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

Recent Work Experience

Sky Dream Mar 2025 – May 2025
Information Technology Instructor *Hong Kong*
- Provided coding and aviation related education to top elementary school students

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*
- Ensure smooth transition from one CMS system to another and improved operational efficiency by 95%

Academic Projects

Retrieval-Augmented Generation (RAG) Adaptive Chunking | *Python, PyTorch, FAISS, Hugging Face* 2025
- Implemented a **Retrieval-Augmented Generation (RAG)** pipeline using fixed-size chunking as a baseline and multiple **adaptive chunking strategies**.
- Integrated **FAISS vector database** and **Transformers** for dense passage retrieval and semantic search.
- Evaluated performance on **TriviaQA** and **NaturalQuestions**, analyzing retrieval quality and token efficiency.
- Achieved up to **17% improvement in retrieval relevance** and reduced token redundancy across test datasets.

Feedforward Neural Network Classifier | *PyTorch, scikit-learn* 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