NICHOLAS M. CALZADA

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EDUCATION

The University of Texas at Austin (UT) **Austin, TX**
BS in Computational Biology *May 2024*
Minor in Spanish
Certificate in Scientific Computation and Data Sciences

EXPERIENCE

Research Assistant **Austin, TX**
Center for Ecological Statistics (UT) *May 2024 – Present*

- Managed the gathering, labeling, and cleaning of training data for a convolutional neural network (CNN) used to classify bioacoustic data.
- Analyzed spatio-temporal impacts on bird vocalizations.
- Computed and visualized prediction loss, prediction accuracy, and class predictions of the trained model on new recordings to present findings to the team in weekly meetings.
- Constructed a Shiny application in R to visualize predicted responses alongside geographic, climatic, and demographic information across the continental United States
- Contributed to the writing of a submitted journal article.
- Discussed directional and compositional methods with team in weekly meetings.
- Developed image processing techniques to quantify glacial ice areas from aerial image data.

Research Assistant **Austin, TX**
Center for Learning and Memory (UT) *Sept 2023 - May 2024*

- Implemented a 3D-CNN to detect multivesicular body organelles in three-dimensional volumetric electron micrograph data sampled from the brain tissue of rats.
- Performed image augmentations and computed distance transforms of training volumes to enhance feature extraction.
- Quantified and compared Intersection over Union accuracy metrics across various model iterations.
- Communicated methods and results with the principal investigator, research scientists, and research assistants.

Undergraduate Course Assistant (UGCA) - SDS 320E and SDS 322E **Austin, TX**
Department of Statistics and Data Sciences (UT) *Aug 2022 - May 2024*

- Assisted professors during lectures by responding to student questions related to example problems.
- Guided students through practical implementations of data wrangling and analysis in R during lab sessions.
- Guided students through the implementation of various machine learning algorithms, including linear regression, logistic regression, k-nearest neighbors, and decision trees.
- Collaborated with fellow course assistants to manage grading for a diverse student cohort of 100+.

PUBLICATIONS

- Schwob, M. R., Hooten, M. B., **Calzada, N. M.** (2024). Spatial Hyperspheric Models for Compositional Data. *arXiv* [Stat.ME]. https://doi.org/10.48550/arXiv.2410.03648 (under review at *Annals of Applied Statistics*)

SKILLS

Technical Skills: Python, R, SQL, Excel, Pandas, Tidyverse, NumPy, Scikit-learn, Matplotlib, PyTorch, TensorFlow, OpenCV, Jupyter Notebooks, Conda/Mamba, LaTeX, Unix/Linux

Languages: English, Spanish

VOLUNTEER SERVICE

- **God's Family Dinner, University Baptist Church:** assisted in the weekly packging and dispersal of dinners to the local unhoused population (2021-2022)
- **Tutoring:** dedicated 5 hours a week outside of class and work responsibilites to tutor local college students in physics, calculus, statistics, linear algebra, and organic chemisty (2021-2023)

HONORS

- University Honors, *2020 - 2024, all semesters*

ORGANIZATIONS

- **American Statistical Association** *Student Member*
- **Machine Learning and Data Science** *Student Member*
- **Absolute Texxas** *Student Member*