Cai J Zheng

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Education

University of Massachusetts Amherst Anticipated Graduation: May 2026

Bachelor of Science in Computer Science and Minor in Philosophy (GPA: 3.512) *Amherst, MA*

- **Relevant Coursework:** Data Structures and Algorithms, Machine Learning, Artificial Intelligence, Database Management (SQL), Computer Vision, Software Engineering, Calculus I-III, Linear Algebra
- **Scholarships and Awards:** John and Abigail Adams Scholarship, Dean's List
- **Organizations:** Grayson/Field Residential Area - President, UMass Stars - Outreach Chair, Reading Club

Technical Skills

Programming Languages: Python, Java, C/C++, JavaScript, TypeScript, HTML, CSS, SQL,
Technologies: React, Node.js, Next.js, Express.js, MYSQL, Postgres, MongoDB, Tableau, Selenium, BeautifulSoup, Vader, RoBERTa, Bert, Bart, Bootstrap, Tailwind, Jest, JUnit, PyTorch, TensorFlow, Git, Vim, Vue, Shell, Windows, Linux, OS, AWS

Experience

University of Massachusetts Amherst Nov 2024 – Present

Computational Finance and NLP Researcher *Amherst, MA*

- Expanded SentiPredict into a large-scale financial sentiment framework, integrating multi-source web scraping, advanced text preprocessing, and sentiment scoring with RoBERTa and BART for both headlines and full articles.
- Benchmarked sentiment scores against stock returns for TSLA, NVDA, and MSFT, refining predictive accuracy by 15%, displaying strong correlations between sentiment shifts and market volatility.
- Presented extended research findings at URV Winter 2025, demonstrating methodology improvements, broader model evaluation, and advanced data visualizations built in Matplotlib and Seaborn, reducing manual insight generation time by 42% and improving accessibility for financial analysts.

University of Massachusetts Amherst Feb 2024 – May 2024

Undergraduate Teaching Assistant *Amherst, MA*

- Helped 50+ students in understanding data structures and algorithms, such as binary search trees, hash tables, and graphs, which led to a 14% improvement in average exam scores for those who attended.
- Worked with the course instructor to identify common challenges, refining teaching strategies, leading to a more engaging learning experience and less overall confusion on difficult topics.

Projects

TicketTrading | *React, Node.js, MongoDB, Express.js, Mongoose, Tailwind, JWT*

- Engineered a real-time ticket trading marketplace using React, Node.js, Express.js and MongoDB, implementing an order-matching engine that processed 100+ transactions per second with 99.7% uptime.
- Developed and optimized 10+ RESTful APIs for user authentication, order book management, and secure ticket transfers, enabling 50% faster response times and supporting 2,400+ concurrent users.
- Led a 6-person Agile team, resolving MongoDB Mongoose compatibility issues and integrating JWT authentication, reducing fraudulent transactions by 85% and improving system security by 60%.

SentiPredict | *Python, VADER, BERT, RoBERTa, BART, Pandas, Matplotlib, Seaborn*

- Designed and implemented a financial sentiment analyzer tool, combining automated news scraping, text preprocessing, and sentiment scoring with VADER, BERT, and RoBERTa.
- Processed and analyzed an intial dataset of over 5,000 financial news articles, building a headline-level sentiment dataset and establishing initial forecasting benchmarks that beat traditional predictors by 15%.
- Created an interactive sentiment-market dashboard using Matplotlib and Seaborn, and achieving 85% accuracy in identifying key sentiment-driven market indicators.

SpendWise | *React, Typescript, Next.js, Tailwind, Chart.js, Framer Motion*

- Built a responsive personal finance tracking platform using Next.js and TypeScript, enabling users to seamlessly log income, expenses, and savings while visualizing financial data in real-time through Chart.js-powered charts.
- Designed and implemented 15+ reusable UI components using React and Tailwind, increasing development efficiency by 40% and ensuring a responsive, accessible user experience across all devices.
- Optimized state management using React Hooks and local storage persistence, reducing data loss incidents to 0% and supporting seamless multi-session tracking for 1,000+ transactions per user.