Dr. Naveed Merchant
Statistician

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Industry Work Experience

April 2025 – Present

Schwab
Internal Audit Manager

Reviewed and audited the statistical methodology and infrastructure of financial models to ensure that they align with regulatory standards, such as SR 11-7 and SR 15-19, and are conceptually sound. Delegated responsibilities and aided project management to ensure that audit deliverables are received in a timely fashion.

Jun 2023 – Sep 2024

Vanguard
Data Analyst Specialist

Explored and modeled effectiveness of financial tools for clients using SQL and Python. Aided data governance and engineering with troubleshooting hive tables and dashboards, and ensured they were properly up to date with AWS Glue, state machines and GitHub actions. Validated procedure that assigns caller intent to transcribed calls, and aided automating updates to use less computing resources. Reviewed and contributed in-house code for experimentation and querying data via cluster, and assisted team in optimizing queries and data tables to prevent cluster overload.

Jan 2022 – Dec 2022

Climate Corporation
Data Scientist

Explored, queried, manipulated and modeled agriculture data using mixed models, bayesian statistical modeling, and visualizations to garner effect of fungicide on crops. Helped determine disease was an influential factor, and performed ETL to create data structures to better explore diseases impact on yield across different locations. Reviewed models, data quality and code of other statisticians, and helped push them to production.

Apr 2021 – Dec 2021

MAXIS-IT
Statistician

Applied semi-supervised and unsupervised machine learning techniques to detect a person's stress given real time biological information. We created a proof-of-concept that this direction had potential. Created infrastructure to use the data, and model said data. Coordinated with HR, reviewed resumes, drafted technical interview questions and conducted/evaluated technical interviews to recruit additional team members.

Jan 2019 – Jun 2020

General Motors
Data Scientist

Optimized algorithms to enable calculations on huge volumes of data regarding car operations and its correlation to future mechanical flaws. Developed and delivered a tool to query weather data from 3rd party sources and merge it within the General Motors database. Engineered informative features to use in large time series analysis to explain malfunctions in conveyor belts

Education

2017 – 2022 **Doctor of Philosophy**
Statistics
Texas A&M University

Skills

Beginner	Linux, APIs, Teaching, Julia Docker, Kubernetes, Coder
Intermediate	LaTeX, Microsoft Office PowerBI, Tableau, Anaconda Rshiny, Python Dash, Flask C++, SAS, Probabilistic Programming Experiment and Database Design
Expert	R, Python, SQL, PyMC, Tensorflow Parallel Computing, Spark, Hadoop AWS (Glue, Sagemaker, Athena, EMR) Machine Learning, NLP, Bayesian Stats Markdown, GitHub, Dominos Dimension Reduction, Big Data

Communication Skills

Conferences	Cross-validation Bayes Factors to Test Equality of Two Densities 2021 World Meeting of the International Society for Bayesian Analysis

Publications

Merchant N, Hart JD. Screening Methods for Classification Based on Non-parametric Bayesian Tests. arXiv preprint arXiv:2301.02283. 2023 Jan 5.

Merchant N, Hart JD. A Bayesian Motivated Two-Sample Test Based on Kernel Density Estimates. *Entropy*. 2022 Aug 3;24(8):1071.

Zhao H, **Merchant NN**, McNulty A, Radcliff TA, Cote MJ, Fischer RS, Sang H, Ory MG. COVID-19: Short term prediction model using daily incidence data. PloS one. 2021 Apr 14;16(4):e0250110.

Merchant N, Hart J, Choi T, Use of Cross-validation Bayes Factors to Test Equality of Two Densities. arXiv preprint arXiv:2003.06368. 2020 Mar 13.

Levy JG, Mendoza-Herrera A, **Merchant N**, Berg-Falloure KM, Kolomiets MV, Tamborindeguy C. Evaluation of the Effect of 'Candidatus Liberibacter Solanacearum' Haplotypes in Tobacco Infection. Agronomy. 2023 Feb 16;13(2):569.

Academic Work Experience

Aug 2020 – June 2021

Texas A&M
Consultant Research Assistant

Collaborated with A&M faculty in developing statistical models to analyze experimental data. Guided and adjusted the experiment design itself to minimize cost and preserve power. Grant proposals were reviewed to ensure funding budget is sufficient for research goals. Aided faculty in using alternative stat packages and software when it better suited their analysis. Here's some sample work I can share where I assisted the AgriLife and Agriculture departments.

Aug 2019 – Dec 2019

Texas A&M
Teaching (Instructor) Assistant

Developed and delivered STAT 201 introductory statistics course designed to introduce sampling concepts to a class of 71 undergraduate students. Overall student rating: 4.22 out of 5. Increased engagement by leveraging online learning platforms.

Aug 2018 – Dec 2021

Texas A&M
Teaching (Grading) Assistant

TA'd for a wide variety of classes. Hosted office hours for students to receive additional help and aided professors with designing and grading tests. Helped students learn coding to apply stat methods in R, Python, JMP, or SAS depending on course. Greater detail on courses assisted can be seen on my website.

Doctoral Research Projects

"Screening Methods for Classification Based on Non-parametric Bayesian Tests"

We propose a Bayesian non-parametric method for checking if data sets share the same distribution, create a frequentist analogue, and apply it for variable selection in classification. I also developed a R package that implements this and another Bayesian method's research. Research goals were intended to speed up models that perform high-dimensional classification in detecting fraud and useful genes for diseases.

"COVID-19: Short Term Prediction Model Using Daily Incidence Data"

A new method is proposed and used for forecasting the number of daily incidences of COVID-19. We developed a R Shiny dashboard and published a paper for the method.