Charles Muehlberger

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EDUCATION

Princeton University| B.S.E. in Electrical and Computer Engineering **2028**
Minors in **Pure Math** and **Statistics** and **Machine Learning**

- Relevant Coursework: Probability and Stochastic Systems, Distributed Systems, C-Programming**,** Honors Linear Algebra, Fundamentals of Statistics, Combinatorics Math, Algorithms and Data Structures
- President of Princeton Quantitative Traders, Officer of Princeton Poker club, Member of Scholars of Finance

Reagan HS **2024**

- SAT: 1580; Math: 800
- President of Debate, President of Physics club, Vice President of Computer Science Club, Officer Robotics

PROFESSIONAL EXPERIENCE

AI Research Analyst (Top Secret Security Clearance) | ORISE – DOD/Navy | May 2025 – August 2025

- Developed a coupled thermal–mechanical simulation framework for elastic heat expansion in brain tissue under RF exposure, combining FDTD modeling with finite-element analysis
- Engineered and trained a custom 3D NN on over 1 billion data points, enabling inverse modeling of RF-based injury mechanisms in the brain
- Optimized high-performance image to numerical optimization algorithms through adaptive learning rates
- Designed and deployed a 4-node personalized HPC cluster, improving large-scale FDTD simulation

Semiconductor Nanolithography Research | Princeton University | September 2025 – Present

- Utilized quantum cascade lasers (wavelength range ~4–12 μm) to prototype lithography methods achieving sub-50 nm resolution in semiconductor patterning.
- Collaborated with a 5-person interdisciplinary team to evaluate scalability for industry applications, presenting findings to faculty and external partners.

Quantitative Research Intern | QuantCap LLC | December 2024 – February 2025

- Constructing machine learning statistical arbitrage models using regressions, random forests / other tree-based models, and Neural Networks (e.g. DNNs, RNNs, CNNs) to come up with 2.95x returns over a year.
- Using SQL, Python (Tensor Flow, Pandas, Pytorch) and C++ to scrape and clean data to manipulate it for use in Machine Learning models
- Back tested strategies on 10M+ data points and 6 separate datasets, with a Sharpe ratio: ~3 and Sortino ratio: ~2.

Software Engineer Grew to 200k valuation (Startup – 5 person) | EVAL | February 2025 – Present

- Full stack web development using React, Supabase, and Firebase – login, profile creation, and rankings
- Engineered ranking algorithm for e-sports players, connecting 50+ leagues, and 10k+ players, using OCR and league data.

Financial Modelling Intern | Notre Dame | June 2024 - August 2024

- Collaborated alongside colleagues to build a quantitative financial model for bitcoin with a win rate of 72%
- Engineered price forecasting using Adam optimization, Monte Carlo simulations, and real time market data.

TECHNICAL SKILLS

Programming:

- CUDA, High-Performance Computing, C, C++, Java, SQL, Python (Pandas, NumPy, SciPy, Scikit-learn), Bash, html, css, React, React Native, Java Script, nibabel, RNNs, CNNs, 3D modeling, Medical Programming

Data Analysis:

- TensorFlow, Convex Optimization, Time-series modeling, Bayesian inference, Monte Carlo Simulations, NLP, Neural Networks (LSTM & GAN), Imaging Registration, REMCOM