

RISHAB TIRUPATHI

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Education

University of Illinois at Urbana-Champaign

Master of Science in Applied Mathematics, Algorithms and Optimization

December 2025

Overall GPA: 3.84/4.00

Graduate Coursework: Statistical Learning, Stochastic Processes, Computational Statistical Optimization, Algorithms, Probability, Advanced Optimization, Graph Theory, Combinatorial Mathematics, 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, Probability, Statistical Modelling, Time Series Analysis, 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 by 97%
- 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 reinforcement learning 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