

# MICHAEL WIECK-SOSA

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## EDUCATION

**Carnegie Mellon University** | PhD in Statistics | Advisor: [Aaditya Ramdas](#) May 2027

- GPA: 3.96/4.00 | Areas: non-stationary time series analysis, forecasting, simulation-based inference, causal inference

**University of Illinois at Urbana-Champaign** | MS in Statistics May 2022

- GPA: 3.95/4.00 | Awards: 2-year teaching assistantship with full tuition waiver and stipend

**Fordham University** | BS in Mathematics with Minors in Computer Science and Economics May 2020

- GPA: 3.77/4.00 | Awards: *magna cum laude* | GRE: 170/170 Quantitative, 163/170 Verbal, 4.5/6.0 Writing

## RESEARCH EXPERIENCE

**Simulation-Based Inference for Non-Stationary Time Series** | Cosma Shalizi March 2024-Present

- Creating a method for inferring the parameters of models of non-stationary time series by matching features of the data
- Proving that  $2d+1$  random features of the data are sufficient to infer a  $d$ -dimensional parameter even in high dimensions

**Conditional Independence Testing for Non-Stationary Time Series** | Aaditya Ramdas | [Preliminary Draft](#) Jan. 2023-Present

- Developed a conditional independence testing framework for high-dimensional non-stationary nonlinear time series

**MIT Lincoln Lab** | Interceptor and Sensor Technology Group | Summer Research Intern May 2021-July 2021

- Implemented signal processing methods for tracking objects in outer space and ran simulations to evaluate different methods

**University of Illinois at Urbana-Champaign** | Computer Science Department | Graduate Research Assistant Jan. 2021-May 2021

- Discovered patterns in the cross-platform dynamics of posts on Twitter, Facebook, and Reddit using Hawkes processes

**National Center for Supercomputing Applications** | Great Lakes to Gulf | Graduate Research Assistant Sept. 2020-May 2022

- Built confidence bands for trends in concentrations and fluxes of chemicals to measure water quality changes across the US

## INDUSTRY EXPERIENCE

**J.P. Morgan** | Quantitative Research | Markets Summer Associate | Received Return Offer June 2023-Aug. 2023

- Worked with macro index traders to develop a multi-period hedging optimization method for derivatives portfolios
- Collaborated with energy derivatives traders to improve the statistical methods used in a systematic trading strategy

**J.P. Morgan** | Quantitative Research | Markets Summer Associate | Received Return Offer June 2022-Aug. 2022

- Worked with equity derivatives traders to analyze market anomalies and discover patterns in trading performance
- Developed a conditional optimization method for the parameters of a trade execution algorithm using real-time tick data

## COURSEWORK

- **Statistics:** Machine Learning, Time Series Analysis, Regression Analysis, Statistical Theory, Statistical Computing
- **Computer Science:** Algorithms, Data Structures, Operating Systems, Computer Architecture, Artificial Intelligence
- **Math:** Stochastic Calculus, Measure-Theoretic Probability, Numerical Analysis, Functional Analysis, Measure Theory, Interacting Particle Systems, Abstract Algebra, Topology, Geometric Flows, Lie Groupoids and Lie Algebroids

## SKILLS

- Extensive experience with Python, R, SQL, proficient in C++, q/kdb+, and extensive experience with NumPy, Pandas, Scikit-learn, PyTorch, TensorFlow, Tidymodels, Rcpp, AWS EC2, Slurm, Linux, Bloomberg Terminal, Bloomberg API

## TEACHING ASSISTANT EXPERIENCE

- Time Series Analysis, Advanced Data Analysis, Financial Data Science I & II, Machine Learning Industry Capstone Project

## POSTER PRESENTATIONS

- *Conditional Independence Testing for Non-Stationary Time Series*, 2024 NBER-NSF Time Series Conference at UPenn