

Neo Lee

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EDUCATION

University of California, Berkeley

GPA: 4.0/4.0

Bachelor of Arts, Applied Mathematics, Computer Science

Graduation: Spring 2026

Cal Alumni Leadership Scholarship

Relevant Coursework: Machine Learning, Deep Learning, Optimization Theory, Time Series Analysis, Stochastic Process, Probability Theory, Linear Algebra, Discrete Mathematics, Graph Theory, Real Analysis, Numerical Analysis, Cryptography, Data Structures and Algorithms, Functional Programming, Object Oriented Programming, Dynamic Programming

TECHNICAL SKILLS

Languages: Cantonese, Mandarin, English, Python, Java, SQL, MATLAB, R, Javascript, HTML, CSS, \LaTeX

Tools: Pytorch, Sklearn, *Boost*, Statsmodels, Pandas, Numpy, Seaborn, Plotly, Matplotlib, MySQL, Selenium, BeautifulSoup, Web3.py, Gcloud SDK, Docker, Git, Bash, Notion

EXPERIENCE

CyphaLab

Hong Kong / Remote

Trading Intern

April 2024 - Present

- Assisted the development of the algorithmic trading division with a proprietary fund of \$500,000.
- Implemented a comprehensive suite of market neutral strategies utilizing machine learning models such as LSTM, ARIMA, GBDT with Pytorch, Statsmodels, and XGBoost, achieving an annual Sharpe ratio of 3.49 and an annual Calmar ratio of 7.2 in forward testing.
- Leveraged optimization methodologies, including mean-variance, Calmar ratio, Kelly criterion, and expected shortfall, to enhance portfolio performance.
- Developed an internal order tracking system with Python accompanied by a dashboard with Plotly to monitor the performance of the trading strategies across multiple exchanges in real time.
- Adopted Gitflow workflow for version control across the team.

UC Berkeley Department of Mathematics

Berkeley, CA

Undergraduate Researcher - Stake-governed Random Turn Games

August 2023 - Present

- Built a finite integer line tug-of-war game simulator with Python, Numpy, and Pandas to solve for Markov perfect equilibria with dynamic programming, and visualized the results with Matplotlib.
- Constructed a computer assisted proof utilizing interval arithmetic for the sufficient and necessary condition for the existence of a Markov perfect equilibrium in infinite integer line tug-of-war games, being that the reward ratio is bounded within a 1×10^{-4} interval from a symmetric game: paper is currently under review.
- Reduced the run-time of the computer-assisted proof by from 3 hours to 20 minutes through the implementation of dynamic programming and vectorization techniques.

Undergraduate Researcher - Mechanistic Interpretability

September 2023 - Present

- Reverse engineered Stockfish's efficiently updatable neural network's learned algorithm using Pytorch, Sklearn, and Seaborn, achieving MSE of 1.8 compared to a simple linear regression model with MSE of 126.
- Applied feature visualization techniques such as activation maximization, gradient ascent, and occlusion sensitivity to interpret the learned algorithm, showing that the neural network has learned to evaluate chess positions based on piece mobility and piece value.
- Applied dimension reduction techniques such as SVD, neuron pruning, and feature projection onto ReLU privileged basis to reverse engineer the embedding layer, showing that each neuron's activation space is 95%+ correlated.
- Aggregated 38GB training dataset with Sqlite and used Git for version control.

UC Berkeley Department of EECS

Berkeley, CA

Academic Tutor - CS61A

August 2023 - December 2023

- Tutored students in Functional Programming, Object Oriented Programming, and Dynamic Programming with Python in lab sessions.
- Held weekly office hours to help students with homework and projects, and tutored other tutors.