Raghav Goyal

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EDUCATION

University of Illinois at Urbana-Champaign
Bachelor of Science in Econometrics and Quantitative Economics   December 2024
Bachelor of Science in Statistics

EXPERIENCE

University of Illinois at Urbana-Champaign
Research Assistant   June 2024 – Present
- Examining whether the single-breath count test can be an effective alternative to the six-minute walk test in physical rehabilitation through linear mixed effects and hypothesis testing from a cohort of 43 patients.

TransOrg Analytics
Data Science Intern   October 2023 – January 2024
- Developed a systematic architecture for machine learning model selection, leveraging insights from 8+ diverse use cases.
- Engineered a deep learning algorithm using autoencoders in PyTorch for anomaly detection with credit card transaction fraud.
- Attained a 10% improvement in precision and a 13% increase in ability to identify the top 100 most suspect transactions compared to a baseline isolation forest estimator on a dataset containing 1.75 million samples with high class imbalance.

Futures First
Capital Markets Intern   June 2019 – July 2019
- Investigated the correlation between crude oil prices and foreign exchange using proprietary analysis tools and Excel.
- Assembled forecasts of price trends for a portfolio of 15 commodity futures and options by utilizing a trading simulator.

Simulanis
Business Development Intern   June 2018 – July 2018
- Condensed research on UI/UX in virtual and mixed reality, accelerating their integration in education and training.
- Assessed the company's market position by categorizing competitor products and presented strategies to grow its presence.

SKILLS

Software: Python (pandas, NumPy, SciPy, Matplotlib, Seaborn, statsmodels, scikit-learn), R (tidyverse), TensorFlow, PyTorch, SQL & Relational Database Management Systems, Tableau, Power BI, MS Excel, Git/Version Control, PySpark
Languages: English, French, Hindi

PROJECTS

Predicting Income Levels from Census Data   March 2024 – April 2024
- Performed exploratory data analysis on 48,000 profiles to determine influential socioeconomic factors, leading to key understandings of income disparity.
- Highlighted the broader societal implications of income prediction models by applying 4 distinct classifiers, focusing on their potential use in policy-making and social equity initiatives.

JP Morgan Quantitative Research Virtual Experience on Forage   October 2023
- Generated a 12-month forecast for natural gas prices using time series analysis techniques and tested a prototype for calculating the value of a commodity storage contract.
- Scripted xgboost, random forest, and logistic regression machine learning models to estimate a customer's probability of default for credit risk analysis and optimized features to convert FICO scores into 5 unique buckets.

ESG Risk Factor Investing   September 2023
- Inspected the relationships between expected returns, total risk, and ESG risk of the top 500 securities in the US stock market and tested findings for statistical significance with Python.
- Designed numerous portfolios based on the distribution of ESG risk and constructed a long-short investment strategy yielding an estimated 4% increase in returns above the market, using the capital asset pricing model.

LEADERSHIP

Illinois Data Science Club – Project & Hackathon (Data Dive) Director   January 2024 – Present
- Led a group of 5 project leads to successfully organize and execute a semester-long hackathon, driving engagement through workshops and challenges and fostering a collaborative environment for over 100 active members.
- Mentored a team through a project lifecycle, guiding them to secure a 2nd place finish in the university-wide competition.

CS 105: Intro to Computing (Python) – Course Assistant   January 2024 – May 2024