Joseph Lavond

209-269-7175 | joelavond@gmail.com | linkedin.com/in/joelavond | github.com/JoeLavond

Education

University of North Carolina — Chapel Hill, NC
Ph.D. Statistics and Operations Research — *Aug. 2020 – May 2025*
M.S. Statistics and Data Science — *Aug. 2020 – May 2024*

California Polytechnic State University — San Luis Obispo
B.S. Statistics — *Sep. 2016 – Mar. 2020*

Industry

Graduate Data Science Intern — June 2024 – Aug. 2024
Red Ventures — *Fort Mills, SC*

- Implemented offline model-based Q-Learning, a reinforcement learning algorithm, demonstrating a typical 5% increase in revenue per session, translating to an estimated $5M in additional business revenue
- Developed and integrated over 6K lines of production code into a simulation environment focused on Markov Decision Processes for website traffic
- Established a streamlined pipeline leveraging historical production data to generate simulations, resulting in a substantial increase in both the quantity and complexity of simulations, leading to robust solutions

Ph.D. Intern — June 2023 – Aug. 2023
Cisco — *San Jose, CA*

- Developed a more efficient way to train generative models with differential privacy at scale, enabling statistical guarantees for the protection of private training data
- Evaluated changes to prevent the occurrence of mode collapse in Generative Adversarial Networks, where samples are not diverse and did not learn to cover the training distribution

Graduate Info Technology Intern — June 2022 – Aug. 2022
Elevance Health, Inc. (Formerly Anthem) — *Indianapolis, IN*

- Implemented custom PyTorch semi-supervised Bayesian anomaly detection approach on Amazon Web Service (AWS) to identify exaggerated claims by providers for services offered
- Created modeling data set pipeline for 60M row database using PySpark SQL in Jupyter on Kubeflow
- Received award for end-of-summer presentation to senior management
- Participated in Agile Scrum model development process using Jira for a Fortune-30 company

Actuarial Services Intern — Apr. 2020 – Aug. 2020
Blue Cross Blue Shield — *Phoenix, AZ*

- Took over the job responsibilities of an Actuary who left the team early into the internship, which included providing the organization with the projected membership for all lines of business
- Learned VBA to automate monthly updates to company forecasts within Microsoft Excel as well as data collection using process flows in SAS and SQL queries in Microsoft Access

Academic

Graduate Teaching Fellow — Spring 2022 & Fall 2024
University of North Carolina — *Chapel Hill, NC*

- Trusted with teaching multiple semesters of an introduction to statistics and data science to over 100 undergraduates
- Created a research project to learn skills related to storytelling with data for students to develop the ability to ingest and communicate answers from data
- Created a research project on famous statistical biases for students to learn and present problematic ways of thinking, historical examples, and how to correctly reason from such problems

NSF-Funded Research Training Group Aug 2022 – May 2025

University of North Carolina *Chapel Hill, NC*

- Funding through a $2M grant to add research to theory and application of networks
- Actively participate in seminars and intensive courses to learn from leaders in network research

Graduate Teaching Assistant Aug 2020 – May 2021

University of North Carolina *Chapel Hill, NC*

- Lab instructor for teaching the foundations of statistics and data science in python covering data manipulation, visualization, simulation, and modeling
- Teaching assistant for introduction to optimization covering linear, integer, non-linear, and dynamic programming, classical optimization problems, and network theory

Projects

Statistical Consultant Aug 2022 – Dec 2023

University of North Carolina *Chapel Hill, NC*

- Used R to analyze longitudinal behavioral data, uncovering early behavioral markers across autism risk groups to support early diagnosis and intervention strategies
- Used R to model medical contract turnaround times, identifying key drivers of delays and delivering predictive insights to inform process improvements

Fatal Force Aug 2020 - May 2021

University of North Carolina *Chapel Hill, NC*

- Engineered features from diverse datasets, including FBI crime reports and Census demographic data, standardizing variables and creating regional dummy variables to account for geographic heterogeneity
- Developed and evaluated models using R to predict police shooting fatalities, improving test RMSE by 3 percent, and identifying key predictors like officer employment and population demographics across regions
- Validated model robustness by comparing results across multiple statistical frameworks (Poisson link and variance-stabilizing transformations), confirming consistent directionality and magnitude of key coefficients

Statistical Consultant Sep 2019 – Jul 2020

California Polytechnic State University *San Luis Obispo, CA*

- Provided SAS mixed modeling analyses and coauthored NIH funded infant feeding study on early life factors and childhood obesity as part of $2 million grant
- Provided statistical support regarding generalized linear models for the theses of several graduate students

Frost Summer Research Program May 2019 – Sep. 2019

California Polytechnic State University *San Luis Obispo, CA*

- Created an R Shiny app for cancer patient use, taking demographic and diagnosis information as input and providing estimated prognoses for various treatments based on KM and COX survival models.
- Manipulated with SAS the SEER database of 20M cancer cases

Publications

- Joseph Lavond. *Advancing Model Security, Data Privacy, and Performance for Widespread Adoption of Trustworthy Artificial Intelligence*. PhD thesis, University of North Carolina at Chapel Hill, 2025. Accepted
- Joseph Lavond, Minhao Cheng, and Yao Li. Feddecay: Balancing model performance and rapid personalization in federated learning with learning rate scheduling. 2025. Under Review
- Joseph Lavond, Minhao Cheng, and Yao Li. Trusted aggregation (TAG): Backdoor defense in federated learning. *Transactions on Machine Learning Research*, 2024

Skills

Technical: Languages *(Python, R, SQL, SAS)*, Machine Learning *(PyTorch, scikit-learn, Tensorflow, Keras, caret)*, Analysis *(Pandas, NumPy, SciPy, Tidyverse)*, Visualization *(Matplotlib, Seaborn, ggplot2)*, Other *(Git, Linux)*

Soft: Communication *(data storytelling, technical documentation)*, Adaptability *(agile methodologies, quick learner, flexible in dynamic environments)*, Time Management *(prioritization, multi-tasking)*, Teamwork *(collaborative projects, cross-functional teams, leadership skills)*

Coursework: Deep Learning, High-Dimensional Time Series, Statistical Consulting, Optimization in Machine Learning and Data Science, Non-Parametric Statistics