

# Nathen Byford

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I am driven to tackle complex challenges through innovative statistical approaches, with a particular interest in adversarial scenarios akin to threat intelligence and cybersecurity.

## EXPERIENCE

### STATISTICAL CONSULTANT | Baylor University

Sep. 2023 – Present | Waco, TX

- Lead statistical consulting projects using advanced analytical techniques and current best practices across diverse academic and research applications.

### GRADUATE TEACHING ASSISTANT | Baylor University

Aug. 2022 – Aug. 2024 | Waco, TX

- Supported statistics courses through instruction, grading, and individualized student assistance, enhancing learning outcomes.

### UNDERGRADUATE RESEARCHER | Oregon State University

May 2021 – Aug. 2021 | Remote

- Developed and tested innovative methods for detecting Benford's Law in real data, advancing statistical analysis techniques.

### DATA SCIENCE FELLOW | Baylor University

Jun. 2020 – Aug. 2020 | Remote

## PROJECTS

### MACHINE LEARNING IMPUTATION FOR MISSING DATA

Baylor University and Eli Lilly

Oct 2024 – Present

- Designed and implemented RNNs to impute missing clinical trial data, addressing challenges of missing-not-at-random (MNAR) biases.

### MODELING UNDER-REPORTED COVID-19 CASE COUNTS

Final Project for Spatial Statistics

Jan 2024 – May 2024

- Implemented a Bayesian model to correct under-reported and over-dispersed spatial counts, optimizing data reliability.

### ANOMALY DETECTION IN TIME-SERIES DATA

Final Project for Advanced Data Driven Methods

Aug 2023 – Dec 2023

- Applied diverse anomaly detection techniques (neural networks, STL, regression leverage points, isolation forests) to identify irregularities in complex time series datasets.
- Methods applicable to detecting irregular patterns in cybersecurity data, such as network traffic or system logs.

## RESEARCH

### BAYESIAN UNDER-REPORTING SPATIAL SCAN STATISTICS

Dissertation Research

Apr 2024 – Present

Work with **Joon Jin Song** to develop and implement Bayesian Statistical methods for minimizing under-reporting bias in spatial scan statistics.

## EDUCATION

### BAYLOR UNIVERSITY

PhD in Statistical Science

Concentration in Data Science

Expected May 2026 | Waco, TX

### BAYLOR UNIVERSITY

M.S. in Statistical Science

Dec 2023 | Waco, TX

### BAYLOR UNIVERSITY

B.S. in Statistical Science

May 2022 | Waco, TX

## SKILLS

### PROGRAMMING

- R
- Python
- Julia
- JavaScript

### TECHNOLOGY

Git/GitHub • Linux/Unix • SQL

Machine Learning • Data Visualization

Artificial Intelligence • Automation

## COURSEWORK

### GRADUATE

Probability Theory

Computational Statistics

Advanced Data Driven Methods

High-Dimensional Data Analysis

Time-Series Analysis

### UNDERGRADUATE

Data Science

Data Management and Mining

Database Development

## LINKS

Github: **nathenbyford**

LinkedIn: **nathen-byford**

Website: [www.natebyford.com](http://www.natebyford.com)