

# ANTHONY ZHANG

Lynnfield, MA | (978) 882-1508 | [anthony.zhang@duke.edu](mailto:anthony.zhang@duke.edu) | [linkedin.com/anthonyjzhang1](https://www.linkedin.com/in/anthonyjzhang1) | [github.com/anthonyjzhang](https://github.com/anthonyjzhang) | [anthonyzhang.dev](https://anthonyzhang.dev)

## EDUCATION

### Duke University, Pratt School of Engineering

Durham, NC

BSE Triple Major in Computer Science, Mechanical Engineering, and Mathematics | Aerospace Engineering Certificate May 2025

GPA: 3.81 / 4.00 | ACT: 35/36 | SAT Math II: 800/800 | Honors: Dean's List, Lynnfield High School Valedictorian

Relevant Coursework: Computer Networks, Computer Systems, Data Structures & Algorithms, Data Analysis & Decision Science

Activities: Duke Men's Basketball Creative Video Intern, Duke Quantitative Finance, Duke Asian Students Association, IM Basketball

## WORK EXPERIENCE

### Fidelity Investments – Global Financial Services Firm with \$4.5 Trillion+ AUM

Boston, MA

Full Stack Software Engineering Intern

Jun 2023 - Present

- Safeguarded Fidelity Institutional's \$50 billion portfolio by evolving internal application to manage collateral, market, credit risk
- Created full stack 'Data Vault' micro-app: indexed 10K+ distinct data points across 5 risk groups to catalog key fields, formulas, and metadata with Angular, OracleDB, Amazon Aurora PostgreSQL, Java, Maven, SpringBoot; application used by 500+ analysts
- Leveraged Agile, Scrum Boards, & Jenkins automation software to manage project workflow, collaboration, and CI/CD pipeline

### Cell Signaling Technology – BioTech Firm developing antibodies (\$200M+ Annual Revenue)

Danvers, MA

Information Technology Intern | [github.com/anthonyjzhang/CloudParameters](https://github.com/anthonyjzhang/CloudParameters)

May 2022 – Aug 2022

- Identified bottlenecks in digital infrastructure; leveraged AWS to streamline production development pipeline for 140 employees
- Developed firmwide cloud computing solution with capabilities to store over 100 terabytes, improving database capacity by ~35%
- Implemented REST API function calls via AWS Java SDK to retrieve, filter, and store over 5000 key administrative parameters
- Extended key-value pair storage solution using Maven and the Spring Framework to query company Amazon DynamoDB tables

### Four Alpha – Sports Betting Arbitrage Startup | [fouralpha.bet](https://fouralpha.bet)

Durham, NC

Co-founder / CEO | [github.com/anthonyjzhang/FourAlpha](https://github.com/anthonyjzhang/FourAlpha)

Dec 2022 – Present

- Founded & led 15 person team; leveraging data-driven strategies to execute risk-free bets that yield 5% guaranteed returns on avg.
- Aggregated historical, pre-game, & live betting odds from 100,000+ events and 12 bookmakers to capture arbitrage opportunities
- Engineered middle-tier with Python and TheOddsAPI to detect arbitrage opportunities across 60+ international sporting markets
- Integrated Firebase to automate storage & display of bets; coded frontend with React/Tailwind CSS; designed UI/UX with Figma
- Raised \$10K in seed capital, advancing internal capabilities and funding long-term term vision of monetizing B2C SaaS platform

## PROJECTS & EXTRACURRICULARS

### McKinsey Digital Hackathon – Selected to code for Central Park Conservatory (in July 2023)

New York, NY

### FaceSense - Facial Recognition Machine Learning (ML) Application | [github.com/anthonyjzhang/FaceSense](https://github.com/anthonyjzhang/FaceSense)

Durham, NC

- Implemented reliable predictive modeling algorithm to classify over 60 subjects as either 'Unknown', 'Not a Face', or Subject X
- Achieved 92% accuracy in facial recognition between 600+ distinct greyscale images while maintaining an 85% fraction of variance
- Reduced dimensionality of 112x92 images from 10,000 to 150 principal components with Principal Component Analysis (PCA)
- Leveraged ML & data analysis algorithms with Python Scikit-learn: Binary Classification, K-Nearest Neighbor, Random Forest, etc.

### Reliable Transport – Custom Network Protocol Over UDP | [github.com/anthonyjzhang/ReliableTransport](https://github.com/anthonyjzhang/ReliableTransport)

Durham, NC

- Developed a custom transport UDP protocol in C that forwards real-time packet-level traffic from sender through a simulated link
- Incorporated TCP Reno-like congestion control with additive increase & multiplicative decrease (AIMD), adaptive retransmission timeout (RTO); maximized bandwidth, yielding ~20,000 kB/s transfers with 95% fairness (measured by Jain's fairness index)
- Designed sliding window protocol, ensured in-order transmission, implemented checksum functionality, and handled packet loss

### Duke Applied Machine Learning Group – Develop innovative solutions for real-world clients

New York, NY

- Advised FinTech startup 'Marco Financial' through strategic cloud migration: transferring on-prem ML models to AWS SageMaker
- Utilized cloud technologies (Lambda, S3, API Gateway) to effectively align IT infrastructure with future scalability requirements
- Streamlined processing of \$18M worth of invoices by conceptualizing innovative pipeline design to enhance document recognition

### Duke AERO – Student-run high power rocketry program

Durham, NC

- Monitored telemetry via TeleMega & RRC3 altimeters; design analysis with Open Rocket, SolidWorks FEA, Ansys Fluent software

## SKILLS & CERTIFICATIONS

Languages & Frameworks: Java, Python (Pandas, Scikit-learn, Jupyter), C, JavaScript, TypeScript, Angular, React, Node.js, Spring, SQL

Tools & Software: AWS, Git, Agile, Scrum, Maven, REST, Databases (Firebase, DynamoDB, Aurora), Figma, Wireshark, Jira, MATLAB

Certifications: AWS Certified Solutions Architect Associate, AWS Certified Cloud Practitioner Foundational, Bloomberg Market Concepts

Interests: Videography, NYT Mini-crosswords, Violin, Thrifting streetwear, Stand-up comedy, Poker, Tenting for Duke vs. UNC, Celtics