Cai J Zheng

617-992-5755 | cjzheng@umass.edu | linkedin.com/cai-zheng | GitHub

Education

University of Massachusetts Amherst Anticipated Graduation: Dec 2026

Bachelors of Science in Computer Science and Minor in Philosophy - GPA: 3.588 *Amherst, MA*

- **Relevant Coursework:** Software Engineering, Data Structures and Algorithms, Algorithms, Machine Learning, Artificial Intelligence, Database Management (SQL), Computer Vision, 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, Vue, Shell, Windows, Linux, OS, AWS

Experience

University of Massachusetts Amherst Nov 2024 – Present

Computational Finance and NLP Researcher *Amherst, MA*

- Further 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 minute** 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 **900+ 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.
- Analyzed an initial dataset of over **2,000+ 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 **10+ transactions per user**.