Chuan Yin

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SUMMARY

- Physics PhD with over 6 years of experience in analytics, Python, statistics, big data, visualization, and optimization
- Proven research scientist skilled in leading dynamic teams on quantitative interdisciplinary projects, effectively communicating complex concepts to diverse audiences, and managing project complexity to drive results
- Eager to leverage analytical skills and collaborative experience in data-driven roles across finance and beyond

EDUCATION

Ph.D. **University of Chicago** | Chicago, IL | Department of Physics 2018 – Expected March 2025

- Thesis: A Loadlock Platform for Next-Generation Quantum Optics Experiments. Publications: No. 1, 2
- Coursework: Machine Learning, Option Pricing, Stochastic Calculus, Numerical Methods, Theory of Algorithms, Scientific Visualization, High-Performance Computing in Finance, Electronics, Modern Applied Optimization

B.A. **University of Chicago** | Chicago, IL | Department of Physics 2014 – 2018

PROFESSIONAL EXPERIENCE

University of Chicago, Department of Physics | *Graduate Researcher, Kimlab* September 2024 – Present

- Develop a multi-objective optimization framework for simulating muon cooling in the next-generation International Muon Collider, achieving a Pareto front for key tradeoff parameters such as transverse and longitudinal emittance
- Utilize G4beamline for particle simulations on cluster computing, Xopt for implementing a genetic algorithm (NSGA-II), and openPMD-beamphysics for advanced statistical analysis and visualization
- Build ML-based surrogate models to approximate complex simulations, reducing computational costs

Navy Federal Credit Union, Lending Analytics | *Data Scientist* June 2023 – September 2023

- Designed and optimized an innovative credit risk modeling tool in Python, PySpark, and SQL, segmenting credit risk for 3000+ attributes across 3 million members, enhancing model development for a 100-person team
- Communicated risk modeling concepts and data insights to a diverse audience of 10+ roles, leveraging compelling data visualizations in Tableau and Python
- Collaborated with Data & Strategy teams to implement customized attributes on Databricks

University of Chicago, Department of Physics | *Graduate Researcher, Simonlab* September 2019 – August 2024

- Processed and visualized 10000+ atom fluorescence images, extracting critical statistical metrics and insights, while employing statistical modeling techniques to evaluate system performance and enhance experimental outcomes
- Maintained Python front panel software for quantum optics experiments, integrating control, imaging, and measurement modules across 50+ lab devices used by 5+ scientists
- Spearheaded the design, simulation, and assembly of a novel ultra-high vacuum loadlock apparatus from scratch, reducing R&D turnaround time for a photonics experiment from 6 months to 1 week

TEACHING EXPERIENCE

University of Chicago, Department of Physics | *Graduate Teaching Assistant* September 2019 – June 2024

- Instructed 30+ students in Computational Physics and Electronics, leading twice-weekly lab sessions and guiding 10h projects on neural networks, Monte Carlo, optimization, and circuit design using FORTRAN, Python, and C++
- Conducted an Arduino workshop for 30 attendees at Conference for Undergraduate Women in Physics, mentored 100+ students in design principles, debugging skills, and statistical techniques in physics labs

FINANCAL EXPERIENCE

Market-Neutral Portfolio Construction | *Independent Project* October 2024

- Developed and optimized a market-neutral portfolio using advanced statistical and machine-learning models to forecast returns, targeting high Sharpe ratios and low drawdown
- Implemented rebalancing strategies, incorporating security data, custom features, and risk factors
- Delivered a comprehensive report and Python code for portfolio construction and performance analysis

IMC Prosperity Trading Challenge | *Team Captain* April 2024

- Led a top 1.2% team in the 2024 IMC Prosperity trading challenge, developing algorithms for market-making, arbitrage, and option pricing while coordinating real-time trading decisions and team collaboration
- Utilized Python packages for data analysis, visualization, back-testing, and deployment

TECHNICAL SKILLS

Programming: Python, SQL, PySpark, Databricks, Git, Jupyter, C++, Linux, Cython, CUDA, OpenMP
Quantitative Analysis: pandas, SciPy, scikit-learn, TensorFlow **Visualization**: Tableau, matplotlib, seaborn, Plotly
Machine Learning: Linear Regression, Logistic Regression, Support Vector Machine, Decision Tree, Random Forest, A/B Testing, Clustering, XGBoost, Neural Network, Natural Language Processing, Time Series Analysis
Engineering: CAD, FEA, UHV, CNC machining, PCB design, waterjet, photonics, opto-electronics
Professional Certificates: IBM Data Science (Cert.), Machine Learning (Cert.), Tensorflow Developer (Cert.)