

JACK SHI

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Education

University of Waterloo

Sep. 2024 – May 2029 (expected)

Bachelor of Mathematics

Waterloo, Ontario

- Major in Combinatorics and Optimization, Minor in Computational Mathematics

Experience

Hubio Technology

May 2026 – August 2026

Software Engineer Coop

Toronto, Ontario

- Developed REST API endpoints across 10+ **Express**, **Angular** and **AWS DynamoDB** microservices for an insurance platform, resolving critical backend bugs through comprehensive QA during a **Node.js v14** to **v24** migration.
- Engineered data transformation logic for a serverless insurance transaction system based on **AWS Lambda**, ensuring standardized data persistence across **DynamoDB** and **S3**.
- Overhauled PDF parsing logic for a driver validation application, eliminating production bugs rate by **75%** and streamlining new client onboarding.

Agfa Healthcare

September 2025 – December 2025

Performance Test Engineer Coop

Waterloo, Ontario

- Developed robust, automated performance and load test scripts using **JavaScript/TypeScript** and the **Playwright** framework to simulate complex customer use cases and network conditions.
- Engineered and integrated new Jenkins projects, writing custom Groovy scripts to fully automate the execution and scheduling of performance test suites within the **CI/CD** pipeline.
- Automated the collection and analysis of performance data by scripting interactions with the JIRA API (Xray) and other internal web services, accelerating the validation of release quality.

Precision e-Business Group

Jan 2024 – May 2024

Application Developer Intern

Burlington, Ontario

- Built a customer service chatbot that assisted **1000+** users and automated weekly analytics reporting from histories.
- Designed a student management system tracking performance of coop students via Zoho Creator workflows.
- Developed an image enhancement API with Fast API supporting Deluge Requests.

Projects

LLM-powered Document Search Engine | *Python, FastAPI, Langchain, Pinecone, SQLite3, Elasticsearch* August 2025

- Engineered an end-to-end Retrieval-Augmented Generation (RAG) query engine utilizing **FastAPI**, enabling users to query across complex, unstructured document repositories.
- Utilized a hybrid search strategy that combines **cosine similarity** and **elasticsearch** for maximizing retrieval precision, yielding a **94%** accuracy rate in ground-truth answer generation
- Optimized RAG data ingestion workflow using **Langchain** with custom parsing, noise removal, chunking and storage implementation, minimizing context loss when embedding text.

High Performance HTTP Server | *C/C++*

November 2025

- Developed a high-performance, multi-threaded TCP server in **C++** that handles HTTP 1.1 protocol
- Capable of scaling to over **80,000+** Requests per Second (RPS) with 50,000+ concurrent client connections
- Implement a custom thread pool and utilized non-block I/O for handling client requests to minimize latency

Shared Markdown Note Taker | *Typescript, Express, Vue, WebSocket*

November 2025

- Engineered a collaborative Markdown editor utilizing **WebSockets** to broadcast real-time updates, enabling seamless, low-latency multi-user co-editing.
- Built a robust document management system featuring customizable folders and deeply nested subfolders to efficiently structure and scale team documentation.

Technical Skills

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

Developer Tools: AWS, Docker, Git, Linux, Jira, Jenkins

Technologies/Frameworks: FastAPI, Node.js, Express, Playwright, React, Redis, PostgreSQL, MongoDB