ALTON BANUSHI

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Education

Northeastern University Boston, MA

Candidate for B.Sc. in Computer Science and Mathematics *Sep 2021 – May 2025*

Coursework: Object Oriented Design, Algorithms & Data, Foundations of Data Science, Computer Graphics, Database Design, Linear Algebra, Probability & Statistics, Calculus 3, Statistic & Stochastic Processes, Group Theory

GPA: 3.99/4.0

Work Experience

Quantitative Risk Developer Co-op New York, NY

Nomura *August 2024 – December 2024*

- Enhanced internal revenue prediction by optimizing ARMAX statistical model parameters, incorporating time-series anomaly detection, and introducing 3 new business lines, ultimately reducing R^2 error by 30%.
- Collaborated with stress-testing analysts to define and automate a back-testing methodology using Python and SQL, reducing manual data manipulation by $3x$ and improving model accuracy.
- Researched and deployed machine learning processes to predict domestic and foreign stock indices, driving internal risk predictive models to achieve R^2 error of ≥ 0.85

Software Engineering Intern New York, NY

TD Securities *June 2024 – August 2024*

- Designed and implemented an optimized RESTful API using Spring Boot, leveraging query optimization and caching to improve response efficiency by 40%.
- Engineered a dynamic React interface, utilizing Redux for state management to centralize and automate internal deal management, eliminating manual processes and reducing waiting periods by $4x$.
- Automated API testing using JUnit and Mockito, integrating with Jenkins CI pipelines to increase code coverage to 90% and reduce manual testing efforts by $2x$.

Quantitative Developer Co-op Chicago, IL

UBS *December 2022 – August 2023*

- Engineered a custom fixed-income web tool in collaboration with portfolio managers, leveraging React, TypeScript, and D3.js to visualize 300+ months of market data, enhancing analytical capabilities.
- Launched a portfolio optimization tool utilizing Mixed Integer Programming and internal model research, increasing data points analyzed by 75% and enabling more precise, data-driven investment decisions.
- Developed and maintained a scalable back-end system using Python and SQL to automate the collection and processing of fixed-income market data, reducing manual analysis time by $2x$ and enhancing portfolio management efficiency.

Teaching Assistant Boston, MA

Khoury College of Computer Sciences *August 2022 – May 2024*

- Instructed 40+ students in a weekly lab, explored lecture topics on algorithms and data structures more intensively, addressed student questions one-on-one
- Provided personalized feedback to students on over 30 assignments weekly, analyzing and evaluating more than 15,000 lines of code to identify areas for improvement
- Conducted weekly office hours, guiding 8+ students an hour on homework, debugging 10,000+ lines of code

Projects

Reflective Curve Visualizer | C++, OpenGL, GLM

- Developed a C++ graphics application using OpenGL and GLM to visualize mathematical functions and their reflective properties, implementing custom shader programs and ray tracing for realistic rendering.
- Enabled multi-function management (up to 10 functions) with real-time wireframe mesh visualization, normal vector display, and dynamic reflection inversion, optimized using OpenGL performance techniques.

Technical Skills

Languages: Java, TypeScript / JavaScript, Python, C++, C#, Swift, MATLAB, R

Technologies: React, Next.js, MySQL, Spring Boot, Express, Prisma, Tailwind, Docker, Datadog, SwiftUI