

ANDREW LIN

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EDUCATION

University of Waterloo

Bachelor of Computer Science, Co-op, GPA: 91.74%

- Dean's Honours List, 2023 – 2024

- Relevant Courses: Data Structures and Algorithms, Logic and Computation, Object-Oriented Software Development

Waterloo, ON

Expected Apr. 2027

EXPERIENCE

Software Engineer Intern

May 2024 – Aug. 2024

TD Bank

Toronto, ON

- Led development of an Enterprise Innovation team project delivering near real-time translation between clients and bank tellers, built with **FastAPI**, **React**, and deployed on **GCP Compute Engine** and **Heroku**
- Developed FastAPI endpoints to evaluate translation quality and handle audio playback through **WebSocket** connections
- Deployed translation models on a **GCP VM** instance, ensuring scalability and achieving a response time of **<500 ms**
- Built a single-device conversation feature with automatic speaker differentiation using **Whisper's** language detection
- Achieved a **6%** increase in translation performance measured by string-based and ML-based metrics (eg. BLEU, COMET) by evaluating and comparing the quality of four different translation models across **38** language pairs

Software Engineer Intern

Sep. 2023 – Dec. 2023

Altis Labs

Toronto, ON

- Developed image annotation tools and data pipelines using **TypeScript**, **GraphQL**, and **Hasura with PostgreSQL** for Altis Labs' AI-powered clinical information platform used by companies such as AstraZeneca and Bayer
- Built a comprehensive patient study labeling system by designing database infrastructure and integrating it into the **Hasura GraphQL API**, complete with multiple **Express.js** endpoints for custom input validation on labels' JSON metadata
- Continued the development of internal **Python** scripts responsible for populating databases with **4000** medical (DICOM) images and over **10 GB** of synthetically-generated sample patient data across **148** tables
- Automated the backup of **AWS RDS** databases using **AWS Lambda**, stored across **S3** and **S3 Glacier**

Quality Assurance Intern

Jan. 2023 – Apr. 2023

Altis Labs

Toronto, ON

- Improved on the **GitHub Actions CI/CD pipeline** by introducing new frameworks, test reporters, coverage reports, and Python dependency-caching into the project and reduced the runtime of the testing workflow by **68%**
- Implemented and configured the **tox** framework for efficient Python virtual environment management, enabling the ability to run over **250** Python tests with various different **Pipenv environments** collectively
- Wrote over **40** unit and integration tests using **Pytest** and **Jest** to expand test coverage in the code base to over **90%**

PROJECTS

Ticket Finder | *React, Spring Boot, Java, Maven, MySQL, Docker*

- Created a full-stack interactive web app that allows users to discover upcoming events and keep track of ticket prices
- Developed a **Spring Boot** back-end service with a **MySQL** database for updating event details, and a **React** front-end which fetches from both the back-end and the Ticketmaster API, using **Material UI** components to display graphs and data

Live Transcriptions | *JavaScript, Chrome API, OpenAI API*

- Coded a Chrome extension that generates live transcripts from any audio through the web browser regardless of the source, using the **Chrome API** and **OpenAI Whisper API**
- Completed features to improve the access of the stored transcriptions, allowing users to search, copy, and sort records

Large Language Model | *Python, PyTorch*

- Built a Transformer-based Large Language Model (LLM) with **124M** parameters, utilizing self-attention mechanisms
- Pretrained the model on a custom text dataset for 10 epochs, optimizing loss gradients and updating weights
- Integrated GPT-2 pretrained weights for fine-tuning, adapting the model to instruction-following and classification tasks

TECHNICAL SKILLS

Languages: JavaScript, TypeScript, Python, Java, C/C++, SQL, GraphQL, Bash, HTML, CSS

Libraries/Frameworks: React, Node, Express, Spring Boot, FastAPI, Apollo Client, Serverless, Cypress, Pytest, Jest, PyTorch

Developer Tools: Git, Docker, PostgreSQL, MySQL, AWS, GCP, Terraform, GitHub Actions, Vercel, Hasura