Alex Zhang

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Education

University of Texas at Austin, TX, USA **August 2024 - December 2024**

- Bachelor of Science, Mathematics (Exchange)
- Coursework: Software Engineering, Object Oriented Programming, Mathematical Statistics, Advanced Calculus for Applications II

Monash University, Melbourne, Australia **February 2023 - June 2026**

- Bachelor of Computer Science High Distinction
- Specialisation: Data Science, Minors: Mathematics & Japanese
- Coursework: Algorithms and data structures, Databases, Discrete maths for computer science, Continuous maths for computer science, Computational modelling and simulation, Linear algebra with applications

Experience/Employment

Technical Events Lead - Wired Monash **March 2024 - Current**

- Managed team of 4+ technical events officers responsible for content creation and delivery
- Conducted weekly workshops to groups of 50+ people on IT related topics (git, data science, mathematics, ML).

Sports Coach - Yarra Valley Grammar/Tennis Works **March 2023 - Current**

- Designed and executed 50+ hours of coaching per season for 20+ football and tennis athlete
- Fostered teamwork, sportsmanship, and drived improvements in both individual skill and team cohesion.

Mathematics Tutor - Crimson Education **February 2024 - November 2024**

- Designed specifically tailored lesson plans (in algebra, calculus, trigonometry and probability & statistics) and problem solving strategies to enhance comprehension and confidence in mathematics achieving a 5/5 star rating.

Projects

Ray Tracer Graphic Renderer

- Miniature ray tracer in C++ using under 300 lines of code, incorporating recursive ray tracing and Monte Carlo integration to simulate realistic lighting.
- Rendered photorealistic images at a 200×100 resolution with 100 samples per pixel, achieving smooth anti-aliasing and high visual fidelity.
- Engineered efficient algorithms to process 2+ million rays/image, balancing computational performance with detailed lighting, shadows, and material effects.

ETF Analysis

- Performed extensive data cleaning, transformation, and univariate/bivariate/multivariate analyses using Python (Pandas, Matplotlib, and Statsmodels) to uncover trends, seasonality, and anomalies in 6700+ different ETFs and 18+ million rows of data.
- Built and validated time series forecasting models (ARIMA), achieving prediction accuracies within a 5% error margin over a 3 year out-of-sample period
- Applied Markorwitz's Modern Portfolio Theory to construct an efficient frontier and optimize asset allocation, improving risk adjusted returns by over 15%

Premier League Web Scraper

- Extracted and engineered detailed match data (goals, passes, shots, possession, xG) for PL teams across multiple seasons to support data analysis and predictive modelling.
- Utilised BeautifulSoup and Selenium for scraping dynamic content, data wrangling in Pandas

Technical Skills

Programming Languages: Python, C++, Java, JavaScript, HTML, CSS, SQL
Frameworks/Libraries: Pandas, Numpy, Selenium, PyTorch, React, Excel, Tailwind CSS, Power BI,
Languages: Chinese (Native), English (Native), Japanese (Basic)
Hobbies: Football (soccer), Tennis, Fitness, Traveling