# Amber Day

🌐 Personal Website  📞  ✉ amberjouleday@gmail.com  in Amber Day  ⭘ AmberJouleDay

## EDUCATION

| AS in Math | BS in Math | MS Math Ed | MA Math | PhD Statistics & Data Sciences |

**University of Texas at Austin**                                    **August 2020 – present**
*Statistics and Data Sciences, PhD - **GPA - 3.98***                              *Austin, Texas*

**SUNY Brockport**                                              **August 2018 – August 2020**
*Mathematics, MA - **GPA - 4.00***                                       *Brockport, New York*

**University of Rochester**                                       **May 2016 – August 2017**
*Mathematics Education, MS - **GPA - 3.97***                              *Rochester, New York*

**Texas State University**                                       **January 2014 – May 2016**
*Mathematics, BS - **GPA - 4.00***                                       *San Marcos, Texas*

**Austin Community College**                                 **January 2011 – December 2013**
*Mathematics, AS - **GPA - 3.66***                                        *Austin, Texas*

## RESEARCH INTERESTS

**Statistics and Data Sciences**
- Deep Learning, Time Series Analysis, Complex-Valued Neural Networks, Signal Denoising, Classification, Bayesian Optimization, Bayesian Active Learning, Markov Chain Monte Carlo, Variational Inference, Applications in Physics, Cosmology, Chemistry, and Genetics

## PUBLICATIONS

Natalie Klein, **Amber J. Day**, Harris Mason, Michael W. Malone, Sinead A. Williamson. Denoising Neural Networks for Nuclear Resonance Spectroscopy. *arXiv:2211.00080.*

## PRESENTATIONS

**Smoothing Matter Power Spectra with a Two-Layer Process Convolution**  - Talking to Ourselves Seminar Series (CCS-6), Los Alamos National Laboratory, Virtual, August 2023

**Speeding Up Bayesian "Deep" Process Convolutions to Better Understand the Universe**  - Applied Machine Learning Student Presentations, Los Alamos National Laboratory, New Mexico, August 2023

**Denoising Neural Networks for Nuclear Resonance Spectroscopy**  - Symposium on Data Science & Statistics, St. Louis, Missouri, May 2023

**Detecting Synthetic Opioids with NQR Spectroscopy and Complex-Valued Signal Denoising**  - Los Alamos National Laboratory Student Symposium, August 2022

## POSTER SESSIONS

**Symposium on Data Science & Statistics**  - Denoising Neural Networks for Nuclear Resonance Spectroscopy, May 2023

**Conference on Data Analysis**  - Denoising Neural Networks for Nuclear Resonance Spectroscopy, March 2023

**WiML Workshop @ NeurIPS**  - Detecting Synthetic Opioids with NQR Spectroscopy and Complex-Valued Signal Denoising, November 2022

**MAA Seaway Conference**  - Comparing Differences of Consecutive Prime Numbers, April 2019
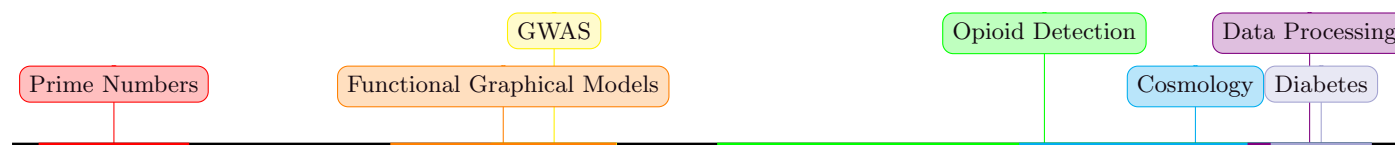
**SUNY Brockport Scholars Day**  - Comparing Differences of Consecutive Prime Numbers, April 2019

## TECHNICAL SKILLS

**Statistical & Data Analysis:** Python, R, Excel

**Other Software & Tools:** LaTeX, Microsoft Word, PowerPoint

# RESEARCH EXPERIENCE



**Predicting Adverse Cardiovascular Events in Individuals with Type 2 Diabetes Mellitus (T2D) Using Inflammatory Markers** with Sinead Williamson, Emily Que, and Audrey Stone (UT Austin)
- *August 2023 - Current:* Developing a Bayesian active tracking algorithm to predict adverse cardiovascular responses to exercise, based on inflammation in T2D.

**Complex-Valued Signal Denoising and Bayesian Optimization for Detection of Synthetic Opioids** with Sinead Williamson (UT Austin) and Natalie Klein (Los Alamos National Laboratory)
- *May 2022 - Current:* Working on developing/applying machine learning and statistical tools for signal detection and for denoising complex-valued time series data. Using Bayesian optimization to inform physics experiments. Running jobs on the Darwin cluster.

**Speeding Up Bayesian "Deep" Process Convolutions to Better Understand the Universe** with Kelly Moran and Earl Lawrence (Los Alamos National Laboratory)
- *May 2023 - Current:* Working on smoothing noisy matter power spectra with a two-layer process convolution then comparing results to results from other denoising techniques (wavelet denoising, and blind denoising autoencoders).

**Cleaning and Processing Data** with Jillian O'Neel, Steven Williams and Erika Guaba-Roldan (Los Alamos National Laboratory)
- *August 2023:* Cleaned and processed data for GRANTA weapons database in engineered materials group (MST-7).

**Bayesian Sparse Functional Graphical Models** with Abhra Sarkar (UT Austin)
- *May - December 2021:* Worked on developing an algorithm to estimate the edges in functional graphical models.

**Genome-Wide Association Study (GWAS)** with Arbel Harpak (UT Austin)
- *Fall 2021:* GWAS of educational attainment. Ran jobs on Texas Advanced Computing Center (TACC).

**Prime Numbers** with Gabriel Prajitura (SUNY Brockport)
- *Spring 2019:* Compared differences of consecutive prime numbers.

# AWARDS

**UT Austin:** University Graduate Continuing Fellowship – $35,000/year, tuition waiver & benefits – August 2023

**Los Alamos National Lab:** Applied Machine Learning Summer Research Fellowship – $16,000 – May 2023

**UT Austin:** Dean's Mentoring Fellowship – $34,000/year, tuition waiver & benefits – August 2020 & August 2021

**UT Austin:** Recruiting Bonus – $4,000 – August 2020

**SUNY Brockport:** Outstanding Tutor Award – April 2019

**SUNY Brockport:** Graduate Assistantship – $15,500 and tuition waiver – August 2018

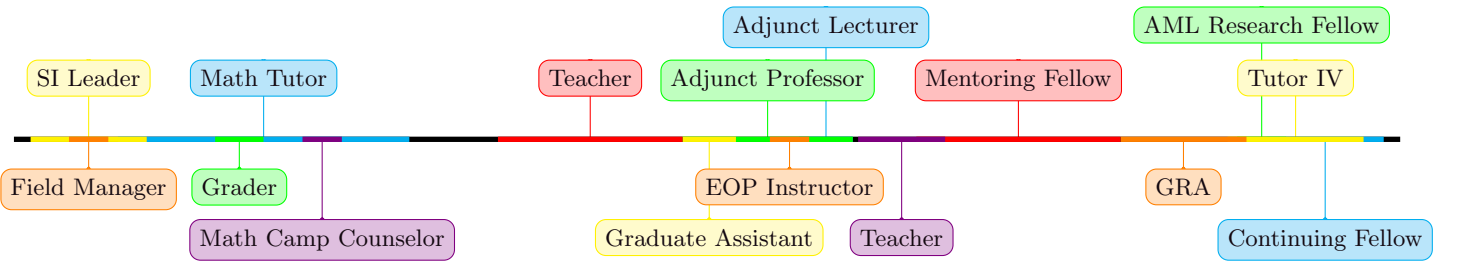**University of Rochester:** Warner School Scholarship – $53,000 – May 2016

**Texas State University:** Emmie Craddock Scholarship – $1,500 – April 2015

**Texas State University:** Ross and Sarah Wayment Endowed Scholarship – $1,500 – April 2015

**Austin Community College:** Austin Kiwanis Club Scholarship – $1,000 – August 2011

**Austin Community College:** Austin Rotary Club Scholarship – $1,200 – August 2011

# RELEVANT EXPERIENCE



**University Graduate Continuing Fellow** — **University of Texas at Austin**
*August 2023 – August 2024* — *Austin, TX*
- Conduct deep learning research for dissertation.

**Applied Machine Learning (AML) Summer Research Fellow** — **Los Alamos National Laboratory**
*May 2023 – August 2023* — *Los Alamos, NM*
- Utilize Bayesian deep process convolutions to better understand the universe.

**Tutor IV** — **Austin Community College**
*April 2023 – Present* — *Austin, TX*
- Tutor mathematics and statistics.

**Graduate Research Assistant (GRA)** — **Los Alamos National Laboratory**
*May 2022 – Present* — *Remote*
- Conduct machine learning research in the Statistical Sciences Group.

**Dean's Mentoring Fellow** — **University of Texas at Austin**
*August 2020 – May 2022* — *Austin, TX*
- Attend classes and explore research areas.

**Teacher** — **Rochester City School District**
*February 2020 – August 2020* — *Rochester, NY*
- Instruct high school students in algebra and geometry.

**Adjunct Lecturer** — **SUNY Brockport**
*August 2019-January 2020* — *Brockport, NY*
- Instruct students in business calculus.

**Adjunct Professor** — **Monroe Community College**
*August 2018-January 2020* — *Brighton, NY*
- Instruct students in developmental mathematics.

**Graduate Assistant** — **SUNY Brockport**
*August 2018-January 2020* — *Brockport, NY*
- Tutor Mathematics for the Living Learning Communities program.

**Educational Opportunity Program (EOP) Instructor** — **Monroe Community College**
*Summer 2019* — *Brighton, NY*
- Teach college survival skills to pre-freshman in summer bridge program.

**Teacher** — **Rochester City School District**
*April 2017-August-2018* — *Rochester, NY*
- Instruct 7th and 8th grade mathematics and science.

**Camp Counselor** — **Texas State University**
*Summer 2015* — *San Marcos, TX*
- Help campers to deepen their understanding of and love for mathematics.

**Mathematics Tutor** — **Austin Community College**
*October 2013-December 2015* — *Austin, TX*
- Tutor mathematics.

**Grader** — **Texas State University**
*August 2014-December 2014* — *San Marcos, TX*
- Grade differential equations assignments.

**Supplemental Instruction Leader** — **Austin Community College**
*January 2013-December 2013* — *Austin, TX*
- Organize and hold group study sessions for pre-algebra.

**Field Manager** — **Grassroots Campaigns**
*Summer 2013* — *Austin, TX*
- Recruit, train, and manage a team of activists.