ANTHONY ZHANG

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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

WORK EXPERIENCE

Fidelity Investments – Global Financial Services Firm ($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 'Data Vault' micro-app (to be used by 500+ analysts) that catalogs over 10K distinct fields, formulas, & metadata across 4+ risk groups with Angular, Java, Maven, Spring, & OracleDB; presented final deliverable to Head of Market & Collateral Risk
- Leveraged Agile methodologies, Scrum Boards, & Jenkins automation software to manage project workflow and CI/CD pipeline

Cell Signaling Technology – Largest Antibody Supplier ($200M+ Revenue) **Danvers, MA**
Information Technology Intern | *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 RESTful API function calls via AWS SDK to optimize retrieving, filtering, and storing antibody shipping properties
- Deployed application to store 5000+ key-value parameters using Maven and Spring to query company Amazon DynamoDB tables

Four Alpha – Sports Betting Arbitrage Startup | *fouralpha.bet* **Durham, NC**
Co-founder / CEO | *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 betting data; programmed frontend with React, designed UI/UX with Figma
- Raised $10K in capital by creating investor deck and facilitating outreach, funding long-term vision of monetizing B2C SaaS model

PROJECTS & EXTRACURRICULARS

McKinsey Digital Hackathon 2023 – Sustainable & Inclusive Growth | *mckinsey-hackathon.vercel.app* **New York, NY**
- Developed gamified digital experience (in 24 hours) for Central Park Conservancy (CPC); utilized React and Vercel to deploy MVP
- Integrated ML recommendation system using Scikit-learn cosine similarity to suggest user-specific actions, driving app stickiness
- Pitched rollout strategy to increase donation/event revenue streams, drive CPC brand awareness, & enhance visitor engagement

FaceSense - Facial Recognition Machine Learning Application | *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 UDP Network Protocol | *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 – Innovate 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

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