Daniel Xu

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Education

University of Waterloo — Waterloo, ON
Bachelor of Computer Science (GPA: 3.96) — *Expected Graduation Date: April 2026*

Experience

Full-Stack Developer — May 2023 – Aug 2023
BlackBerry

- Self-implemented next-gen image converter using **Python**, web-scraping, and **tkinter GUI** to automate image conversions to WebP format, saving countless hours for current/future developers and boosting site performance up to **135.7%**
- Optimized **JavaScript/TypeScript** bundle sizes, external package imports, and **SASS** transitions, enhancing speed indices by an average factor of **30%+** on web pages according to Google Lighthouse benchmarks
- Developed **60+** web pages and **12+** components to production using **TypeScript**, **XML**, **SASS**, and **AEM**
- Collaborated with stakeholders from Corporate, IoT, and Cyber teams to ensure successful delivery of agile development tasks, fostering cross-functional communication through **JIRA**, **Optimizely**, and **Microsoft Teams**

Software Engineer — November 2022 – May 2023
Discourse Agency

- Self-developed **privilege walk application** using **Next.js**, **Tailwind CSS**, and **Anime.js** for Discourse Agency
- Integrated **REST API** to automate dynamic generation and emailing of score reports with quantitative measurements of user privilege with **Node.js** server, utilizing client-server interactions at **7 API endpoints** for seamless POST/GET requests
- Utilized **Firebase Realtime Database** with Admin SDK and security rules to encrypt storing/retrieval of user data
- Implemented dynamic questionnaire with 30 questions, employing **statistical analysis** to measure user privilege
- Optimized data reading **time efficiency** and incorporated asynchronous components to improve render time by **81+%**
- Leveraged **Context** and **Reducer** to streamline global/local state, enhancing state manipulation efficiency

Projects

DerivaPrice | *Python, MATLAB, SciPy*

- A theoretical derivative pricing interface with pricing models such as **Black-Scholes** and **Binomial** using **Python**
- Implemented a **Monte Carlo simulation** algorithm to approximate option prices, involving modeling risk-neutral evolution of asset prices and generating multiple realizations of asset paths using **MATLAB** for European puts/calls
- Utilized **PWL**, **Hermite**, and **Natural Cubic Spline** interpolation for precise yield curve construction in financial modeling
- Leveraged spot/options prices, implied volatilities, and risk-free rates to pinpoint arbitrage opportunities with **SciPy**

DynamicForexTrader | *Python, Oanda API, Pandas, Matplotlib, SciKit, TensorFlow, Keras*

- Built algorithmic trading system featuring a live 50:1 leveraged margin trader for Forex derivatives and dynamically implementable strategies with **Python** and **Oanda API**, reaping **doubled** average long-term returns
- Engineered and trained a **deep neural network** binary classification model on **40,000+** data-points with binary cross-entropy loss and sigmoid activation for Forex market prediction using **TensorFlow**, **Keras**, and **SciKit**
- Leveraged **grid search** with **StratifiedKFold** cross-validation to optimize six hyperparameters such as dropout rates, regularization strength, and network architecture, resulting in a **3%+** improved prediction accuracy
- Implemented vectorized and iterative backtesting classes to test **10+** financial strategies on dynamic financial instruments

Credit Card Approvals | *Python, Pandas, SciKit*

- Built logistic regression model to predict credit card application approvals with **90%+** classifier accuracy using **SciKit**
- Pre-processed data using missing value imputation and label encoding, and scaling using **Pandas** and **NumPy**
- Performed grid search to find 2 optimal hyperparameters of logistic model, increasing performance potential

Stock Market Sentiment Analysis | *Python, Pandas, Matplotlib, NLTK*

- Generated investment insight for **Facebook** and **Tesla** through sentiment analysis with **Python** and **NLTK**
- Scraped **500 news headlines** to produce time series visualizations with **Matplotlib** and predict stock market sentiment
- Developed algorithm to filter verbatim copied headlines, improving statistical modeling accuracy by **4.8%**

Skills

Languages: Python, SQL, MATLAB, R, C/C++, Java, HTML/CSS, JavaScript, TypeScript
Frameworks/Libraries: Pandas, SciKit, TensorFlow, Keras, SciPy, Matplotlib, NumPy, Node.js, React, Next.js, Firebase
Technologies: Git, Linux, Github, Adobe Experience Manager (AEM), JIRA, Figma, GitLab, Optimizely