Duke B&B) Master's thesis, 2022–2023  
Co-supervise with Roland A. Matsouaka First position: PhD student, GWU B&B

## **ADDITIONAL INFORMATION**

### **Current Memberships**

- Student member, American Statistical Association (ASA)
- Student member, International Biometric Society Eastern North American Region (ENAR)
- Student member, International Chinese Statistical Association (ICSA, 泛华统计协会)
- Student member, New England Statistics Symposium (NESS)

### **Skills**

- Language: Chinese (Mandarin), English
- Computer: R, SAS,  $\text{\LaTeX}$

**Myers-Briggs type indicator:** *Introversion*, *INtuition*, *Thinking*, and *Judging* (INTJ), December 2023