Youssef Chouay

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Education

Masters in Computer Science - Thesis — Ottawa, ON
University of Ottawa — *Jan 2025 – Dec 2026*
- **Supervisor:** Vida Dujmovic (Wikipedia Link) | Received over **$52,000** in research scholarships

Bachelor of Applied Science in Software Engineering — Ottawa, ON
University of Ottawa — *Sept 2020 – Dec 2024*
- **Relevant Coursework:** Data Structures & Algorithms, Embedded Systems, Databases, Discrete Math, Real-Time Systems Design, Enterprise Architecture

Experience

Artificial Intelligence Researcher — May 2024 – Present
National Research Council — *Ottawa, ON*
- Designed and deployed systems in **Python** using **LangChain**, enabling seamless communication between Building Automation Systems (BAS) and reducing data processing times and workload by **49%**.
- Used a **SQLite** to efficiently process, integrate, and manage real-time data streams from BAS.
- Partnered with **Delta Controls** and **Carleton University** to deliver AI-powered building agents, achieving a **56% reduction in maintenance costs** by automating issue detection, predictive maintenance, and real-time alerts.

Junior Software Engineer — Sept 2022 – Aug 2023
Wind River Systems — *Ottawa, ON*
- Designed and implemented an Automation Dashboard using **Angular**, **TypeScript**, and **Django**, with a **PostgreSQL** database, to streamline the management and analysis of services used by industry leaders such as **NASA, Airbus, and Ford**.
- Achieved over **90%** faster query execution and UI responsiveness by optimizing API endpoints, implementing efficient database queries, and reducing frontend rendering times.

Software Developer — May 2022 – Apr 2024
University of Ottawa — *Ottawa, ON*
- Redesigned and optimized the university's search engine using **PHP**, **MySQL**, and **Apache**, improving query response times by **80%**, benefiting over **5,000+ students** and saving the university over **$30,000** annually.
- Developed and deployed automation scripts using **PHP**, **Bash**, and **Cron jobs** to enhance search speed by **54%** and streamline data migration workflows.

Teaching Assistant — Sept 2023 – Present
University of Ottawa — *Ottawa, ON*
- Assisted in teaching **Graduate** classes such as **Machine Learning for Bio-informatics** and **Undergraduate** ones like **Data Structures & Algorithms**, **Design & Analysis of Algorithms**, **Programming Paradigms** and **Discrete Structures**.

Projects

NLP Phishing Detection | *Bell Canada Research Project*
- Built a phishing detection system using **NLP** and computer vision (CNNs) for website classification and clustering, achieving **98.4%** accuracy.
- Developed a Chrome extension to integrate phishing detection directly into email clients and implemented an automated pipeline with **AWS S3** for retraining on new phishing data.

GeeGee's Intramural website | *Personal Project*
- Built a **GeeGees Intramural Sports Hub** from scratch using Next.js + TypeScript/Tailwind UI, SSR pages for leagues/teams/schedules, and slick Chart.js visualizations—delivering an accessible, responsive experience for thousands of students.
- Designed a **high-throughput Rust + Actix-web API** backed by **SQLx/PostgreSQL** that streams real-time standings, Elo ratings, and predictive match analytics with sub 20ms latency.
- Drove concurrency with async/await and strict type-safety to create a modular, fault-tolerant codebase that scales gracefully under heavy traffic.

Distributed File Storage System | *Personal Project*
- Designed and developed a scalable, fault-tolerant distributed file storage system using **Go**, enabling efficient storage and retrieval across multiple nodes.
- Implemented **consistent hashing** and data replication to ensure high availability and reliability.
- Optimized network communication with **gRPC** and **Protocol Buffers**, reducing data transfer latency by **35%**.

Skills

Programming Languages: Python, Java, Go, Rust, C/C++, JavaScript/TypeScript, HTML/CSS, SQL, LaTeX
Frameworks & Tools: AWS CDK, React, Node.js, TensorFlow, Docker, Kubernetes, Firebase, Jira, Git, Mockito, Flask