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

EXPERIENCE

CyphaLab **Remote**
Portfolio Manager *April 2024 - Present*
- Spearheaded the development and optimization of the proprietary algorithmic trading portfolio for the company's cryptocurrency fund of $500,000.
- Engineered and implemented a comprehensive suite of CTA strategies utilizing machine learning models such as LSTM, ARIMA, GBDT with Pytorch, Statsmodels, and XGBoost for effective reinvestment of corporate capital.
- Leveraged sophisticated optimization methodologies, including mean-variance, Calmar ratio, Kelly criterion, and expected shortfall, to enhance portfolio performance.
- Applied elastic regularization and principal component analysis (PCA) for dimensionality reduction, ensuring model robustness and mitigating overfitting.
- Achieved an annual Sharpe ratio of 3.49 and an annual Calmar ratio of 7.2 since inception.

Data Scientist *Januaray 2024 - April 2024*
- Ensembled CodeBERT and gradient boosting decision trees using Pytorch and XGBoost to classify malicious Ethereum smart contracts, achieving 0.89 F1 score on the test set.
- Built a transaction optimizer with Python to dynamically calculate the optimal gas price for Ethereum transactions and routing them through the optimal MEV relayer, reducing gas fees by 30%.
- Built a data relayer hosted on Google Cloud Virtual Machine to provide on-chain DEX transaction data for online time series forecasting.

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.

HKUST School of Engineering   Remote
Undergraduate Researcher - Machine Learning   *March 2023 - July 2023*
- Scraped and cleaned online data on the US economy and stock market using Python, BeautifulSoup, Selenium and Pandas, and stored mass data with MySQL.
- Analyzed economic indicators such as CPI and interest rate with regression and clustering using Numpy and Scikit-learn.
- Surveyed and summarized academic papers on state-of-the-art machine learning topics such as diffusion models for generative AI.

Kook Surf Inc.   San Diego, CA
Founder   *December 2021 - August 2022*
- Founded an IoT surfboard rentals company using automated rental stations powered by Arduino and NFC.
- Co-developed the mobile app for the company using React Native and Flask.
- Developed and tested the embedded system for the rental stations, ensuring reliability and security of the transactions.
- Successfully sold the company after validating the market demand by generating over $10,000 revenue.

VotingDAO (votingdao.io)   Remote
Co-Founder   *December 2021 - March 2022*
- Founded and led VotingDAO, a decentralized organization that aims to empower the blockchain community through fair and transparent voting mechanisms.
- Organized the Blockchain Person Of The Year 2021 Election on Ethereum, Polygon and BNB Chain, attracting over 15,000 participants and generating significant media attention and social impact.
- Partnered with and endorsed by industry leaders such as BAYC, Animoca Brands, Polygon DAO, Consensys, etc., establishing strong relationships and collaborations within the blockchain ecosystem.