Zaki Machfj

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Skills

Languages: Python, JavaScript, TypeScript, Go, C++, SQL
Technologies: React, Django, Flask, Docker, AWS, PostgreSQL, NumPy, Pandas, PyTorch, OpenCV, Scikit-Learn

Experience

Deliverect   September 2023 – December 2023
Backend Developer Intern   *Toronto, Ontario*
- Led the development of a NetSuite entreprise payment system migration using **Flask** and **MongoDB** to support recurring subscriptions and product add-ons for more than **700,000 customers**
- Optimized request handling in a billing micro-service by implementing asynchronous routes in **FastAPI** and indexed **SQL** queries, improving the service's performance and allowing it to handle a **60% growth in traffic**
- Designed and implemented a distributed processor for restaurant POS analytics that **parallelized food delivery aggregation tasks** using **RabbitMQ** and **Python**, **increasing throughput by 550%**

Empire Life   January 2023 – May 2023
Software Developer Intern   *Kingston, Ontario*
- Automated the approval of insurance advisors by developing a **Python script** and **GitHub Actions CI/CD pipeline** running on a nightly CRON schedule, saving the customer service team 10+ hours weekly
- Designed and built end-to-end features for a new MFA system using **Django**, **React** and **TypeScript**, allowing clients to manage their MFA factors and **leading to a 45% increase in adoption**
- Developed a **Python** script to batch-process inactive users from an **Auth0** database, leading to a **12%** size reduction

Dejero Labs   May 2022 – August 2022
Software Developer Intern   *Waterloo, Ontario*
- Led the development of a new 2FA API with **PostgreSQL** and **Rails**, leading to **2,000 new MFA enrollments**
- Reduced database latency times by **300% to less than 90 ms** by implementing a MongoDB connection pool with **Go**
- Designed and implemented a reusable tooltip component using **Angular** to improve mobile performance/accessibility

Quill Podcasting   May 2021 – August 2021
Software Developer Intern   *Toronto, Ontario*
- Created user-facing graphs with **React** and **TypeScript** to visualize clients' podcast analytics and retention metrics
- Designed automated test suites using **Selenium** and **Jest**, increasing the codebase's **test coverage by 12%**
- Built a custom podcast player with **React** and **CSS** from existing Figma design mockups for 40 new clients

Projects

Computer Vision Chess App
- Implemented **image recognition algorithms** for chessboard detection in user-uploaded images using **OpenCV**
- Leveraged **transfer learning** on a pre-trained **CNN** model in **PyTorch** to classify pieces and convert images to FEN
- Created a confusion matrix with **Scikit** to visualize model predictions, with an 81% average precision and 77% F1 score

Autonomous Vehicle, Perception Team
- Worked on the computer vision team at a school club to **build a CNN** for road sign perception and detection
- Implemented robust data pre-processing and augmentation scripts for **210,000 images** with **OpenCV** and **Pandas**

Chess Opening Recommendation Algorithm
- Created a web app to recommend chess openings to users based on their chess.com games using **React** and **FastAPI**
- Implemented an ML recommendation system using one-hot encoding and cosine similarity with **Scikit-Learn**
- Pre-processed, normalized and analyzed user data with **Pandas** and created data visualizations with **Matplotlib**

Education

University of Waterloo   Sep. 2020 – May 2025
Bachelor of Science in Computer Science   *Waterloo, Ontario*
- Interests: Machine Learning, Fitness, Chess, Soccer, anything that ends with "ball"
- Coursework: OOP in **C++**, Compilers, Databases, Algorithms, Data Structures, Operating Systems