Ted Zhang

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Experience

Machine Learning Developer Intern, *Kinaxis Inc.* May 2023 – Aug 2023
Toronto, Ontario

- Researched and tested various **change point detection** techniques and **unit root** tests to identify anomalies within supply chain time series data using a system based on **Ruptures, Kalman Filters**, an **Augmented Dickey-Fuller** test, and **matplotlib**.
- Implemented and productionized the techniques in a **Python module**, complete with an **HTML** report generation feature.
- Analyzed and aggregated data from a large-scale database to prepare it for testing using **PySpark** and **Azure Databricks**, decreasing processing time by **53%** compared to the previous system.
- Refactored data utilities using **PySpark**, improving readability, reducing lines by **40%,** and decreasing runtime by **45%**.

Machine Learning Engineering Intern, *BlackBerry Limited* Sept 2022 – Dec 2022
Waterloo, Ontario

- Developed an unsupervised **NLP** model with an **87 f1-score** and **92% validation accuracy** for log anomaly detection using **hashing vectorizers**, **scalers**, **LSTM** autoencoders, Google's **BERT** transformer, and **isolation forest**.
- Tested, productionized, and integrated the new model into the existing codebase and pushed **2000+ lines** into **production**.
- Researched and experimented with models from **research papers** using **TensorFlow**, **Keras**, **Scikit-learn,** and **Pandas.**
- Improved the machine learning data pipeline by decreasing memory usage by **38%** using **multiprocessing,** working on a **NoSQL** database, and reducing log footprint and redundant **API** calls by **55%**.
- Implemented a **CI/CD** pipeline using **Git**, **GitLab CI/CD**, **GitLab Runner**, **Docker**, and **bash scripts**.

Machine Learning Developer Intern, *Advanced Micro Devices Inc. (AMD)* Jan 2022 – Apr 2022
Markham, Ontario

- Developed and trained a medical diagnosis **AI** that can detect intracranial hemorrhages with **94% validation accuracy** using **TensorFlow**, **Keras**, **Pandas**, and **NumPy** trained on brain scans from an RSNA database of over **700,000 images**.
- Utilized transfer learning using **InceptionV3**, a custom data loader, and image preprocessing using **OpenCV.**
- Built both a **CLI** and **GUI** using **Tkinter** to display the brain scans along with their predictions in a user-friendly manner.
- Containerized an inference optimization library along with various other pretrained models using **Docker** and **bash scripts**.

Relevant Projects

Personal Website - www.tedzhang.ca/ Apr 2022 – Present

- Built a multi-page personal portfolio website complete with interactive elements using **React.js**, **SASS**, and **JavaScript**.
- Optimized website for mobile responsiveness and added features like a mobile menu and dynamically resizing elements to improve user experience.

Mastermind Artificial Intelligence - GitHub Dec 2020 – Feb 2021

- Designed and programmed the algorithm for an artificial intelligence that can play the game Mastermind with 3 levels of difficulty in **Java**. Designed the highest difficulty's algorithm to beat almost any human player.
- Fully commented and documented code to fit industry standards, including function headers.

Education

BCS, Computer Science, *University of Waterloo* Jun 2023 – Apr 2026
Waterloo, Ontario

BASc, Mechatronics Engineering, *University of Waterloo* Sept 2021 – Jun 2023
Cumulative GPA: 94.38/100
Waterloo, Ontario

- Spring 2022 **First in Class Engineering Scholarship**, Fall 2021, Spring 2022, Winter 2023 Dean's Honours List
- Relevant Courses: Algorithms and Data Structures, Digital Logic, Circuits, Linear Algebra, Calculus 1 & 2, Statistics

Skills

- Languages: Python, C++, JavaScript, HTML, CSS/SASS, bash, Java, SQL
- Frameworks & Cloud: TensorFlow, PySpark, Scikit-learn, Pandas, NumPy, Azure, Databricks, OpenCV, Matplotlib, React.js
- Other: Machine Learning, NLPs, Time Series Analysis, CNNs, Computer Vision, CI/CD, Git, SOLIDWORKS, AutoCAD