Nathen Byford

Statistical Consultant

Status: Statistical Consultant and PhD Student, Baylor University
Field: Data Science, Statistical Analysis, Spatial Statistics
Techs: R, bash, Python, Statistical Modeling, Machine Learning, Git

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Summary

PhD student at Baylor University working on projects in spatial statistics, anomaly detection, Bayesian modeling, and computational statistics. In addition to working on research I also work for the statistical consulting center helping clients from a wide range of fields from social work to geosciences. Experienced in data manipulation, data visualization, and multiple modeling techniques.

Experience

Statistical Consultant - Statistical Consulting Center, Baylor University — Sep. 2023 - Present

* Perform statistical analysis for diverse range of clients and projects
* Analyses of large scale and unstructured data sets with R and Bash
* Present restults in clear and elementary manner for clients

Graduate Teaching Assistant - Baylor Univeristy — Aug. 2022 - Aug. 2024

* Teach suplimental instruction sessions for introduction to statistics
* Hold office hours for introcutory statistics and statistical methods
* Grade homework, quizzes, and exams

Undergraduate Researcher - Oregon State University — June 2021 - Aug. 2021

* Developing new methods to test for Benford's law in real data
* Implementing methods in R
* Comparing tests for greatest power and lowest error rate
* Also look into Benfor's law in english words and texts

Data Science Fellow - Baylor University and Denver Water — June 2020 - Aug. 2020

* Worked directly with stakeholders at Denver Water to analyze effectivnes and efficiency of water filtration
* Produce statistical analysis and interpret results

Education

Ph.D. in Statistical Science - Baylor University — Aug. 2022 - Present

* Project: Correcting for under reported count data in Bayesian Spatial Scan Statistics
* Developing and implementing Bayesian method to model under-reported and over-dispersed spatial counts

Master of Science in Statistical Science - Baylor University — Aug. 2022 - Dec. 2023

* Project: Anomaly Detection in Time Series Data
* Focus on Statistical Methods, Mathematical Statistics, and Computational Statistics.

Bachelor of Science in Statistical Science - Baylor University — Aug. 2019 - May 2022

* Major Courses: Mathematical Statistics, Computational Statistics, Database Design.

Interdisciplinary Collaborations

Data Analysis of Anti-bacterial Coatings - Department of Enviromental Science — Current collaboration

* Work with zero inflated positive data to determine differences in anti-baterial coatings
* Utilized an ordinal data model as traditional parametric approaches were ineffective due to non-normal distributions in the data

Data Analysis for Presentation - Department of Physical Therapy — Mar. 2024 - Aug. 2024

* Work with survey data from physical therapests to determine the most often taught and used outcome measures by teachers and clinicians.
* Worked with text data to clean up results and repeat responses.

Survey Data Analysis for Dissertation - Department of Social Work — Dec. 2023 - Apr. 2024

* Work alongside PhD candidate in Social Work to complete statistical analysis for dissertation.
* Analyze survey results with logistic regression with model selection

Projects

Analysis of ChatGPT Decision Making Process - Baylor Economics — Current work

* Working with Dr. Van Pham from economics
* Analyzing how chatGPT makes decisions in prompted situations using story telling

Machine Learning Imputation for Missing Data - Baylor Stats and Eli Lilly — Current work

* Use recurrent neural networks (RNN) to impute missing values in clinical trials
* Try to correct for bias in missing not at random (MNAR) data

Spatial Under-Reporting of COVID-19 - Spatial Statistics final project — May 2024

* Project: Correcting under-reporting in over-dispersed spatial count data
* Developing and implementing Bayesian method to model under-reported and over-dispersed spatial counts

Anomaly Detection in Time Series Data - Baylor University — Dec. 2023

* Anomaly detection using data driven methods
* Methods include; regression leverage points, STL, neural network, and isolation forest

Capstone project (Planarian Growth) - Baylor University — May 2022

* Worked with freshmen in BIO 1406 as statistical consultant
* Analyzed the growth of planarian based on light exposure
* Guided students from experimental design through to presentation of results