# IAN TAYLOR

IAN.M.TAYLOR1@GMAIL.COM • (803) 606-6136

IANMTAYLOR.NET • GOOGLE SCHOLAR • GITHUB • LINKEDIN

# RESEARCH TOPICS AND INTERESTS

Record Linkage, Network Statistics, Machine Learning, Statistical Computing, Bayesian Modeling, Markov Chain Monte Carlo, Statistical Consulting, Statistics Education, Data Visualization and Graphics

## EDUCATION

01/2020 – 10/2023	<b>Ph.D. Statistics</b> , <i>Colorado State University</i> , Fort Collins, CO. Bayesian Models and Streaming Samplers for Complex Data with Application to Network Regression and Record Linkage
	Ph.D. Advisors: Andee Kaplan and Bailey K. Fosdick
08/2017 – 12/2019	M.S. Statistics, Colorado State University, Fort Collins, CO.
08/2009 – 05/2013	<b>B.S. Mathematical Sciences</b> , <i>Clemson University</i> , Clemson, SC. Concentration: Computer Science GPA: 3.89 Manga Cum Laude

## EMPLOYMENT

03/2024 – Present	<ul> <li>Postdoctoral Researcher, National Renewable Energy Laboratory, Golden, CO.</li> <li>Multimodal surrogates for Bayesian Optimization</li> <li>Uncertainty quantification for next-gen grid simulation</li> <li>Created stats help desk for NREL researchers</li> </ul>
01/2023 – 05/2023 08/2017 – 12/2019	<ul> <li>Graduate Teaching Assistant, Colorado State University, Fort Collins, CO.</li> <li>Lead recitation and lecture sections ranging from 25–60 students in size.</li> <li>Develop curriculum for STAT 301 and 307 courses (600+ students/semester).</li> </ul>
08/2022 – 12/2022	<ul> <li>Graduate Statistical Consultant, Graybill Statistical Laboratory, CSU, Fort Collins, CO.</li> <li>Guide researchers on statistical methods for a wide variety of subjects.</li> </ul>
01/2020 – 07/2022	<ul> <li>Graduate Research Assistant, Colorado State University, Fort Collins, CO.</li> <li>Develop model for Bayesian record linkage in a streaming context.</li> <li>Create MCMC algorithm for efficient streaming Bayesian updates.</li> </ul>
06/2016 – 07/2017	<ul> <li>Senior Analyst, CarMax Auto Finance, Kennesaw, GA.</li> <li>Extended Service Plans (ESP)</li> <li>Manage reserve forecast for ESP returns and claims, explore improvements to actuarial models. With team, refine models creating \$2M reserve surplus.</li> <li>Report ESP reserve forecast to company vice presidents; interpret model results.</li> <li>Research and implement Markov network clustering algorithm as record linkage solution for ESP claims data. Consolidate 350,000+ records into groups for each distinct repair facility.</li> </ul>

	<ul> <li>Identify independent repair facilities for vehicle service partnerships in markets with higher ESP claims risk.</li> <li>Supervise analyst intern for summer term. Guide research into improvements to risk segmentation by vehicle make/model.</li> </ul>
06/2013 – 05/2016	<ul> <li>Strategy Analyst, CarMax Auto Finance, Kennesaw, GA.</li> <li>Servicing Analytics/Collections Strategy</li> <li>Design and evaluate A/B strategy testing in loan servicing.</li> <li>Consult with managers of telephony departments to statistically evaluate business strategies.</li> <li>Research and create behavioral scorecard to predict account delinquency. Reduced 1 to 30-day collections costs by 15%.</li> <li>Implement strategy for TCPA compliance.</li> <li>Automate collection of data from post-call customer surveys, create customer service evaluation metric.</li> </ul>
08/2010 – 05/2013	<ul> <li>Undergraduate Research, Intelligent River, Clemson University, Clemson, SC.</li> <li>Research local correlation scores as statistical quality control test for real- time data.</li> <li>Implement score in distributed computing environment on Palmetto high performance cluster.</li> </ul>
06/2012 – 08/2012	<ul> <li>Application Developer Intern, SCANA Corporation, Cayce, SC.</li> <li>Financial Reporting/Peoplesoft</li> <li>Develop business-critical financial reports in SAP</li> <li>Support generation, transmission, and distribution business financial reports</li> <li>Maintain financial report archives</li> </ul>

## PUBLICATIONS

**Taylor, I.**, Kaplan, A., & Betancourt, B. (2025). Generative Filtering for Recursive Bayesian Inference with Streaming Data. *Journal of Computational and Graphical Statistics*, 1–13. <u>https://doi.org/10.1080/10618600.2024.2442000</u>

**Taylor, I.**, Kaplan, A., & Betancourt, B. (2024). Fast Bayesian Record Linkage for Streaming Data Contexts. *Journal of Computational and Graphical Statistics*, *33*(3), 833–844. <u>https://doi.org/10.1080/10618600.2023.2283571</u>

Taylor, I., Keller, K. P., & Fosdick, B. K. (2023). *Restricted Regression in Networks* (arXiv:2311.18039). arXiv. http://arxiv.org/abs/2311.18039

Hughes, S., Rondeau, M., Shannon, S., Sharp, J., Ivins, G., Lee, J., **Taylor, I.**, & Bendixsen, B. (2021). A Holistic Self-learning Approach for Young Adult Depression and Anxiety Compared to Medication-Based Treatment-As-Usual. *Community Mental Health Journal*, *57*(2), 392–402. <u>https://doi.org/10.1007/s10597-020-00666-9</u>

# COURSES TAUGHT

#### FULL COURSES

- STAT 301 Introduction to Statistical Methods (Fall 2018, Spring 2023)
- STAT 307 Introduction to Biostatistics (Spring–Fall 2019)
- STAT 204 General Statistics recitation (Spring 2018)
- STAT 201 General Statistics recitation (Fall 2017)

#### GUEST LECTURES

- DSCI 445 Statistical Machine Learning (Fall 2020)
- STAT 730 Advanced Theory of Statistics (Spring 2020)
- STAT 440 Undergraduate Bayes (Spring 2019)

## CONFERENCES

#### PRESENTATIONS

- JSM 2022 A Non-degrading Streaming Sampler for Recursive Bayesian Inference
- CMStatistics 2021 (Invited) Fast Bayesian Record Linkage for Streaming Data Contexts
- JSM 2021 Streaming Record Linkage for Online Data Deduplication
- ISBA 2021 Restricted Regression in Networks

#### POSTERS

- Conference on Data Analysis 2025 Multi-modal Surrogate Models for Bayesian Optimization
- CSU Statistics Student Posters 2022 Fast Bayesian Record Linkage for Streaming Data Contexts
- ISBA 2021 Restricted Regression in Networks
- CSU Statistics Student Posters 2021 Sampling Methods for Streaming Record Linkage Models
- CSU Statistics Student Posters 2020 Record Linkage: Basics and Streaming RL
- JSM 2019 The Impact of Prior Choice on Latent Variable Network Models
- CSU Statistics Student Posters 2019 Impact of Prior Choice on Network Models with Random Effects

#### ORGANIZATIONAL ROLES

- JSM 2022 Session Chair Computing in Large and Complex Data Analysis
- IMS NRC 2019 at Colorado State University planning team

## SEMINARS AND WORKSHOPS

- Coding and Cookies: Version Control Using Git (Spring 2022)
- Coding and Cookies: Reproducible Reports using Rmarkdown (Fall 2021)
- Coding and Cookies: Version Control Using Git (Spring 2021)

### SOFTWARE

bstrl

- R package for Bayesian Streaming Record Linkage
  - GitHub: <u>https://github.com/ianmtaylor1/bstrl</u>
  - CRAN: <u>https://cran.r-project.org/package=bstrl</u>
- gammacount R package providing distributions related to renewal processes with gammadistributed interarrival times
  - GitHub: https://github.com/ianmtaylor1/gammacount

#### EXPERIENCE AND TOOLS

R, Python, pytorch, git, SQL, slurm, Rmarkdown, Quarto, LaTeX, Stan, Bash, Linux, Julia

# AWARDS AND ACHIEVEMENTS

- Science in 3 minutes NREL lab-wide speed talk honorable mention 2024
- Stanford Open Datathon 2021 finalist data modeling track
- Graybill Award for Excellence in Linear Models 2019
- Phi Beta Kappa 2013
- Clemson University Honors College General Honors
- National Society of Collegiate Scholars
- William Lowell Putnam Competition, 90<sup>th</sup> percentile