RISHAB TIRUPATHI

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Education

University of Illinois at Urbana-Champaign *Expected December 2025*
Master of Science in Applied Mathematics, Algorithms and Optimization *Overall GPA: 3.79/4.00*
Graduate Coursework: Statistical Learning, Computational Statistical Optimization, Algorithms and Models of Computation, Theory of Probability, Advanced Optimization, Numerical Analysis, Graph Theory, Partial Differential Equations

University of Illinois at Urbana-Champaign *December 2023*
Bachelor of Science in (Highest Distinction) Applied Mathematics, (Highest Distinction) Statistics *Overall GPA: 3.81/4.00*
Undergraduate Coursework: Linear Algebra, Statistics and Probability, Statistical Modelling, Time Series Analysis, Time Series Machine Learning, Numerical Methods, Stochastic Processes, Optimization

Experience

Freddie Mac **McLean, VA**
Graduate Quantitative Risk Management Intern, Single Family Costing Team *May 2025 – August 2025*
- Analyzed over 1 million loans through SQL queries and SAS to determine discrepancies and anomalies in data
- Debugged a default risk model, performed data extraction and created visualizations to support analysis and performance evaluation
- Constructed an optimization solver to reduce time to determine loan weights from over 2 hours to under 2 minutes
- Collaborated with team members to manage priorities and meet deadlines, ensuring timely progress on tasks

University of Illinois at Urbana-Champaign **Champaign, IL**
Graduate Researcher *August 2024 – Present*
- Conducting research in portfolio optimization with costs applying control theory and stochastic processes to model dynamics
- Reading and reviewing peer-reviewed papers to identify gaps and recent developments in the field
- Participating in a reading group on Reinforcement Learning, engaging in discussions and presenting advancements and applications

Mathematics Graduate Teaching Assistant *August 2024 – Present*
- Assisting in teaching Calculus to over 60 undergraduate students, enhancing their fundamentals and computational procedures
- Conducting weekly discussion sessions, clarifying complex concepts and facilitating problem-solving activities
- Grading assignments and exams biweekly providing constructive feedback to improve student performance
- Holding weekly office hours to offer individualized academic support and mentorship

AGCO Corporation **Champaign, IL**
Data Analyst Intern *May 2024 – August 2024*
- Automated manual code generation and data cleansing processing through VBA reducing reporting time by 98%
- Implemented automated code generating processes uniquely mapping over 3500 entries to alphanumeric codes
- Conducted research on product inventory to determine redundant information and refine product offerings

FrostDefense Envirotech **Champaign, IL**
Machine Learning Intern *January 2024 – May 2024*
- Performed data visualization and statistical analysis on temperature data of over 35,000 data points from 1924 to 2023, focusing on frost risk assessment and trend identification through Python
- Implemented machine learning and deep learning algorithms such as Random Forest and LSTM, to forecast temperature patterns and frost occurrence through time series data with 94% accuracy
- Developed an automation process in Python of downloading and aggregating data from multiple CSV files into a single dataset

Chicago Blackhawks **Chicago, IL**
Analytics Intern, Business Strategy and Analytics Group *June 2023 - August 2023*
- Implemented and designed SQL and DBT data models of over 1 million ticketing records to support operation analyses and reporting
- Developed 4 Tableau dashboards for the ticketing department to make data-driven decisions on ticket pricing and sales
- Formulated hypotheses, performed tests, synthesized insights, and effectively delivered recommendations through narratives and presentations to senior leadership

Projects

World Health Organization Life Expectancy Predictor
- Developed classification and regression models on a World Health Organization dataset to predict Life Expectancy, focusing on Logistic Regression and Random Forest in Python and R
- Conducted correlation analysis to identify key variables, achieving a classification accuracy of 94.4%
- Improved model performance by trimming predictors, scaling inputs, and utilizing Random Forest models, resulting 98.3% accuracy

Skills

Programming Languages: Git, Python, R, SAS, SQL, Visual Basic
Software: DBT, Microsoft Excel, Snowflake, Tableau (BI)
Python Libraries: Keras, Matplotlib, NumPy, pandas, scikit-learn, SciPy, seaborn, statsmodels, TensorFlow
R Libraries: dplyr, ggplot2, tidyverse, tsa