Lucas Nogueira

Software Engineer, University Of Waterloo

Links | lnogueir.me | lnogueir@uwaterloo.ca | +1 226 978-5884

Languages | C++, Python, C, Go, JavaScript, Java, HTML, CSS

Tech | WebRTC, Git, Docker, Node.js, React, MongoDB, AWS, Redis, Flask, FFmpeg, Jenkins, MySQL

Education

University of Waterloo | Bachelor of Computer Engineering (B.CE) September 2018 - Present
Relevant courses: Operating Systems, Data Structures & Algorithms, Systems Programming & Concurrency

Federal University of Rio de Janeiro (UFRJ) | B.Eng Electrical February 2018 - August 2018
Placed 6th of all admitted students in the program; Dean's Honor List

Experience

Software Engineering Intern | Ross Video, softGear Remote | January 2021 - Present

- Implemented **WebRTC** client with **C++ chromium-based** native code API to publish and process multimedia streams from Serial Digital Interface to Selective Forwarding Unit, achieving **ultra-low latency of ~0.6s**.
- Engineered **multi-threaded** media pipelines with **hardware acceleration** using **C** libraries to interact with a **GPU** and perform H264 video encoding/decoding efficiently, dropping CPU usage by **over 35%**.

Software Developer in Test | The Weather Network Remote | May 2020 - August 2020

- Developed and **dockerized Go** micro-services to **concurrently** process weather files, contributing to deprecation of **C++** monolithic forecast engine serving **+4 million unique users**.
- Performed **geospatial queries on MongoDB** to process coordinate messages from **AWS SQS** on **8GB** data sets of granular precision weather data leading to nearly **30% performance upgrade**.
- Used **Jenkins, Helm, and Kubernetes** to standardize the **CI/CD** approach for **all backend teams** by engineering a configurable centralized **deployment pipeline** improving infrastructure maintainability.

Junior Web Developer | AGF Investments Toronto, ON | September 2019 - December 2019

- Shipped multiple **JSP** pages and **Java backend** server endpoints interacting with **SQL databases** to handle users/staff messaging requests and secure file uploads that **impacted over 60 000 users**.
- Implemented **React** into **Java Spring** to migrate off legacy JSPs and jQuery Plugins which **reduced bundle size by approximately 15%**.

Teaching Assistant | University Of Waterloo, CS138 Waterloo, ON | January 2019 - April 2019

- Taught **Data Structures and Object Oriented Programming** in **C++** for first-year Software Engineering students and developed **Python** scripts for auto-marking assignments.

Projects

Liteboard.io | Founder | Featured | +300 stars on Github April 2020 - October 2020

- Built backend infrastructure, using **Janus SFU implementation**, capable of supporting **multistream conferences** with up to **50 participants** per room powered by **WebRTC, Redis, Node and Express**.
- Implemented **WebSocket-based** chat rooms with support for image/document attachments to enable concurrent messaging system between students and lecturers in the platform.

Arithmetic Expression Tree Simulator | Demo here **Tech Stack** | JavaScript, HTML, CSS

- A web app that, with animation, generates **binary trees** of arithmetic expressions with pure JavaScript by applying **Knuth's layout algorithm** to assign coordinate to nodes without collision of branches.
- Applied **Dijkstra's Shunting-yard algorithm** to parse expression from infix to its postfix form to **asynchronously and recursively** create animated tree structure simulation.