Matthew Tseng

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Education

Simon Fraser University Burnaby, BC

Bachelor of Science, Computer Science *Expected Grad: 2026*

- **Relevant Coursework**: Data Structures and Algorithms, Database Systems, Computational Data Science, Software Engineering, Object Oriented Design in Java, Multimedia Systems Design

Projects

AI Trading Simulation | *Python, Pandas, NumPy, Scikit-learn, Matplotlib*

- Developing a trading simulation that predicts stock price movements using **machine learning models** (SVM, Random Forest, Logistic Regression), processing 500+ daily data points.
- Built a feature pipeline with technical indicators and lagged returns, implementing **forward-fill preprocessing** to handle NA values.

Gait Analysis System | *Python, Pandas, SciPy, Matplotlib, Seaborn*

- Developed a Python-based pipeline to process 100,000+ accelerometer data points, using **Pandas and SciPy** for gait analysis.
- Implemented **Butterworth** low and high-pass filters to clean noisy sensor data for accurate step detection.
- Enhanced signal processing performance by leveraging **SciPy's** optimized numerical routines.
- Designed plot visualizations with **Matplotlib and Seaborn** that revealed undetected asymmetry patterns.

ChildHelp Inventory Management | *Java, Spring Boot, HTML, CSS, JavaScript, PostgreSQL*

- Worked in a 5-person **Agile** team to build a **Spring Boo**t donation inventory system for a nonprofit organization.
- Implemented secure user login, session handling, and CRUD operations on a PostgreSQL-backed inventory system.
- Developed a responsive, user-friendly frontend with HTML/CSS and JavaScript.

Sports Forum Website | *Java, Spring Boot, React.js, JUnit, PostgreSQL*

- Built a full-stack sports discussion platform with **Spring Boot and React.js**, supporting user auth and live threads.
- Configured **PostgreSQL** database schema and optimized indexing to support efficient queries on large datasets.
- Implemented unit testing with **JUnit** to ensure backend stability and authentication reliability.

Trading Interface | *Python, Pandas, Tkinter, IBKR API*

- Built a responsive GUI using Tkinter and Python that processes market data points for real-time visualization and trade execution, using IB-insync and yfinance APIs.
- Reduced market data latency through optimized event-driven callbacks, ensuring reliable UI updates.
- Implemented non-blocking IBKR API calls using asyncio and ibinsync to handle concurrent market data streams.

Technical Skills

Languages: Java, Python, JavaScript, SQL, R, HTML/CSS, C, C++

Frameworks/Tools: Spring Boot, React, Pandas, NumPy, SciPy, Next.js, PostgreSQL, MongoDB, SQLite, Tkinter, JUnit, Postman, Git, Matplotlib, Seaborn

Work Experience

Website Developer - Volunteer Feb 2025 - Present

The Church in Burnaby *Burnaby, BC*

- Developing a responsive website using **React.js, Next.js, and Tailwind CSS** to improve outreach and content accessibility.
- Collaborating with partners to gather requirements and implement SEO practice.

Hockey Scorekeeper Sept 2024 - Present

Canlan Sports - ASHL *Burnaby, BC*

- Operated scoreclock to manage game score and timing, ensuring accurate and timely updates during hockey matches.
- Tracked goals, penalties, and player participation, maintaining records for 30+ games monthly.