

Ian Taylor

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Research Topics and Interests

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

Education

Ph.D., Statistics, Colorado State University. (Jan 2020 – Present)

- Dissertation title: “Bayesian Models and Streaming Samplers for Complex Data with Application to Network Regression and Record Linkage”
- Ph.D. Advisors: Bailey K. Fosdick and Andee Kaplan
- Expected graduation: December 2023

M.S., Statistics, Colorado State University. (Aug 2017 – Dec 2019)

B.S., Mathematical Sciences, Clemson University. (Aug 2009 – May 2013)
Computer Science concentration

Employment

Academic

Graduate Teaching Assistant, Colorado State University, Fort Collins, CO. (Jan 2023 – May 2023, Aug 2017 – Dec 2019)

- Teach recitation and lecture sections ranging from 25–60 students in size.
- Develop curriculum for STAT 301 and STAT 307 courses.

Graduate Statistical Consultant, Graybill Statistical Laboratory, CSU, Fort Collins, CO. (Aug 2022 – Dec 2022)

- Consult with junior and senior researchers on statistical methods for a wide variety of research subjects.

Graduate Research Assistant, Colorado State University, Fort Collins, CO. (Jan 2020 – Jul 2022)

- Develop model for Bayesian record linkage of many files in a streaming context.
- Create MCMC algorithm for efficient Bayesian updating in streaming data contexts.

Undergraduate Research, Intelligent River Project, Clemson University, Clemson, SC. (Aug 2010 – May 2013)

- Research local correlation scores as statistical quality control test for real-time data.
- Implement score in distributed computing environment on Palmetto high performance cluster.

Industry

Senior Analyst, CarMax Auto Finance, Kennesaw, GA. (Jun 2016 – Jul 2017)

- Manage reserve forecast for Extended Service Plan (ESP) returns and claims, explore improvements to actuarial models. With team, refine models creating \$2M reserve surplus.
- Provide insight into ESP reserve forecast to company vice presidents.
- 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.
- Identify independent repair facilities for vehicle service partnerships in markets with higher ESP claims risk.
- Supervise analyst intern for summer term. Guide research into improvements to risk segmentation by vehicle make/model.

Strategy Analyst, CarMax Auto Finance, Kennesaw, GA. (Jun 2013 – May 2016)

- Design and evaluate A/B strategy testing in loan servicing.
- Consult with managers of telephony departments to statistically evaluate business strategies.
- Research and create behavioral scorecard to predict account delinquency. Reduced 1 to 30-day collections costs by 15%.
- Implement strategy for TCPA compliance.

- Automate collection of data from post-call customer surveys, create customer service evaluation metric.

Application Developer Intern, SCANA Corporation, Cayce, SC. (Jun 2012 – Aug 2012)

- Develop business-critical financial reports in SAP
- Support generation, transmission, and distribution business financial reports
- Maintain financial report archives

Courses Taught

Full Courses

- STAT 301 – Introduction to Statistical Methods (Spring 2023)
- STAT 307 – Introduction to Biostatistics (Spring–Fall 2019)
- STAT 301 – Introduction to Statistical Methods (Fall 2018)
- 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)

Publications

- [1] TAYLOR, I., KAPLAN, A. and BETANCOURT, B. (2023). [Generative filtering for recursive bayesian inference with streaming data.](#)
- [2] TAYLOR, I., KAPLAN, A. and BETANCOURT, B. (2023). [Fast bayesian record linkage for streaming data contexts.](#)
- [3] HUGHES, S., RONDEAU, M., SHANNON, S., SHARP, J., IVINS, G., LEE, J., TAYLOR, I. and 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** 392–402.

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

- 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](#), [CRAN](#)

gammaccount – R package providing distributions related to renewal processes with gamma-distributed interarrival times. [GitHub](#)

Awards and Achievements

- Stanford Open Datathon 2021 finalist – data modeling track
- Phi Beta Kappa 2013
- Clemson University Honors College – General Honors
- National Society of Collegiate Scholars
- William Lowell Putnam Competition, 90th percentile

Computing Experience

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