Dennis Ousmanov

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Education

University of Michigan — Ann Arbor, Michigan
B.S. in Statistics; ***GPA: 3.41/4.00*** — *Aug 2020 – May 2024*
Minor in Computer Science

Relevant coursework: Data Structures and Algorithms, Discrete Mathematics, Computer Science Theory, Statistical Computing, Probability, Theoretical Statistics, Regression, Machine Learning, Deep Learning, Bayesian Data Analysis, Topics in Biostatistics, Practice and Communication in Statistics.

Skills

Languages: C++, Python, R, SQL, MATLAB

Machine Learning Tools: TensorFlow, Keras, PyTorch, scikit-learn, Statsmodels, pymc, h2o, e1071

Data Analysis Tools: NumPy, pandas, Matplotlib, Seaborn, Tidyverse, ggplot2, Tableau
Operating Systems: Windows, Linux

Source Control Tools: Git, Gitlab

Experience

Glenbrook Trading — Detroit, Michigan
Quantitative Researcher — *May 2024 – September 2024*

- Utilized advanced data manipulation techniques in Python, leveraging `pandas` to analyze large financial datasets.
- Applied time series analysis to identify patterns and trends in stock market data, using logistic regression, decision trees, and Naive Bayes classifiers for market trend prediction.
- Sampled probabilities of the market trending upwards using MCMC with the `pymc` library.

Altair Engineering — Troy, Michigan
Training Specialist Data Analytics and AI Intern — *May 2024 – Aug 2024*

- Developed and published the physicsAI for HyperWorks v2024 course, designed to expose engineers to the physicsAI ML workflow. Created hands-on exercises for ML model dataset creation, training, testing, and prediction on CAE models.
- Collected and stored historical result data to enhance ML model training and utilized Altair's HyperStudy for data curation.
- Wrote a Python script to transfer Q&A data from a spreadsheet into dataframes categorized by software, facilitating efficient integration into the LMS.

Michigan Institute of Data and Science — Ann Arbor, Michigan
Teaching Assistant — *Jun 2023 – Jul 2023*

- Facilitated lectures on Data Science topics, including computer vision and exploratory data analysis using Python.
- Created a Jupyter notebook demonstrating the applications of tokenization using Python's `NLTK` library.

Projects

Asthma Diagnosis Classifier

- Applied Gini importance scores from a Random Forest model to identify key predictors from a set of 100+ potential predictors. Utilized `Tidyverse` and `caret` libraries for data cleaning and preprocessing
- Implemented Support Vector Machine (SVM) and K-Nearest Neighbors (KNN) models using R to classify asthma cases from the NHANES dataset. Performed cross-validation to optimize hyperparameters, achieving classification accuracies of 0.848 with SVM and 0.846 with KNN.

Inference on Diabetes Rarity using Bayesian Methods

- Leveraged R and `Tidyverse` to automate data cleaning and preprocessing of Behavioral Risk Factor Surveillance System (BRFSS) data, optimizing workflows and ensuring reproducibility.
- Implemented Bayesian hierarchical models using MCMC algorithms via `rstan` to analyze the relationship between mental health and diabetes. Assessed convergence using trace plots and Gelman-Rubin diagnostics ($\hat{R}$).
- Used posterior samples to construct 95% confidence intervals, enabling comparative analysis of diabetes probabilities between mental health groups.

Dear Hiring Manager,

I am writing to express my interest in the Quantitative Trader role at SCALP Trade. With a completed Bachelor's degree in Statistics, and a minor in Computer Science from the University of Michigan I believe that I have a solid foundation in both programming and mathematical skills to contribute effectively to your team.

My coursework throughout my time at the University of Michigan included advanced studies in machine learning, Bayesian statistics, computer science, probability, and theoretical statistics courses. My solid foundation in Python, R, and machine learning libraries such as TensorFlow and PyTorch, combined with my expertise in mathematical modeling and statistics, equips me with the technical skills necessary for the complex problem-solving challenges at SCALP Trade.

After graduating, I undertook the task of starting a mid-frequency algorithmic trading company called Glenbrook Trading with a small team. Before taking this risk, I had little knowledge working with financial data, specifically stock market data. Rather than letting that discourage me, I thought of how I could use my statistics and computer science background to tackle common trading problems. My ability to dive into an unknown domain demonstrates my risk taking ability and my hard working nature. This experience led me to work with advanced data manipulation techniques using Python and pandas to discover patterns in large financial datasets. I utilized machine learning and statistical models to predict market trend direction, while also fitting regression models, such as a Recurrent Neural Network to forecast future trends while acknowledging past year’s data trends.These skills align closely with the analytical and programming aspect of the position. Similarly, the collaborative nature of my research role at Glenbrook required me to become a more effective communicator of mathematical reasoning to team members with limited technical backgrounds, as well as engage in communication between the development and financial sectors of the company.

Overall, my solid foundation in mathematical statistics, problem-solving, and programming, along with my passion for leveraging data to make better business decisions, make me a strong candidate for this role. I am eager to contribute to the success of SCALP Trade and am especially excited to work with mentors to better my problem-solving and mathematical reasoning skills. This internship offers an invaluable opportunity for personal and professional growth as I prepare for graduate school in 2025.

Thank you for considering my application. I look forward to the opportunity to further discuss how my skills and experience align with the position's goals.

Sincerely,
Dennis Ousmanov