Axel Tang

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Education

University of Toronto 2025 - Expected 2027
Master of Engineering (Emphasis on Data Analytics and Machine Learning) *Toronto, Canada*
- **Relevant Coursework:** Applied Deep Learning, Intro to Cloud Computing

University of Ottawa 2020-2024
Honours Bachelor of Science in Computer Science (GPA: 3.51 / 4.00) *Ottawa, Canada*
- **Honours and Awards:** Dean's Honour List, International Merit Scholarship

Credentials 2025
Post Grad Certifications *Remote*
- **Harvard Online:** Data Science for Business
- **Deeplearning.AI:** Machine Learning Specialist

Relevant Work Experience

Hong Kong General Chamber Of Commerce July 2024 – Aug 2024
Information Technology Intern – Software Development & Computer Vision *Hong Kong*
- Implemented a **motion detection** and **face recognition system** using **Python OpenCV contour detection**, enabling security camera monitoring.
- Used fuzzywuzzy algorithm to compare data from SQL database to extract abbreviated names.
- Re-designed intranet webpages with ASP.net & CSS and data entry into system.

InteractHealthPro Mar 2024 – June 2024
Software Developer Intern *Canada*
- Migrated from Keap to Groove.cm by rebuilding automations, transferring customer data, and reconfiguring funnels, reducing manual workload and improving team operational flow.

Academic Projects

Retrieval-Augmented Generation (RAG) Adaptive Chunking | *Python, PyTorch, FAISS* End of 2025 - Ongoing
- Built a baseline RAG pipeline including text preprocessing, fixed-size chunking, dense embedding generation, an in-memory vector store, and a retriever + RAG orchestration module.
- Developed and evaluated adaptive chunking strategies to improve retrieval relevance compared to fixed-chunk baselines on open-domain QA datasets (TriviaQA, NaturalQuestions).
  * *TriviaQA (Llama-3.1-8B)* — **vanilla 74.2%** → **70.0% (Top 3 RAG)**
  * *TriviaQA (Qwen-3-8B)* — **59.2%** → **66.9% (Top 3 RAG)**
  * *NaturalQuestions (Llama-3.1-8B)* — **32.4%** → **43.9% (Top 3 RAG)**

Feedforward Neural Network Classifier | *PyTorch, scikit-learn* Oct 2025
- Built and trained a **3-layer neural network (64-32-1)** using PyTorch for binary classification on synthetic datasets.
- Implemented full **forward/backward propagation** and optimized using the **Adam optimizer**, achieving **82+% accuracy**.
- Visualized **training/test convergence** and analyzed gradient behavior over 300 epochs.

Umple | *Java, Internal Language: UML* https://umple.org
- Actively contributed to an open source project (**model-oriented programming** tool) with 1.78+ million visitors.
- Tasked with implementing and resolving **Java** and **Umple** issues while ensuring effective version control and **CI/CD pipeline**.
- Submitted multiple **Pull Requests**; such as extraneous bracket detection with **Regex** and **Batch Scripts** for Windows Development

Technical Skills

Frameworks: PyTorch, TensorFlow, Hugging Face, Scikit-learn
Tools: FAISS, Docker, Jupyter, Google Colab, Git
Concepts: Deep Learning, Neural Network, NLP, RAG, Information Retrieval, Adaptive Chunking
Languages: Languages: Python, Java, C#, JavaScript (React, Node.js), Kotlin, Go