# AUSTIN LAU

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## EDUCATION

**Princeton University | Princeton, NJ** **Class of 2023**
**B.S.E. Operations Research and Financial Engineering** **GPA 3.93**
**Certificates:** Computer Science, Statistics and Machine Learning, Decision Science
**Relevant Coursework:** Algorithms and Data Structures, Reinforcement Learning, Big Data, High-Frequency Markets, Financial Mathematics, Probability and Stochastic Systems, Data Science, Computational Mathematics

## SKILLS

**Programming Languages & Software:** Python, C++, C#, Java, Q/kdb+, R, JS/HTML/CSS, SQL, OpenGL, Matlab, AMPL
**Technical:** Algorithm Design, Mathematical Modeling, Web Dev, Simulation, Linear Programming, Computer Graphics
**Design:** Adobe Creative Suite (Illustrator, InDesign, Photoshop, XD), Final Cut Pro, Apple Motion
**Foreign Language:** Japanese (Professional Working Proficiency)
**Achievements:** Tau Beta Pi Honor Society, Eagle Scout, 2x Honolulu Marathon Finisher

## WORK EXPERIENCE

### Quantitative Trading Strategies Intern
*Morgan Stanley | New York, NY* June 2022 - Present

- Created scenario analysis tool for credit derivatives traders to view real-time risk sensitivity of their portfolio under a range of hypothetical market shocks (using Python and Dash)
- Added an auxiliary strategy profiler to examine the risk impacts of taking on new positions
- Implemented second-order Greeks calculations for CDX options using numeric methods
- Laying foundation for options trade optimizer to find trades that minimize portfolio risk under realistic constraints
- Developing CDX index arbitrage strategy to exploit differences between constituent quotes and index NAV

### Software Engineering Intern
*Balyasny Asset Management | New York, NY (Remote)* June 2021 - August 2021

- Built backend architecture (using SQL and C#) and reactive web app for internal portfolio research tool
- Created API to collect and synthesize analyst stock rankings and send reports to portfolio managers
- Rewrote equity research tools to use modular SOA and optimized their runtime efficiency
- Made Python-based Excel integrations to replace inefficient macros for PnL analysis

### Software Engineering Intern
*HeyGears Inc. | Irvine, CA (Remote)* September 2020 - February 2021

- Wrote a K-D tree-based ray tracing algorithm to calculate the local thickness of regions of 3D meshes
- Developed application to generate optimized polygonal meshes from raw volumetric model data and render output in an interactive window, using greedy algorithm in C++, OpenGL, and GLSL
- Researched dental mesh segmentation techniques using feature line detection and classification
- Designed a compact data serialization format for a novel volumetric representation of 3D scans and models

### Engineering Intern
*Voya Investment Management | New York, NY (Remote)* June 2020 - August 2020

- Created an automated workflow that saved a Voya sales team an estimated 2-3 hours per week
- Wrote SQL scripts to automate the compilation of diagnostic reports from employee databases

## INDEPENDENT RESEARCH

### "Stochastic Modeling of Respiratory Disease Spread on College Campuses"; Adviser: Mete Soner
*Princeton University Project X Fund | Princeton, NJ (Remote)* May 2020 - August 2020

- Formulated model for stochastic disease transmissions between discrete agents in a social network over time
- Built a 28,000-agent model of a student body based on a Cornell University demographic dataset
- Simulated the effects of varying environmental and intervention variables on viral outbreak dynamics