Michael Ferreira

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Education

University of Waterloo — Waterloo, ON
Bachelor of Computer Science — *Sept 2025 – Apr 2030*

Wilfrid Laurier University — Waterloo, ON
Bachelor of Business Administration — *Sept 2025 – Apr 2030*

Technical Skills

Languages: TypeScript, Python, JavaScript, Racket, C, HTML/CSS, SQL (Postgres), Java
Technologies: React, Node.js, Django, Next.js, TensorFlow, TailwindCSS, Git, Docker, Chrome DevTools
Libraries: pandas, NumPy, Matplotlib, openpyxl, Beautiful Soup, Axios, Scikit Learn, OpenCV, librosa

Experience

Software Engineering Intern — Nov 2024 – Mar 2025
Local Reach — *Kingston, ON*

- Refactored the website to leverage SSR and SSG techniques, reducing client-side bundle size by 68% and improving initial page load time from 2.8s to 0.9s.
- Developed YOLO computer vision pipeline for automated TV display recognition in retail stores, achieving 30+ FPS throughput with sub-500ms latency through OpenCV preprocessing; technology acquired by Taiv (YC W20)
- Engineered a neural network audio classifier using MFCC, mel-spectrogram, chroma, and tonnetz features using librosa, achieving 92% accuracy with a 3-layer dense architecture optimized through 64-epoch training

Charity CEO and Lead Developer — Dec 2024 – Aug 2025
Baobab — *Toronto, ON*

- Built and deployed a full-stack MERN donation platform serving 10 charitable organizations with 90+ active users, contributing 9K+ lines of production code that facilitated $1,000+ in donations
- Implemented JWT-based authentication with bcrypt password hashing and RBAC protecting 50+ API endpoints while maintaining sub-100ms average response time
- Optimized MongoDB schema with compound indexes on 3 core collections achieving 40% faster query performance and supporting 10x data volume scalability through denormalization strategies

Projects

Sublet Centre | *TypeScript, Next.js, PostgreSQL, Supabase, Docker, TailwindCSS* — Nov 2025 – Present

- Built a full-stack subletting platform to support 100+ listings, targeting off-campus student housing
- Implemented secure authentication and role-based access control using Supabase Auth
- Used denormalization in PostgreSQL schema to manage listings and user data, while reducing query latency
- Developed server-side rendered search and filtering features, improving SEO performance and reducing initial page load time by 250%

Forex Predictor | *Python, Scikit Learn, Pandas, NumPy, Matplotlib, YFinance* — Sept 2025 – Dec 2025

- Engineered 90+ features from technical indicators (RSI, MACD) and macroeconomic data to predict forex price movements with 93% accuracy in direction classification for predicting currency movements in 5 years
- Trained Random Forest and Gradient Boosting models using time-series cross-validation, achieving $R^2 = 0.84$ on EUR/USD next-day returns
- Automated data ingestion and evaluation pipelines, processing 100,000+ historical data points across multiple currency pairs over 25 years using the Yahoo Finance API

Baobab Charity Website | *TypeScript, MongoDB, React, Next.js, Git* — Apr 2024 – Aug 2025

- Developed a full-stack MERN platform for charitable donations used by 10+ organizations, implementing responsive layouts, dynamic routing, and modular React components with a scalable backend architecture
- Designed and implemented secure user authentication and session management using bcrypt to support 80+ concurrent user accounts, ensuring data integrity and protection against XSS and CSRF
- Built a real-time wishlist system enabling charities to create, update, and track 250+ requested items using dynamic state management, improving donation transparency