

# JAMES MARTIN

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## EXPERIENCE

### Research Scientist

2022-present

Loss Prevention Research Council, Gainesville

- Facilitated multiple working groups consisting of major retailers, manufactures, and solutions providers covering topics in fraud and data analytics. Created demonstrations of a variety of modeling and data visualization techniques. Encouraged information sharing among members on best practices.
- Conducted brand sentiment analysis leveraging social media data and pre-trained Natural Language Processing models. Acquired data through APIs and web crawlers using a cloud based architecture.
- Collaborated with local law enforcement agencies to develop forecasts of calls for service using ARIMA and LSTM deep learning models. Produced auto-updating maps to enable decision making.
- Assisted retailers in creating regression based shrink models and risk profiles to inform loss strategy using store attribute and socio-demographic data.

### Research Assistant

2020-2022

Global & Environmental Health Lab, Department of Environmental and Global Health, University of Florida

- Investigated the social and environmental factors contributing to COVID-19 mortality in northern Italy using Bayesian Hierarchical Clustering. Used geostatistical methods such as kriging to fuse air pollution data.
- Estimated air quality for the southeastern US at 1km resolution for six years using an ensemble of machine learning models, particularly decision tree based models such as XGBoost and Random Forest.
- Processed over a million EHR records to derive weekly neonatal intensive care unit admissions across seven years in the state of Florida for an epidemiological study on the effects of air pollution on infant health.
- Extracted and processed remote sensing data using cloud based platforms.

### Research Assistant

2017-2019

Quantitative Disease Ecology & Conservation Lab, Department of Geography, University of Florida

- Identified social-ecological risk factors for Dengue fever vector *Aedes aegypti* invasion into households in Huaquillas, Ecuador using hierarchical regression models. High performance computing capabilities were employed to conduct an exhaustive model search and rank models using an information criterion approach.
- Conducted ecological niche modeling of the Lyme disease vector *Ixodes scapularis* in Florida to compare the performance of machine learning and regression based approaches in estimating species distribution.
- Implemented ODE based mechanistic models to forecast the monthly presence of *Aedes aegypti* across 95 US counties using climate and sampling data. Presented at CDC Epidemic Prediction Initiative workshop.
- Optimized urban vector control regiments using health accessibility models and spatial network analysis. Created functionality in R to convert shapefiles into network objects.

### Undergraduate Research Assistant

2015-2017

Quantitative Ecological Dynamics Lab, Department of Integrated Biology, University of South Florida

- Assisted in implementing mechanistic models to forecast the geographic distribution of African trypanosomiasis (sleeping sickness) under different climate change scenarios.
- Reviewed literature for ecophysiological trait data on the Tsetse fly vector to inform model parameters. Fitted various nonlinear functions.

## SKILLS

Python, R, C++, SQL, php, HTML, CSS, Linux, AWS, Azure, WordPress, FreeCAD, SketchUp, Adobe Photoshop, Zoho, Microsoft Office suite, ArcGIS suite, Google Earth Engine

## EDUCATION

**Master of Science, Geography**, University of Florida, GPA: 3.93

2019

**Bachelor of Science, Public Health**, University of South Florida, GPA: 3.50

2017

## RELEVANT COURSEWORK

Epidemiology, Environmental and Occupational Health, Biostatistics, Disease Ecology, GIS Programming, Geostatistics, Quantitative Methods in Geography, Models in Mathematical Biology