

Fred Liu

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EDUCATION

University of Waterloo

Bachelors in Computer Science

- DS&A, OS, Databases, Compilers, ML, AI, Cryptography

Expected Graduation: Dec 2025

GPA: 3.8/4

EXPERIENCE

Apple

Software Engineer Intern

Sep 2024 – Present

San Diego, CA

- Developing unsupervised clustering models and neural networks to predict access patterns, aiming to optimize over 40 petabytes of data and reduce storage costs by \$5 million annually

Cohere AI

Software Engineer Intern

Jan 2024 – Apr 2024

Toronto, ON

- Processed 278TB of big data using distributed systems and NLP to create pretraining datasets, improving LLM performance by 4% across coding benchmarks
- Architected novel concurrent clustering algorithm in Spark, reducing false positive rates in text deduplication from 10% to 0.1%, drastically improving quality of pretraining datasets
- Engineered internal tool with FastAPI and Streamlit to automate the data processing and quality assurance workflow, optimizing the development time of data processing jobs by 30%.

Super.com

Data Engineer Intern

May 2023 – Aug 2023

Toronto, ON

- Orchestrated seamless upgrade of DBT from 1.0 to 1.6 by coordinating the data team and communicating cross-functionally, modernizing data processing options for over 2700 derived tables
- Examined data lineage to safely apply lifecycle rules on stale data, cutting AWS S3 storage space by 60% and saving \$52000 annually
- Architected scalable data pipelines to improve collaboration with suppliers, reducing errors and time spent updating sheets by 20 hours per week

Titanium Agency

Full Stack Developer Intern

Waterloo, ON

Sep 2022 - Dec 2022

- Minimized data fetch size from database by translating complex backend data transformation logic to SQL and limiting results by implementing pagination, accelerating frontend dashboard operations by 5 times
- Developed loading bar component using WebSocket connection for realtime progress between frontend and backend, enhancing user experience for over 12000+ timely operations
- Built new webpage using Facebook Business API for bulk ad cloning, reducing cloning time by up to 70%

Wish

Data Scientist Intern

Jan 2022 – Apr 2022

San Francisco, CA

- Engineered fully integrated ETL process to extract, transform, and load app notification metrics into dashboards, establishing benchmarks enabling analysis of user engagement trends
- Researched attribution data models to measure engagement, facilitating A/B experimentation on app notifications
- Uncovered 7% organic increase in user retention by using attribution models to identify bias from advertising strategies, leading to more data-driven marketing decisions

Nokia

Software Developer in Test

May 2021 – Aug 2021

Ottawa, ON

- Creatively explored the system to discover a obscure critical-impact memory leak, preventing the system from inevitably crashing
- Developed automated tests covering 50+ API endpoints, reducing future effort

Nokia

Future Tech Intern

Jul 2019 – Aug 2019

Ottawa, ON

- Devised Google TextFSM regex templates to automatically parse router logs, reducing development time of project to migrate routers by 2-3 weeks

PROJECTS

Personal AI Agent | *Python, Streamlit, OpenAI API*

May 2023 – Present

- Developed AI agent to automate 20+ local tasks such as writing meaningful Git commits using OpenAI tool calls
- Prototyped novel AI manager to command the AI agent, allowing for better completion of complex tasks

FredZip | *C++, DS&A*

May 2018 – May 2020

- Implemented Huffman tree and LZ77 algorithms in C++ to build a text compressor with 55% compression rate comparable to industry-standard tools

AWARDS

Best-In-Class at Super.com: \$2000 awarded for exceptional performance among cohort of 66 interns

Honor Roll in Canadian Computing Contest (CCC): Placed top 4% on Waterloo's 2020 Senior CCC, a contest evaluating problem solving and DS&A skills

Honor Roll in Fermat Contest: Placed top 4% on Waterloo's Gr 11 math contest

TECHNICAL SKILLS

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

Technologies: Spark, Airflow, Snowflake, DBT, MongoDB, MySQL, NodeJS, Vue

Developer Tools: Git, GCP, AWS, Docker, Linux, Github Actions, VS Code, Tableau

Libraries: Pandas, NumPy, Matplotlib, Scikit-learn, Pytorch, Tensorflow, Flask, FastAPI, Streamlit

HOBBIES

Spending too much money in badminton: Too addicted to badminton to care

Shamelessly improvising songs: Attempts to cover songs by ear on Violin or Piano

Eating pho: Best food in the world?