Austin Zane

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Education

University of California, Berkeley
Berkeley, CA

Ph.D. in Statistics
2021 - Present

Texas A&M University
College Station, TX

B.S., Majors in Statistics, Applied Math (with honors), Minor in Computer Science
2017 - 2021

- Major GPA: 4.0, Overall GPA: 3.96

Publications

Sun, S., Zane, A., Fulton, C., & Philipoom, J. ***Statistical and Bioinformatic Analysis of Hemimethylation Patterns in Non-Small Cell Lung Cancer*****. BMC Cancer, 21, 268 (2021).** https://doi.org/10.1186/s12885-021-07990-7

Research Experience (funded)

Summer Program in Biostatistics at Harvard T.H. Chan S.P.H.
Harvard University

Student Researcher
Jun. 2020 - Jul. 2020

- Principal Investigator: Dr. Briana Stephenson
- Attended lectures in biostatistics, statistics, and A.I. delivered by Harvard faculty.
- Analyzed population data from the CDC's National Health and Nutrition Examination Survey.
- Highlighted cardiovascular disease risk factor disparities associated with race and socioeconomic variables.
- Worked with survey sample design (sample weights), data wrangling, regression analysis, and specialized R packages.
- Produced a report that can be used by future researchers and policymakers to provide the right recommendations for the right people.

Statistics Summer Undergraduate Research Experience
Texas A&M University

Student Researcher
Apr. 2020 - Nov. 2020

- Principal Investigator: Dr. Huiyan Sang
- Built and deployed a COVID-19 mobility dashboard using Shiny, R, and 300GB of cell phone location data from Safegraph Inc.
- Focused on spatiotemporal analysis and its association with sociodemographic variables.
- Collaborated with researchers from UT School of Public Health and Rice University to adapt the dashboard for Houston.
- Presented dashboard to TAMU COVID-19 task force and local government. Available from **shinyapps.io**.

NSF Research Experience for Undergraduates
Texas State University

Team Lead
Jun. 2019 - Sep. 2020

- Principal Investigator: Dr. Shuying Sun
- Analyzed massive genetic datasets using R, Bash, then various statistical methods, including Wilcoxon signed-rank test.
- Wrote virtually all of the thousands of lines of code, conducted the statistical analysis, and wrote most of the manuscript.
- Resulted in a paper titled "Statistical and Bioinformatic Analysis of Hemimethylation Patterns in Non-Small Cell Lung Cancer" that has been accepted by BMC Cancer for publication

NSF Undergraduate Research
Texas A&M University

Student Researcher
Jan. 2019 - May. 2019

- Principal Investigator: Dr. Huiyan Sang
- Focused on the development of algorithms for analysis of spatiotemporal datasets.
- Tracked maritime vessels in a harbor using sparse location data.
- Gained data analysis and visualization skills in Python.

Projects

Statistics Capstone
Texas A&M University

Student
Jan. 2020 - May 2020

- Principal Investigator: Dr. Huiyan Sang
- Analyzed traffic accidents in Dallas County and Travis County, TX, from 2016 to 2019.
- Cleaned and reduced the data to predict the number of accidents in a day given the weather, date, location, etc.
- Employed both zero-truncated negative binomial regression and random forest models.
- Gained experience with data reduction, model selection, and data visualization while providing insight into which factors play significant roles in Texas traffic accidents.

Independent Study in Machine Learning

Texas A&M University

Student

Aug. 2019 - Dec. 2019

- Instructor: Dr. Boris Hanin
- Worked through *Pattern Recognition and Machine Learning* by Christopher Bishop.
- Explored how statistics and mathematics work together to form machine learning.
- Gained significant knowledge of machine learning methods and how to apply them in future projects.

Independent Study in Linear Algebra

Texas A&M University

Student

Jun. 2018 - Aug. 2018

- Instructor: Dr. Boris Hanin
- Worked through *Finite-Dimensional Vector Spaces* by Paul Halmos.
- Enhanced my familiarity with theory of linear algebra beyond regular coursework.
- Learned to self-manage and work independently.

Honors & Awards

2020	**G. Alan Cannon '88 Endowed Scholarship,**	Dept. of Math.
2020	**Melvin Hamilton '71 Memorial Endowed Scholarship,**	College of Science
2019	**Madhava Prize in Analysis Award,** Top student in MATH 446: Honors Principals of Analysis	Dept. of Math.
2019	**Classroom Excellence Award,** Top student in MATH 409: Honors Advanced Calculus	Dept. of Math.
2017	**National Hispanic Scholarship Award,** Awarded every semester	Texas A&M
2017	**Dean's Honor Roll,** All eligible semesters	Texas A&M

Posters & Presentations

2020	**Texas A&M Emergency Management Advisory Group,** Mobility Dashboards	Texas A&M U.
2020	**Statistics Undergraduate Project Showcase,** Predicting Count of Accidents on Given Day	Texas A&M U.
2020	**Pipelines into Biostatistics 2019 Symposium,** Harvard Cardiovascular Disease Research	Harvard U.
2019	**American Society of Human Genetics 2019 Conference,** REU Hemimethylation Research	Houston, TX
2019	**Math Graduate Programs Expo,** REU Hemimethylation Research	Texas State U.
2019	**Statistics Undergraduate Research Poster Session,** REU Hemimethylation Research	Texas A&M U.
2019	**Summer Undergraduate Research Symposium,** REU Hemimethylation Research	Texas State U.

Technical Skills

Proficient, R, C++, Rmarkdown, Shiny, tidyverse
Intermediate, Python, LaTeX, Unix
Familiar, SAS

Highlighted Coursework

Mathematics

- **MATH 606: Theory of Probability**, graduate level probability, planned Spring 2021
- **MATH 607: Real Variables I (A)**, graduate level real analysis
- **MATH 447: Principals of Analysis II (A)**, honors
- **MATH 446: Principals of Analysis I (A)**, honors
- **MATH 409: Intro to Real Analysis (A)**, honors
- **MATH 423: Linear Algebra II**, proof-based, planned Spring 2021
- **MATH 323: Linear Algebra (A)**, proof-based

Statistics

- **STAT 642: Methods of Statistics (A)**, graduate level experimental design
- **STAT 611: Theory of Inference (A)**, graduate level
- **STAT 414: Mathematical Statistics (A)**, proof-based probability
- **STAT 436: Multivariate Analysis and Statistical Learning (A)**

Computer Science

- **CSCE 313: Computer Systems**, planned Spring 2021
- **CSCE 312: Computer Organization (A)**
- **CSCE 221: Data Structures and Algorithms (A)**