PRAYAG GEORGE SINGH CHATHA

University of Michigan
Department of Statistics
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RESEARCH INTERESTS

Bayesian inference, deep learning, epidemiology, healthcare data, stochastic simulation

EDUCATION

Ph.D. Statistics 2020-2025
University of Michigan
Advisors: Jon Zelner and Jeffrey Regier

M.A. Mathematics 2016-2017
Wesleyan University
Advisor: Felipe Ramírez

B.A. Mathematics 2012-2016
Wesleyan University
Graduated with Honors

PUBLICATIONS

Journal Articles

Prayag Chatha, Fan Bu, Jeffrey Regier, Evan Snitkin, Jon Zelner. "Neural Posterior Estimation for Stochastic Epidemic Modeling." In preparation. [pdf] [code]

Conference Papers

Prayag Chatha, Yixin Wang, Zhenke Wu, and Jeffrey Regier. "Dynamic survival transformers for causal inference with electronic health records." In: *NeurIPS Workshop on Learning from Time Series for Health* (2022). [pdf] [code]

- Accepted as a spotlight presentation (top 20% of submissions)

Other

Prayag Chatha. "Close Enough: A Dynamical Approach to the Littlewood Conjecture." *Master's Thesis* (2017). [pdf]

GRANTS

Current Research

Propelling Original Data Science Grant
Michigan Institute for Data and AI in Society
PIs: Jon Zelner and Fan Bu
$79,000 (August 2024-July 2025)
Neural Posterior Estimation Approaches for Fitting High-dimensional Stochastic Epidemic Models to Real-world Spatiotemporal Disease Data
Role: Main Researcher & Grant co-author

OTHER SOFTWARE

pno-ai: https://github.com/chathasphere/pno-ai (2019)

- Pytorch generative AI model for musical improvisation trained on piano MIDI data pipeline
- 100+ stars on Github

TEACHING EXPERIENCE

University of Michigan, Ann Arbor, MI
Graduate Student Instructor

- STATS 413 (Fall 2022): Applied Regression Analysis; undergraduate level; 40 students
    - Led a weekly lab session reviewing theory and teaching R code, graded assignments, held regular office hours
- STATS 306 (Winter 2022): Introduction to Statistical Computing; undergraduate level; 40 students
    - Led a weekly lab session teaching R code, developed course materials, graded assignments, held regular office hours
- STATS 401 (Fall 2021, Winter 2021): Applied Statistical Methods; undergraduate level; 40 students
    - Led a weekly lab session reviewing theory and teaching R code, graded assignments, held regular office hours
- STATS 250 (Fall 2020): Introduction to Statistics and Data Analysis, introductory level
    - Led a weekly lab session reviewing theory and teaching R code, graded assignments, held regular office hours

Wesleyan University, Middletown, CT
Teaching Assistant

- Linear Algebra (Spring 2017); undergraduate level, 30 students
  - Held regular review sessions, graded homeworks
- Introduction to Calculus (Fall 2016), 30 students
  - Held regular review sessions, graded homeworks
- Opera and Oratorio (Spring 2013), 12 students
  - Worked as piano accompanist to singers during regular classes and practice sessions, played during the end-of-semester recital

WORK EXPERIENCE

CKM Analytix, New York NY: Data Analyst & Software Engineer
November 2017 - June 2019
Worked in client-facing data analytics, product development, and internal IT support

- Developed a web dashboard and API with Postgresql, Kotlin, and Vue.js visualizing automation opportunities in IT tickets
- Optimized a client's ETL pipeline ingesting ticket data for 50+ IT service accounts using Python and SQL. Deployed the pipeline to an EC2 instance, reducing runtime by more than a day
- Wrote a Python module linking timesheets to digital activity logs for a Fortune 500 telecoms company. Delivered weekly visualizations/tables identifying potential worker capacity

Andrew Davidson and Co., Inc., New York, NY, Modeling Intern
June 2017 – August 2017

- Detected significant regional volatility errors in the firm's home price model through statistical analyses in Numpy and Excel
- Identified novel risk factors in mortgage turnover and delinquency by training a random forest model on Freddie Mac home loans in scikit-learn

PRESENTATIONS AND INVITED LECTURES

Oral Presentation, "Neural Posterior Estimation for Simulation-based Inference in Epidemic Modeling," *Michigan Student Symposium for Interdisciplinary Statistical Sciences*, March 2024.

Invited Talk, "Estimating Treatment Effects from Electronic Health Records with Deep Learning," *Joint Statistical Meetings*, August 2023. [slides]

Spotlight Presentation, "Dynamic Survival Transformers for Causal Inference with Electronic Health Records," *NeurIPS Workshop on Learning from Time Series for Health*, December 2022.

Poster Presentation, "Early Detection of Alcoholic Liver Disease with Transformers," *Michigan Student Symposium for Interdisciplinary Statistical Sciences*, March 2022.

AWARDS

Outstanding Teaching Team Award 2022-2023 (University of Michigan Department of Statistics)

SERVICE

Undergraduate Research Program in Statistics

- Mentored two undergraduates in an independent study of spatial and social heterogeneity of transmission in epidemiological models from January-April 2023

Peer-Reviewed Articles for:

- ICLR 2023 Workshop on Time Series Representation Learning for Health
- NeurIPS 2023 Workshop on Deep Generative Models for Health

UM Statistics Department Student Council

- Participated in recruitment outreach panels for the department's Visit Day and Fall Preview Weekend
- Set up and helped administer the department's Slack workspace as part of the Computing Committee

Graduate Employees' Organization

- Served as Statistics department union steward from Fall 2022-Fall 2023
- Served union treasurer from Summer 2023-Summer 2024
    - Managed union finances for a 2,000-person bargaining unit with $500,000 of yearly revenue from membership dues
    - Developed a budget for the 2023-24 fiscal year and supervised our union's staff finance/office manager
    - Oversaw the distribution of a $400,000 strike hardship fund to more than 300 recipients

COMPUTING SKILLS

Python, Pytorch, R, SQL, Stan, Git, Linux, Amazon Web Services, Docker, Kotlin, Javascript

PERSONAL

Jazz and classical pianist
Citzen of the United States
Native speaker of English, proficient in Spanish, (formerly) literate in Ancient Greek