Hayden D. Hampton

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Education

University of Central Florida — Orlando, FL
Doctor of Philosophy, Big Data Analytics — 2019–2024

- Advisor: Dr. Edgard Maboudou-Tchao
- Dissertation: Deep Learning One-Class Classification with Support Vector Methods

University of Central Florida — Orlando, FL
Masters of Science, Statistics and Data Science — 2019–2021

- (GPA: 3.90/4.00)

University of Central Florida — Orlando, FL
Bachelors of Science, Double Major in Statistics and Actuarial Science — 2016–2019

- (GPA: 3.86/4.00)

Work Experience

Woolbright Development — Boca Raton, FL
Data Analyst with AI Specialization — May 2024 - Current

University of Central Florida — Orlando, FL
Graduate Research Assistant — May 2023 - August 2023

- Developed a quantile-based time series forecaster combining variational nearest neighbor Gaussian processes with temporal fusion transformer for long horizon geopolitical event prediction in the Middle East.
- First place winner in the 2023 Algorithms for Threat Detection (ATD) Competition for accurate prediction of geopolitical event counts; supported by NSF grants DMS-1924792, DMS-2318925 (Huang).
  Link to competition award

University of Central Florida — Orlando, FL
Graduate Research Assistant — May 2022 - August 2022

- Constructed a multivariate time series forecaster using a mixed-effects negative binomial model with spatio-temporal clustering capable of predicting national-level geopolitical event counts.
- Top-performing model in the 2022 Algorithms for Threat Detection (ATD) Challenge for accurately ranking geopolitical event types by their predictability using Kendall tau; supported by NSF grant DMS-1924792.
  Link to competition award

Infotech Consulting — Gainesville, FL
Econometric and Statistical Analysis Intern — May 2020 - August 2020

- Supported full-time analysts and experts who provide complex statistical and econometric litigation support for cases in antitrust, class action, breach of contract, and healthcare fraud.
- Automated ML-based techniques for pattern recognition and anomaly detection with highly ambiguous data.
- Leveraged dataset of 300+ million observations to develop actionable insights for both technical/nontechnical audiences.

Hannover Re Orlando, FL

Actuarial Intern & Actuarial Temp May 2018 - August 2018

- Developed multifaceted statistical modeling tools used for risk evaluation and pricing of unconventional annuity products.
- Built and validated stress testing models to evaluate the company's exposure to market shocks.
- Designed macro-automated dashboard providing actionable insights based on current trends of industry leaders.

Teaching Experience

University of Central Florida Orlando, FL

Graduate Teaching Associate August 2019 - May 2024

- Instructor, Honors Statistical Methods I, STA 2023H, Spring 2021
- Instructor, Sample Survey Methods, STA 4222, Fall 2020
- Guest Lecturer, Categorical Data Analysis, STA 4504, Spring 2021
- Guest Lecturer, Life Contingencies I, STA 4130, Fall 2020
- Data Science Lab Assistant, Fall 2021 - Spring 2024

Graduate Teaching Assistant

- Grader, Logistic Regression, STA 6238, Spring 2023
- Grader, Statistical Computing II, STA 6106, Spring 2022 - Spring 2024
- Grader, Statistical Computing I, STA 6106, Fall 2021 & Fall 2023
- Grader, Big Data Analytics Methods, STA 4724, Summer 2021
- Grader, Categorical Data Analysis, STA 4504, Spring 2020
- Grader, Applied Time Series Analysis, STA 4852, Spring 2020
- Teaching Assistant, Principles of Statistics, STA 2014, Fall 2019

Academic Services for Student Athletes (ASSA) Tutor

- Tutored student athletes in calculus, statistics, and computer programming, Summer 2019

Technical Skills

- **Proficient**
  - Python, R, SQL, Azure, QGIS, SAS, VBA, LaTeX, Office 365
- **Basic**
  - Matlab, Power BI, AWS, GCP, C
- **Machine Learning**
  - Pytorch/TensorFlow, one-class classification, ensembles, transformers, graph neural networks, hyperparameter tuning, knowledge distillation
- **Applications**
  - Classification, regression, clustering, dimensionality reduction, anomaly detection, sentiment analysis, networks
- **Software Development**
  - Git, Unit Testing

Publications

Submitted

1. E. Maboudou-Tchao, **H. Hampton.** (2023) Deep Least Squares One-Class Classification. Submitted to Journal of Quality Technology.

In Preparation

1. **H. Hampton**, HH. Huang, C. Kundu. (2024) Geopolotical Event Forecasting: A Quantile-Based Approach Integrating Gaussian Process Regression and Temporal Fusion Transformer.

Scientific Conferences

Invited Presentations

Deep Least Squares One-Class Support Vector Machine

- 7th International Symposium on Statistical Process Monitoring (ISSPM 2023) Valencia, Spain.

Contributed Presentations

Geopolitical Event Forecasting: A Quantile-Based Approach Integrating Gaussian Process Regression and Temporal Fusion Transformer

- Algorithms for Threat Detection (ATD) PI Workshop (2023) Fairfax, Virginia.

Deep Support Matrix Data Description

- 39th ASA Quality and Productivity Research Conference (QPRC 2023) Houston, Texas.

High-Dimensional Multivariate Time Series Forecasting for National-Level Geopolitical Events

- International Conference on Statistical Distributions and Applications (ICOSDA 2022) Huntington, WV.

Poster Presentations

Anomaly Detection Using Deep Least Squares Support Vector Data Description

- Voted #1 Best Poster Award
- 39th ASA Quality and Productivity Research Conference (QPRC 2023) Houston, Texas.

Deep Belief Network Anomaly Detection Using Least Squares Support Vector Methods

- International Chinese Statistical Association Applied Statistics Symposium (ICSA 2022) Gainesville, FL.

Scholarships and Awards

- Addition Financial Branch Research Competition March 2024
  - First plane winner ($3,000 prize awarded).
  - Secured first place in a data analytics competition to solve a credit union's branch location problem resulting in actionable recommendations that are currently driving strategic decisions by the C-suite.
  - Designed a methodological framework that integrates advanced geospatial technology with a multi-criteria optimization algorithm for the strategic selection of sites for branch network expansion using detailed localized geographical data.
    Link to presentation slides
    Link to competition report

- Voted Best Poster Award at the 39th ASA Quality and Productivity Research Conference June 2023
  Link to poster
- Addition Financial Data Analytics Competition March 2022
  - First place winner ($8,000 prize awarded).
  - Developed a novel optimization algorithm in Python incorporating complex customer segmentation and tiered pricing strategies resulting in a 26.8% increased portfolio size expected to generate millions of dollars of additional revenue.
    Link to competition report
- Recipient of the Theodore R. and Vivian M. Johnson Scholarship December 2019
- Recipient of the University of Central Florida's Scholars Award 2018-2019
- Recipient of AFC Chapter Scholarship January 2013

Volunteering

- Participant on Justifi Service Trip To Thailand on Human Trafficking July 2018
  Worked with organizations in Thailand dedicated to combating and preventing human trafficking.
- Group Leader on Justifi Service Trip To Nicaragua July 2015
  Led 15 participants on a ten-day trip through Nicaragua focused on social and ecological issues threatening local communities and the nation.
- Volunteer for Ethiopian Absorption Center in Israel June 2008
  In cooperation with the Ministry of Aliyah and Integration, I worked with Ethiopian immigrants and helped them integrate into Israeli society.

Extracurricular Activities

- Member of Quantitative Modeling and Algorithmic Trading Team at UCF 2019-2020
  - Under the guidance of Dr. Ramanlal, we built a sentiment analysis classifier to determine the impact a news article or tweet had on the financial markets.
- Member of Actuarial Science Club at the University of Central Florida 2015-2020
  - Vice President, 2018-2019
  - Competitor at Drake Symposium held at Drake University in Iowa, 2018
- Member of Alpha Epsilon Pi Fraternity at the University of Central Florida 2015-2017
  - Judicial Chair Member, 2015-2017
- Toastmasters 2017-2024
  - Member of Toastmasters Winter Park Club #3674, 2021-2024
  - Member of Toastmasters Oviedo Club #3179, 2019-2020
  - Member of Toastmasters International Club #8503, 2017-2018
- Casualty Actuarial Society Student Program November 2016
- Member of Palm Beach State College's Math Team 2014-2015
  - Competing member at the University of North Florida's statewide math competition, 2014
- Participant in Palm Beach State College's Math and Science Summer Institute Program Summer 2014