CAROLYN (CHIH-HSUAN) KAO

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PROFESSIONAL SUMMARY

Driven to learn quickly, advance programming proficiency and training in Computational Mathematics. Solid background in Data Science and Quantitative Research settings supporting team needs. Motivated team player focused on boosting efficiency and performance with analytical and data-oriented approaches.

Advanced proficiency in Python, Java, C#, C++, R, MATLAB, Julia, UNIX and Linux Shell
Intermediate skills in TensorFlow, PyTorch, SQL, REST API, FastAPI, and Excel VBA
Earned Chartered Financial Analyst (CFA) Level I

EDUCATION   chkao831.github.io/COURSEWORK/

STANFORD UNIVERSITY   **Stanford, CA**
M.S. Computational and Mathematical Engineering; CGPA 3.93/4.3   Sep 2019 – Jun 2021
- Coursework in Deep Learning (DL), Natural Language Processing (NLP), Reinforcement Learning, Time Series Analysis, Algorithmic Trading, Software Development, Numerical Analysis, Optimization, Stochastic Control Process, Distributed Computing, Mathematical Finance, Differential Equations.

UNIVERSITY OF CALIFORNIA SAN DIEGO   **La Jolla, CA**
Graduated magna cum laude with CGPA 3.88; Awarded Honors with Distinction in Management Science;
Member of Phi Beta Kappa; Participated in the National Name Exchange in 2018-19
B.S. Applied Mathematics; GPA 3.91/4.0   *Sep 2015 – Jun 2019*
- Coursework in NLP, Java OOP, Data Structures, Applied Computing, Probability Theory, Mathematical Statistics, Real Analysis, Optimization, Multivariable and Vector Calculus, Actuarial Mathematics.

B.S. Management Science (Quantitative Economics); GPA 3.87/4.0   *Sep 2015 – Jun 2019*
- Coursework in Operations Research, Micro/Macroeconomics, Corporate Finance, Financial Markets, Industrial Organization, Accounting, Econometrics, Decisions Under Uncertainty, Financial Mathematics.

WORK EXPERIENCE   LinkedIn@CHKAO831

London Stock Exchange Group (LSEG)   **London, United Kingdom**
Quantitative Analyst, Analytics & AI   *May 2023 – present*
- Designed and maintained financial APIs in C#/C++ within the Quantitative Pricing Service, incorporating pricing models and algorithms for diverse financial assets with real-time and historical market data.
- Implemented customized analytical solutions in Python, integrating mathematical modeling, machine learning, and statistical frameworks to address challenges in fixed income and volatility surfaces.
- Rewarded a shared 2nd Place in the LSEG Post Trade Kaggle (advanced tier) Machine Learning Competition, demonstrating proficiency in advanced analytics and problem-solving within the financial domain.

Taiwan Semiconductor Manufacturing Company Limited (TSMC)   **Hsinchu, Taiwan**
ML Data Scientist, R&D Information Technology   *Aug 2021 – Sep 2022*
ML Summer Intern, R&D Pathfinding   *Jun 2020 – Sep 2020*
- Individually initiated, developed and optimized the Multi-model Search Kernel for the in-house ML platform, leading to a computational 10X speedup and expansion of business application across R&D.
- Applied gradient-based optimization techniques and quantitative models to solve high-dimensional calibration problems, contributing to state-of-the-art results for selected systems in the 2nm development.
- Rewarded Divisional Quarterly Star of TSMC AAID (AI Application & Integration) for the 4th Quarter of 2021.
- Rewarded 2nd and 3rd Place respectively in TSMC R&D Intern Competition and Machine Learning Competition, showcasing proficiency and success in both mathematical research and artificial intelligence endeavors.

RESEARCH PROJECTS   chkao831.github.io/PORTFOLIO/

Performance Portable Ice-Sheet Modeling   *Mar 2021 – Jun 2021* at **Stanford, CA**
- *Techniques: High Performance Computing (HPC), Numerical Methods, Optimization*
  Co-authored an IJHPCA journal (Vol. 37, Issue 5, pp. 600-625, DOI: 10.1177/10943420231183688), highlighting my role in crafting an automated parameter tuning framework for the MPAS-Albany Land Ice (MALI) Model on HPC.

Predict S&P 500 Movements using RCNN   *Dec 2020 – Mar 2021* at **Stanford, CA**
- *Techniques: Natural Language Processing (NLP), PyTorch, Recurrent Convolutional Neural Network*
  Constructed NN models with various attention mechanisms given a hybrid inputs of news title and DJIA market indices to predict the intraday directional movements in financial time series.

FX Algorithmic Trading with a Distributed Quote Book   *Mar 2020 – Jun 2020* at **Stanford, CA**
- *Techniques: scikit-learn, Algorithmic Trading, Big Financial Data, Cloud Computing*
  Consolidated ML model outputs into actionable trading signals to identify latency arbitrage opportunities and estimate potential profit due to time disparity among quotes provided by different liquidity providers.